

# Optimization of Internship Management Strategies for Vocational Undergraduate Students in the Context of Industry-Education Integration

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**Abstract:** Internship programs constitute a vital component of practical teaching in higher vocational institutions, serving as a tangible manifestation of enhanced school-enterprise collaboration and industry-education integration. They represent a crucial approach to improving talent cultivation quality and strengthening graduates' social adaptability. Vocational undergraduate education, as a pivotal segment of applied undergraduate education, bears the responsibility of nurturing high-level technical and skilled professionals, with the effectiveness of internship management directly impacting the achievement of educational objectives. This paper examines internship management practices among vocational undergraduate students, identifying challenges such as misaligned institutional goals, substandard internship content, inadequate process supervision, and oversimplified evaluation frameworks. Based on these findings, four optimization strategies are proposed: establishing a mutually beneficial partnership, restructuring internship curriculum frameworks, developing digital-intelligent platforms, and implementing diversified collaborative evaluation systems. These measures aim to address current internship management challenges, foster deeper school-enterprise integration, and elevate the quality of talent development.

**Keywords:** Industry-education integration; Vocational undergraduate education; Internship management; Strategy optimization; University-enterprise collaboration

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## 1. Introduction

The educational internship for vocational college students serves as the “touchstone” for talent cultivation, with its effectiveness directly correlating to the quality of professional talent development and practical competencies. In this context, undergraduate vocational education bears the critical mission of producing high-level technical and skilled professionals. Internship management acts as a pivotal link between academic instruction and industrial production, and its operational quality directly determines the alignment between talent development standards and industry demands. However, traditional internship management models have become increasingly inadequate for meeting the new requirements of industry-education integration, necessitating the exploration of more scientific and effective management strategies.

## **2. New requirements for internship management in vocational undergraduate programs imposed by industry-education integration**

### **2.1. Deeply aligned with industrial development needs**

The internship management in vocational undergraduate programs under the industry-academia integration model must be closely aligned with the inherent logic of industrial upgrading. As manufacturing transitions toward intelligent transformation, services evolve toward digitalization, and emerging technologies emerge and rapidly advance, more refined requirements are imposed on talent specifications and skill structures<sup>[1]</sup>. Internship management should extend beyond traditional job immersion, actively engaging with critical segments of the industrial chain and core technological domains. Key elements such as technical standards, production processes, and quality control across industries should be integrated into internship design. Authentic corporate production environments, state-of-the-art equipment, and cutting-edge technological applications must serve as essential foundations for student internships. Internship positions should reflect dynamic industry trends, meet current operational needs while anticipating future technological developments. Only by establishing a deep alignment with industrial demands can vocational undergraduate internships effectively fulfill their role in talent cultivation.

### **2.2. Strengthening the school-enterprise collaborative education mechanism**

The integration of industry and education entails transcending traditional boundaries between schools and enterprises to establish a more cohesive collaborative model for talent development. Schools and enterprises are no longer merely transactional partners but have evolved into an educational community jointly committed to cultivating talent. Deep collaboration is essential across multiple dimensions, including defining talent development objectives, designing curriculum frameworks, planning internship programs, and strengthening faculty teams. Corporate technical experts should actively participate in internship design, incorporating industry best practices and corporate values throughout the training process. Academic faculty must regularly visit enterprises to stay updated on technological trends, ensuring curricula remain aligned with real-world industry needs. Both parties should maintain a sustained communication mechanism to regularly assess partnership effectiveness and adjust strategies accordingly. In resource allocation, enterprises should share their advanced equipment, technologies, and personnel with schools, while schools should extend their research achievements and technical expertise to businesses. This collaborative approach represents not a fragmented alliance but a tightly-knit partnership characterized by shared goals, collective responsibility, and mutual benefits.

### **2.3. Enhancing students' comprehensive professional competencies**

In the context of industry-education integration, internship management objectives have evolved from mere skill training to comprehensive enhancement of professional competencies. Undergraduate vocational students must not only master solid technical expertise but also develop robust comprehensive qualities such as innovative thinking, communication skills, and teamwork abilities. During internships, students encounter authentic work environments and complex production challenges, requiring them to apply theoretical knowledge to analyze and solve practical problems. Cultivating critical thinking and innovative awareness is equally crucial; students should be able to identify issues, analyze them, and propose improvement suggestions. The development of professional ethics and craftsmanship spirit constitutes a key component of internship management, with students forming sound professional values through immersion in corporate culture. Additionally, capabilities such as interdisciplinary knowledge integration, digital technology application, and global perspective expansion should be incorporated into internship training frameworks. Enhancing comprehensive professional competencies necessitates systematic training programs and diversified practical platforms to ensure students achieve holistic skill development and quality improvement throughout their internships.

### **3. Analysis of the current status of internship management for vocational undergraduate students**

#### **3.1. Misaligned objectives between the university and the enterprise, resulting in superficial collaboration**

When managing internships, vocational undergraduate institutions often prioritize the completion rate of teaching plans as the primary evaluation criterion, aiming for students to apply theoretical knowledge and acquire fundamental skills through practical experience. In contrast, enterprises focus more on immediate improvements in production efficiency and labor cost control, typically assigning interns to relatively simple support roles. These differing goal-oriented approaches make it difficult for both parties to reach consensus on internship depth, duration, and quality standards. Although some school-enterprise collaboration projects formally establish joint training mechanisms, they lack effective mechanisms for aligning interests and sharing responsibilities in practice. Schools have limited understanding of enterprises' actual needs, while enterprises lack sufficient awareness of schools' educational philosophies, hindering deep integration of teaching and learning<sup>[2]</sup>.

#### **3.2. The internship content lacks depth, with insufficient emphasis on the development of advanced skills**

In current internship arrangements, students primarily engage in routine operational tasks and basic service-related work, lacking effective training in complex problem-solving skills and innovative thinking. Most internship positions involve repetitive labor, limiting students' participation in core business activities such as technology development, process optimization, or managerial decision-making. This approach fails to fully align with the applied and interdisciplinary talent cultivation objectives emphasized in vocational undergraduate education. There exists a structural mismatch between internship program designs and the core competency requirements of academic disciplines; internship content in some programs even resembles that of vocational college levels, failing to demonstrate the technical depth and knowledge breadth expected at the undergraduate level. Corporate internship programs are typically designed based on existing job requirements, lacking forward-looking skill development strategies, which results in relatively limited practical exposure for students to new technologies and advanced processes.

#### **3.3. Ineffective communication channels between schools and enterprises, with blind spots in process supervision**

The information transmission mechanism in internship management exhibits significant deficiencies, with neither schools nor enterprises maintaining a regular communication platform. School instructors primarily rely on periodic visits and student reports to assess the corporate internship environment and student performance, making it difficult to ensure timely and accurate information collection. Enterprises often lack in-depth understanding of students' academic backgrounds and training requirements, frequently managing interns based on general employee standards. The feedback mechanism for issues arising during internships is inadequate, with many problems only being identified and addressed after accumulating to a certain extent. The adoption of digital management tools in internship supervision remains limited, while traditional paper-based records and telephone contacts prove inefficient. There is insufficient real-time tracking of students' learning progress, skill acquisition, and adaptability during internships, resulting in inadequate dynamic quality control capabilities.

#### **3.4. The evaluation subject is relatively singular, and there is poor coordination in competency certification**

In the current internship evaluation system, faculty members hold significant weight in assessments, while the involvement of corporate mentors and industry experts remains relatively limited. Evaluation criteria predominantly rely on university-defined metrics, which often diverge from actual industry competency requirements. There is a lack of coherent linkage

between vocational skill certifications and internship outcome evaluations, making it difficult to convert students' practical experience gained during internships into authoritative competency credentials. Evaluation standards vary markedly across different employers for students in the same field, with no unified industry certification framework serving as a reference. The recognition of internship evaluation results in students' subsequent job search and career development needs improvement, as some employers question the authenticity and value of internship experiences.

## **4. Optimization of internship management strategies for vocational undergraduate students in the context of industry-education integration**

### **4.1. Building a symbiotic interest community to address the misalignment of objectives**

The fundamental solution to addressing misaligned objectives lies in establishing a deep integration mechanism between universities and enterprises. Vocational undergraduate institutions should proactively align their talent cultivation goals with regional industrial development plans, ensuring synergy between academic objectives and corporate long-term strategies to foster a community of shared destiny<sup>[3]</sup>. Universities should design internship programs as innovative practical activities addressing real-world production challenges, guided by enterprises' technological upgrade needs. This approach not only meets corporate technological advancement requirements but also enhances student competencies. A shared profit-sharing mechanism should be implemented, distributing technical achievements and process improvement benefits generated during internships according to predetermined ratios to incentivize deep collaboration. Concurrently, a risk-sharing model should be established, clearly defining responsibilities and coordination mechanisms between institutions and enterprises to prevent cooperation obstacles arising from ambiguous accountability. Taking the "New Energy Vehicle Technology" program as an example, instructors can direct students to corporate battery R&D departments to undertake six-month internships focused on optimizing battery management systems, a critical technical challenge. Under corporate mentors' guidance, students participate in battery thermal management algorithm improvement projects, applying theoretical knowledge to design experimental solutions that address battery temperature control precision issues. Such initiatives not only equip students with cutting-edge battery technologies but also reduce corporate R&D costs, achieving mutual benefits for both parties.

### **4.2. Redesigning the internship curriculum chain to enhance task technical complexity**

The restructuring of internship program models should shift from the traditional single-skills training approach to a comprehensive competency-oriented framework, establishing a progressive pathway for technical skill development. Course designs must closely align with cutting-edge industrial advancements, integrating new technologies, processes, and standards into internship tasks to ensure students engage with the latest industry applications. Enhancing the technical sophistication of internships requires moving beyond simplistic operational drills, instead creating integrated projects that encompass technical analysis, solution design, implementation, and effectiveness evaluation. Curriculum content should reflect the distinctive characteristics of vocational undergraduate education, strengthening students' technological innovation and complex problem-solving capabilities while solidifying foundational skills. Internship projects should emphasize skill transferability and scalability, enabling students to develop cross-domain application and technological integration capabilities alongside core competencies. Taking the "Digital Media Technology" program as an example, instructors can design internship chains spanning brand visual identity system development, multimedia interactive experience design, and virtual reality environment creation. Students first participate in user experience optimization analysis for existing corporate products, employing data mining techniques to identify user behavior patterns and propose improvements. They then undertake interactive interface design for new products, completing the entire process from conceptual design to prototype development based on ergonomic principles and visual communication theories. Finally, they contribute to corporate digital marketing strategy formulation by leveraging multimedia technologies to create immersive brand experience initiatives. Throughout the internship, students will master various technical platforms such as

front-end development frameworks, 3D modeling software, and data visualization tools, while developing comprehensive professional competencies including project management, teamwork, and client communication. This project-based internship model enhances the depth of technical training and cultivates students' systematic thinking and innovative practical skills, enabling them to assume higher-level technical responsibilities in complex industrial environments.

#### **4.3. Build a digital and intelligent platform to achieve closed-loop process monitoring**

The establishment of an integrated digital management system requires consolidating core functional modules such as student information management, corporate resource allocation, internship process tracking, and performance evaluation <sup>[4]</sup>. Leveraging IoT technology and mobile internet applications, the platform enables comprehensive data collection and intelligent analysis throughout the internship lifecycle, providing real-time and accurate information support for both educational institutions and enterprises. The system features multi-dimensional data interfaces that automatically aggregate and process information including student internship logs, corporate mentor evaluations, and project progress. Its intelligent algorithm module identifies anomalies and risk points during internships, promptly sending alerts to responsible personnel. The platform features a visual dashboard that intuitively displays internship quality metrics and trend trends, offering scientific basis for management decisions. Taking the "Modern Logistics Management" program as an example, instructors can assign students internship tasks across various modules, such as warehouse management, transportation scheduling, and supply chain optimization, on the digital platform. The system automatically records students' participation and performance across operational processes in logistics enterprises. After daily QR code check-ins, the platform tracks operational data from tasks like goods warehousing, inventory counting, and delivery route planning. Corporate instructors can use mobile devices to assess students' work quality and professional skill mastery in real time. The system also integrates with corporate ERP data to analyze students' contributions to operational efficiency in projects, generating quantified competency assessment reports and enabling intelligent personalized guidance.

#### **4.4. Establish a diversified collaborative evaluation system and streamline the competency certification pathway**

Educational institutions should establish evaluation criteria aligned with industry standards, incorporating elements such as mastery of professional theories, practical operational proficiency, demonstration of innovative capabilities, and development of professional competencies into comprehensive assessments <sup>[5]</sup>. Corporate mentors should provide objective evaluations based on actual work performance and task completion quality, with particular emphasis on students' problem-solving abilities and teamwork skills. Industry experts offer authoritative assessments from the perspectives of technological advancements and professional standards, ensuring evaluation outcomes remain synchronized with industry demands. Additionally, internship evaluations should be deeply integrated with vocational skill certifications and professional competency certifications, enabling students to accumulate relevant competency documentation during their internships. A unified digital evaluation portfolio should be established to document students' performance across various stages and projects, creating traceable and verifiable career progression records. Taking the "Accounting" program as an example, instructors can collaborate with corporate financial managers and experts from the Certified Public Accountants Association to design a comprehensive evaluation model covering modules such as financial software operation, tax filing practices, and cost accounting analysis. As students' complete real-world corporate financial projects, they directly engage in practical training for the Junior Accountant Qualification Examination, with their internship outcomes serving as key criteria for professional certification. Enterprises will assign quantitative scores based on students' performance in monthly financial settlements and annual audit support tasks, while industry experts conduct professional evaluations focusing on financial compliance, data accuracy, and analytical dimensions. The final comprehensive evaluation report serves not only as a key reference for credit recognition but also as a robust credential for students' job applications, achieving seamless integration between academic assessment and professional competency certification.

## 5. Conclusion

The internship management in vocational undergraduate programs is currently facing both opportunities and challenges arising from the deepening integration of industry and education, while the limitations of traditional management models have become increasingly apparent. Establishing a community of shared destiny between schools and enterprises, optimizing internship content design, strengthening process supervision, and improving evaluation mechanisms have become essential measures for enhancing internship quality. All stakeholders should collaborate to establish robust institutional safeguards, driving internship management toward greater standardization, precision, and intelligence. Moving forward, continuous refinement and innovation in practice are crucial to provide stronger support for cultivating high-quality technical and skilled professionals who meet the demands of the new era.

## Disclosure statement

The author declares no conflict of interest.

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