

Graduate Employment Quality and University Talent Cultivation: Mechanism Construction and Pathways

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Abstract – This research addresses the long-standing structural misalignments between university talent cultivation and graduate employment quality in Chinese universities, which constrain both institutional effectiveness and labor market performance. The primary aim is to propose a feasible mechanism for bridging this gap. Using employment data from universities in Sichuan, the research employs web scraping, indicator system construction, and structural attribution methods to systematically evaluate employment quality and reveal underlying institutional imbalances. Based on these findings, a linkage mechanism with dynamic feedback and adjustment is proposed, integrating six key directions of talent cultivation reform, university-enterprise cooperation, and a dual-loop evaluation system. The outcome of this research is a practical framework and reference pathway for improving the responsiveness of university education to labor market demands, thereby enhancing graduate employment quality and advancing broader higher education reform.

Keywords – University Talent Cultivation, Employment Quality, Linkage Mechanism, Mechanism Optimization.

I. INTRODUCTION

With the rapid expansion of higher education and the rise of “new-quality productive forces”, aligning graduate employment quality with university talent cultivation has become urgent. Despite rising graduate numbers in China, from 7.27 million in 2014 to 11.7 million in 2024, job creation has lagged, leading to supply-demand imbalances and growing policy concern. Structural issues such as industrial transformation, uneven discipline development, and insufficient employment-oriented curricula further constrain employability. While policies emphasize “employment-oriented education,” systematic research on mechanisms linking cultivation and employment quality remains limited.

This paper addresses how to construct a university talent cultivation linkage mechanism that effectively enhances graduate employment quality. Based on a systematic analysis of employment quality data, it explores pathways for building such mechanisms to align educational supply with social demand, improve graduates’ employability and satisfaction, strengthen the talent supply capacity of universities.

II. LITERATURE REVIEW

2.1. Research on Employment Quality

“Employment quality” is a multidimensional concept rooted in development economics and labor sociology. The ILO’s “Decent Work” framework (1999) highlighted income level, job security, career development and labor rights. While, the OECD (2015) proposed the Multidimensional Job Quality Framework, emphasizing earnings quality, labor market security, and working environment as key dimensions.

According to Zhang (2023), higher education and employment quality are closely linked through human capital theory, which views education as an investment that enhances graduates’ labor market competitiveness.

Importantly, this relationship should function as a feedback loop in which employment outcomes guide improvements in talent cultivation.

Many countries have developed graduate tracking systems, such as Germany’s KOAB and the UK’s DLHE, to provide standardized data for curriculum renewal and policy evaluation. By contrast, China’s mechanisms remain underdeveloped, relying mainly on the Annual Graduate Employment Quality Report and institution-led surveys, with limited frequency, fragmented indicators, and weak data utilization, which constrains alignment between education and labor market needs (Pan Y. et al., 2022).

2.2. *Research on Talent Cultivation Linkage Mechanisms*

The linkage between talent cultivation and employment quality is essentially a multi-actor, multi-dimensional process of collaborative governance, aiming to dynamically match educational supply with industry demand. Existing studies highlight the evolution from the “Triple Helix” of universities, industry, and government toward more inclusive models incorporating social organizations and learners, reflecting greater openness and adaptability (L Wang et al., 2024).

In practice, diverse cooperation models have been developed. The “dual-mentor system” and “order-based classes” enhance alignment between curricula and labor market needs, while local governments play a platform governance role through joint laboratories, training bases, and cross-sectoral data platforms. Regional cases, such as the “University + Industrial Cluster” alliance in the Guangdong-Hong Kong-Macao Greater Bay Area, demonstrate improved integration of academic disciplines and industrial structures (Wang et al., 2023). Technological advances further reinforce this linkage. Employment big data systems and graduate tracking provide real-time labor market insights, enabling universities to dynamically adjust curricula, competency standards, and training objectives in response to feedback (Chen H. et al., 2023).

Overall, although theoretical and practical explorations have enriched the field, challenges remain in institutional co-construction, standard alignment, and data governance. Future efforts should focus on shifting from resource coordination to deep integration, ensuring a more precise match between higher education and labor market demand.

2.3. *Theoretical Foundations of this Study*

2.3.1. *Outcome-Based Education (OBE)*

OBE emphasizes “backward design”, starting from desired learning outcomes to determine curriculum structures and teaching practices, highlighting the primacy of results over processes (Maharishi M. et al. 2025). It provides a framework for aligning curriculum goals and competency structures with employment relevance.

2.3.2. *Educational Feedback Theory*

According to Williams (2024), educational quality improvement depends not only on teaching itself but also on systematic evaluation and timely feedback. This theory underscores the role of formative assessment in dynamically monitoring learning and informing instructional adjustments.

2.3.3. *Systems Theory and Collaborative Education*

Systems theory emphasizes the interdependence of organizational components and argues that overall opti-

-zation, rather than piecemeal adjustments, is necessary to enhance system performance. Building on this, the collaborative education perspective advocates that talent cultivation should be a systemic task jointly undertaken by universities, enterprises, and governments (Liu, 2017).

III. RESEARCH METHODS AND DATA SOURCES

3.1. Research Methods

This research follows a “data collection → status analysis → mechanism construction” approach. Employment quality data serve as the foundation for sentiment analysis, indicator evaluation, and structural attribution, which together reveal imbalances in current cultivation systems. Based on these findings, targeted optimization directions are proposed to reconstruct the talent cultivation system, forming a dynamic closed-loop mechanism that aligns educational supply with employment demand.

3.2. Data Sources

The study combines multiple sources: A. Official reports and policies from the Sichuan Provincial Employment Guidance Center and provincial government documents. B. Web data collected from Weibo, China’s largest social media platform, where graduate employment topics are frequently discussed. Sentiment analysis was conducted to capture attitudes toward employment.

3.3. Employment Quality Indicator System

Based on prior research and micro definitions of employment quality - and constrained by data availability - we construct four first-level dimensions (See Table 1): (1) Employment Distribution, reflecting talent flows, regional matching, and service to local development; (2) Employment Status, focusing on labor-market entry and fit with academic background and expectations; (3) Employment Satisfaction, serving as external recognition of graduate competence and feedback for educational improvement; and (4) Employer Evaluation, enabling routine feedback to adjust curricula, internships, and competency training.

Table 1. Employment Quality Indicator System.

Dimension	Indicators
Employment Distribution	Regional distribution of employment
	Distribution by employer ownership
	Distribution by industry sector
Employment Status	Accessibility of job opportunities
	Job-major alignment
	Graduates’ evaluation of university employment services
Employment Satisfaction	Satisfaction with job content
	Satisfaction with salary level
	Satisfaction with career development prospects
Employer Evaluation	Employers’ evaluation of graduates

Dimension	Indicators
	Employers' evaluation of university employment services

IV. RESULTS AND DISCUSSIONS

4.1. Empirical Analysis of Graduates' Employment Sentiment

(1) Data Collection and Cleaning

We conduct sentiment analysis on graduate employment discourse from Weibo-China's largest open social media platform with high youth penetration-given its representativeness for graduates' authentic views on employment, careers, and educational experiences. Our dataset covers the period from December 23, 2023, to December 23, 2024. Using keyword-based scraping, we retrieved 5,061 raw comments related to "university graduate employment", "career development", and "employment satisfaction". After removing invalid entries (ads, blanks, duplicates), Chinese word segmentation, and non-text filtering, we obtained a clean corpus for analysis.

(2) Sentiment Analysis with ROST CM6

Using ROST CM6 and its built-in sentiment lexicon and intensity model, we automatically identified polarity and graded results (see Table 2).

Table 2. Sentiment Analysis Results.

Sentiment Category	Total (n, %)	Mild (n, %)	Moderate (n, %)	High (n, %)
Positive sentiment	3238 (99.54%)	54 (1.66%)	93 (2.86%)	3091 (95.02%)
Neutral sentiment	6 (0.18%)	4 (0.12%)	2 (0.06%)	0 (0.00%)
Negative sentiment	9 (0.28%)	8 (0.25%)	1 (0.03%)	0 (0.00%)

Results indicate highly optimistic attitudes toward employment and career development: high-positive accounts for 95.02%, expressing enthusiasm and confidence about future careers. Though some face pressures, public expressions tend to be positive, rational, and forward-looking. This suggests universities have made progress in strengthening students' career confidence and provides emotional-attitude evidence complementing quantitative employment-quality analysis.

4.2. Improvement in Employment Quality

The current status of employment quality mainly presents these following aspects:

(1) Regional Stability and Distinct Employer Profiles

According to the 2024 *Graduates' Source and Employment Intentions Survey in Sichuan*, intended employment regions rank Sichuan (79.78%), Chongqing (4.69%), Guangdong (2.74%), Zhejiang, and Shanghai. Employer type preferences are led by state-owned enterprises (31.81%), followed by government agencies (12.84%), and other types (11.07%). By industry, education ranks first (22.21%), followed by information transmission/ software/IT services (10.97%) and culture/sports/entertainment (9.73%). Across graduate degrees (Master's, Bachelor's, Associate), education is the top intended sector.

(2) Job-Major Alignment and Support Require Improvement, but Satisfaction Varies

The 2023 *Graduate Employment Quality Report* reports in Sichuan major-industry matching at 72.69% and job matching at 72.05%, implying about one-third of positions are not highly related to majors, leaving room to improve job-major matching. While 49,000 internship/traineeship opportunities were developed and 15,000 graduates participated, graduates still perceive intense competition and information frictions, affecting opportunity availability. Satisfaction is relatively high for initial “work content”, indicating effective teaching outputs, but “career prospects” satisfaction is 78.39%, revealing insufficient support for career development and unclear growth paths. Salary satisfaction aligns with the “expectation congruence” indicator at 80.87%, suggesting a gap remains between pay and expectations that calls for better guidance and expectation management.

(3) Competency Differences and Weak University-Enterprise Feedback

Employers are generally satisfied (only 4.12% dissatisfied), yet emphasize different competencies. While disciplinary knowledge, skills, and learning ability are rated relatively high, gaps appear in practical experience, creativity, and interpersonal communication-pointing to weak market linkage and joint practice with employers and sluggish feedback mechanisms for updating talent cultivation.

4.3. Performance Analysis of the Talent Cultivation System

Based on the employment quality indicators, this section applies the three-step method of “problem identification-attribution-diagnosis” to evaluate the talent training system.

Problem identification: the analysis shows that the accessibility of job opportunities remains low due to fierce competition and limited information channels; job-major alignment is insufficient, with nearly one-third of graduates working in positions not closely related to their majors; graduates’ evaluations of university employment services fluctuate, reflecting gaps in feedback utilization; salary satisfaction shows volatility, indicating misaligned expectations; career development satisfaction is relatively low due to unclear growth paths; employer evaluations of graduates are uneven, particularly in practical, innovative, and interpersonal skills; and employers’ evaluation of universities’ employment services is generally low, revealing weak cooperation frameworks.

Casual attribution: the analysis indicates that these problems stem from fragmented career guidance systems, lack of industry-oriented curriculum design, absence of dynamic feedback mechanisms, insufficient career counseling, limited integration of general education with career planning, inadequate practice-based learning, and fragile university-enterprise collaboration.

Inductive diagnosis: the diagnostic synthesis reveals seven categories of structural imbalance: student support systems, curriculum and program design, feedback and regulation mechanisms, career development support, integration of general education with career planning, practice-oriented teaching systems, and university-enterprise cooperation. These issues highlight systemic misalignments across the training system, which cannot be solved by fragmented adjustments but require structural reconstruction and systematic interventions.

4.4. Analysis of Structural Problem Attribution

Building on the evaluation above, structural imbalances are categorized and scored to determine severity.

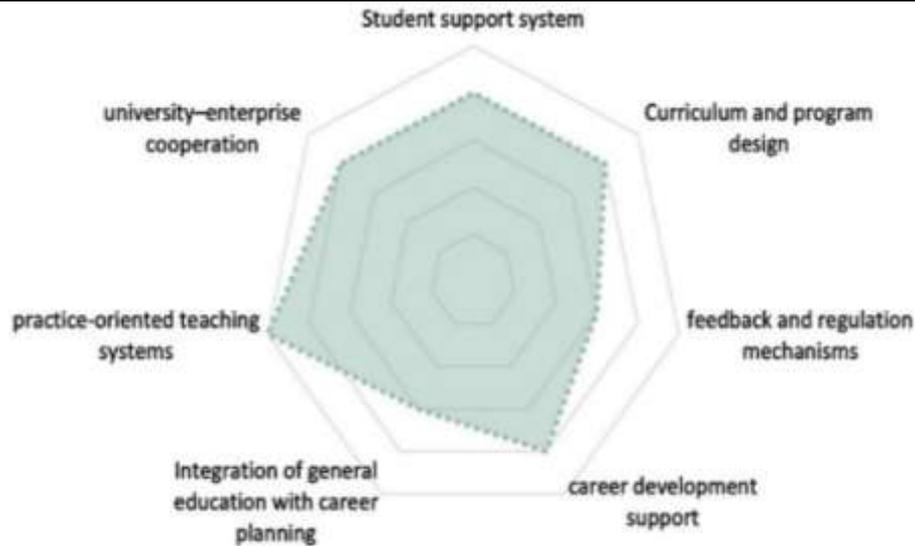


Fig. 1. Radar Chart of Structural Problem Optimization Directions.

As shown in Fig. 1, all seven categories score above three, indicating urgent need for optimization. To address these issues, six key directions of system reconstruction are proposed:

- (1) **Renew Teaching Philosophy:** Establish competence generation as the core value orientation, replacing knowledge transmission with a competence-quality-knowledge framework. Create joint mechanisms for updating teaching philosophy through regular industry-university exchanges.
- (2) **Clarify Teaching Objectives:** Redesign objectives around identified competence gaps, incorporating both transferable skills and job-specific skills to cultivate versatile talent.
- (3) **Optimize Curriculum System:** Adjust program structures according to employment distribution and employer feedback, strengthen practice-oriented and project-based modules, and evaluate course-job alignment, revising or integrating mismatched courses.
- (4) **Reform Teaching Modes:** Institutionalize task-based and project-oriented learning with real industry cases, introduce diversified assessment, and enable dynamic teaching adjustments through process feedback.
- (5) **Strengthen Faculty Development:** Attract practitioners with industry expertise, enhance teachers' practice-oriented training, and implement evaluation systems combining student, peer, and employer assessments linked to promotion and incentives.
- (6) **Improve Campus Support Systems:** Integrate resources to enhance service synergy, establish comprehensive career support platforms, and foster university-enterprise joint practice education.

4.5. *Pathways for Constructing a University Talent Training-Employment Quality Linkage Mechanism*

(1) *Principles of Construction*

To ensure scientific operation and coordinated governance, the proposed mechanism adheres to three principles. First, the principle of information efficiency, which emphasizes the accurate transmission, rapid flow, and effective response of information nodes to enable authentic feedback and precise regulation. Second,

the principle of incentive compatibility, requiring alignment between the objectives of universities, students, employers, and government so that both local and overall goals can be achieved. Third, the principle of system closure, which entails building a dynamic cycle of “input-process-output-feedback-reinput”.

(2) Key Elements

Guided by these principles, five essential elements are selected: employment quality data, talent training system reconstruction, university-enterprise practice education, graduate employment feedback, and government employment policies. Employment data act as the driver, providing both orientation and decision-making evidence. System reconstruction serves as the core, focusing on six dimensions of reform: teaching philosophy, objectives, curriculum, pedagogy, faculty development, and campus support. University-enterprise cooperation plays a pivotal role in practice education, while graduate employment feedback ensures continuous adjustment through dynamic data. Government policies function as the macro-level guarantee by regulating direction, allocating resources, and setting standards.

(3) Construction Pathway

The mechanism (see Figure 2) is data-driven at its core and policy-guided at the macro level. Employment quality indicators serve three major functions: (1) providing evidence to identify mismatches between education supply and labor demand; (2) embedding graduate and employer feedback into the dynamic mechanism to drive content and pathway adjustment; and (3) acting as evaluation tools to monitor effectiveness and inform optimization.

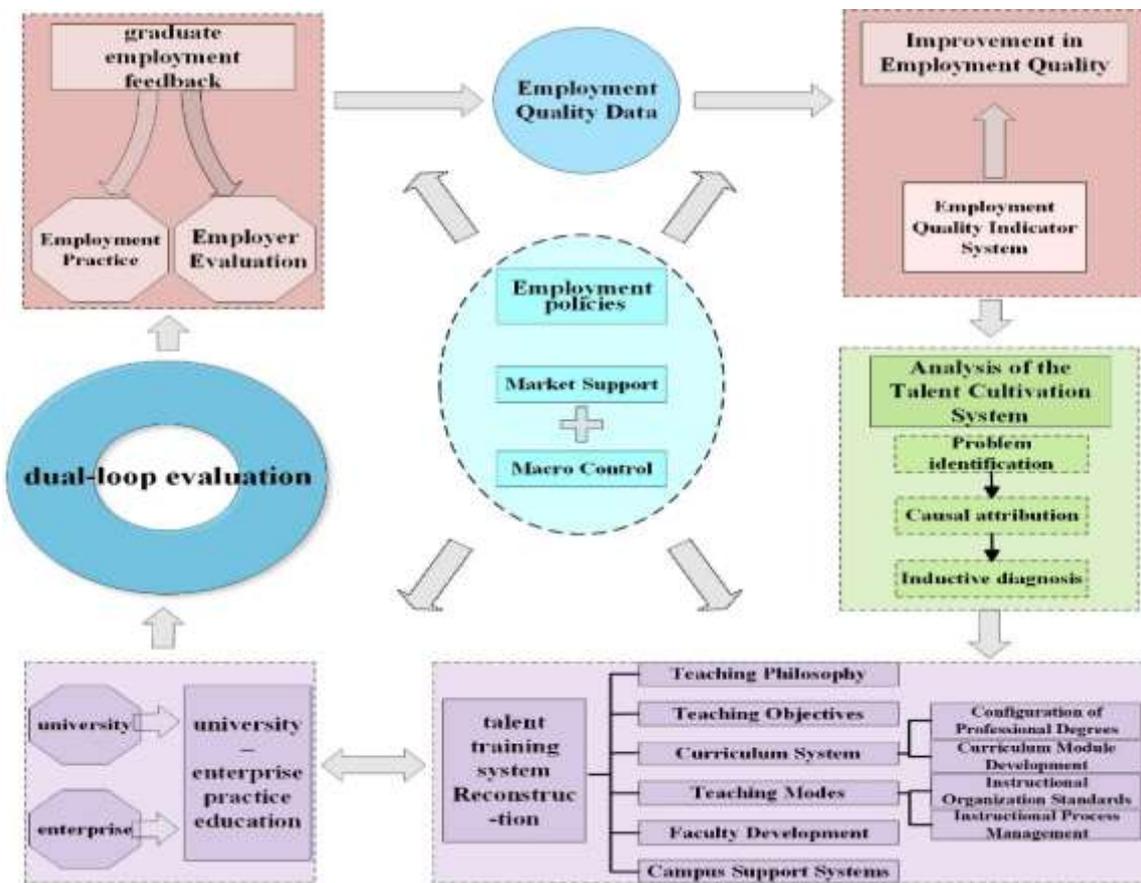


Fig. 2. Pathway of the data-driven university talent training-employment quality linkage mechanism.

After obtaining feedback, the three-step method of “problem identification-attribution-diagnosis” is employed, leading to targeted restructuring of the training system. To ensure timely feedback and precise intervention, a dual-loop evaluation system is established. The inner loop focuses on universities’ internal evaluation of teaching and learning quality, while the outer loop centers on employer-led assessments of competence and employment outcomes. This design ensures complementarity between internal and external evaluations, with results feeding back into the mechanism to strengthen the coupling between education and employment systems (see Figure 3).

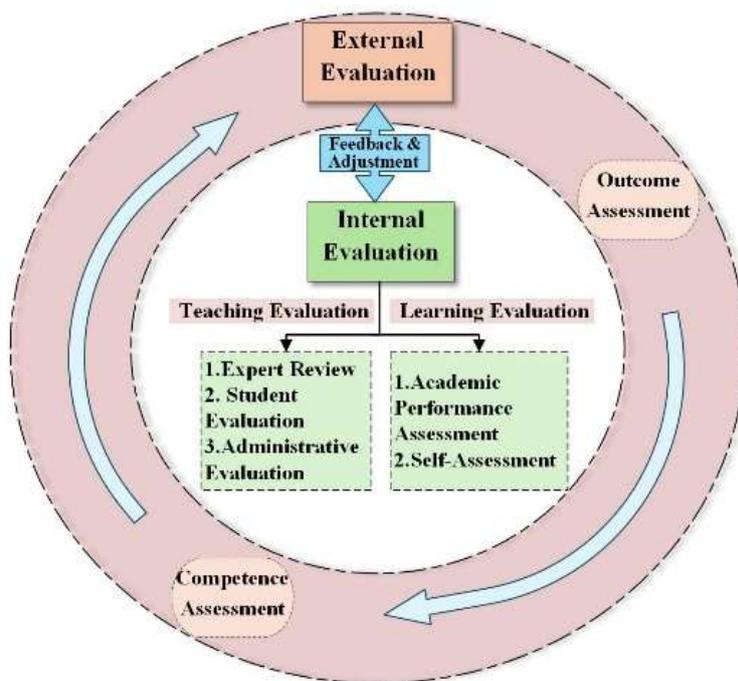


Fig. 3. Dual-loop evaluation mechanism within the linkage system.

Finally, integration is achieved through interfaces such as university-enterprise practice and graduate employment feedback, with government policy functioning as the “invisible hand” that ensures macro-level alignment. Through the interaction of data flow, evaluation flow and feedback flow, the mechanism establishes a virtuous cycle that dynamically couples talent training with employment outcomes.

In conclusion, this study discusses the construction pathway of a “linkage mechanism for university talent cultivation” from the perspective of graduate employment quality data, systematically elaborating its theoretical rationale, structural elements and operational processes. First, the mechanism is grounded in the principles of information efficiency, incentive compatibility and system closure to ensure the authenticity of data feedback and the alignment of stakeholder interests. Second, employment quality data serve as the entry point for integrating multiple dimensions, including talent cultivation, practice-oriented education and policy support. Third, the operational flow and functional layout of the mechanism are analyzed to demonstrate how it enables the precise alignment of educational supply with social demand in practice. Finally, an overall schematic diagram is developed to illustrate the interactions among internal modules and the pathways of dynamic adjustment, thereby validating the mechanism’s logical integrity and practical feasibility. This study not only provides a clear approach to optimizing university talent cultivation systems but also offers a practical tool for enhancing graduate employment quality and improving the efficiency of talent supply-demand matching. Based

on the findings, it is further suggested that future efforts focus on advancing this mechanism through university practice, policy support and broader dissemination.

V. RECOMMENDATIONS AND CONCLUSION

5.1. Recommendations

Building on the mechanism design and in response to the structural tensions between talent cultivation and graduate employment quality, this study proposes recommendations at three levels: universities, government and promotion, to enhance the alignment between education and labor market demand.

A. University Improvements

(1) Integrate objectives, curriculum and evaluation: Establish an outcome-oriented loop linking philosophy, goals, courses and teaching activities with employment quality indicators. (2) Strengthen practice-oriented teaching and industry alignment: Embed occupational competency standards into curricula, adopt project- and task-based models with enterprise participation, and enhance students' employability. (3) Enhance faculty development and feedback mechanisms: Promote dual-qualified faculty recruitment and industry training, while using student and employer feedback for dynamic course adjustment.

B. Government Policy Measures

(1) Develop integrated employment monitoring systems: Establish unified data platforms for graduate tracking and evidence-based policy support. (2) Promote university-industry-government collaboration: Build tripartite platforms for curriculum co-design, joint projects, and talent selection. (3) Provide policy and financial support: Encourage initiatives such as joint labs, internship subsidies, and outcome-based evaluation.

C. Promotion and Scalability

(1) Pilot implementation across institution types: Test the mechanism in research universities, applied universities, and vocational colleges. (2) Standardize tools and processes: Develop indicator templates, flowcharts, and evaluation models to facilitate replication. (3) Build platforms for research and knowledge exchange: Establish alliances for data sharing, best practice dissemination, and policy learning.

5.2. Conclusions

This study proposes a linkage mechanism designed to address the structural misalignments between university talent cultivation and graduate employment quality. The framework offers both theoretical insights and practical implications, helping universities clarify training orientations, supporting policy implementation, and providing concrete pathways for practice. Its potential lies in linking higher education with labor market demands; however, its generalizability still requires further verification. Future research should extend, test, and refine this mechanism, exploring its role in aligning talent cultivation with evolving labor market needs.

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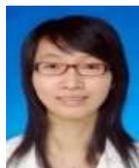
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