

# A Dual-Driven Teaching Reform for the Business Intelligence Course: Integrating Scenario-Based Learning and Industry-Education Collaboration

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**Abstract:** As the digital economy reshapes enterprise operations, the convergence of business intelligence and artificial intelligence (AI) drives demand for professionals combining business acumen with technical expertise. The Business Intelligence course faces persistent challenges: technical instruction disconnected from business contexts, superficial AI integration, and practical training misaligned with industry needs. Drawing on teaching reform literature, this paper proposes a dual-driven framework integrating scenario-based teaching with industry-education collaboration. The model spans four dimensions—curriculum content redesign, instructional innovation, multi-tiered practical training, and evaluation refinement—each discussed with implementation strategies. The approach embeds AI technologies within authentic business scenarios, aiming to cultivate interdisciplinary talent equipped for evolving industry demands.

**Keywords:** Business Intelligence; Teaching reform; Scenario-based teaching; Industry-education integration; OBE concept; Data analysis ability

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## 1. Introduction

Information technology advances have accelerated convergence between business intelligence and artificial intelligence, reshaping enterprise decision-making and operations <sup>[1]</sup>. Association for Information Systems data shows Business Intelligence (BI) technologies consistently represent the largest share of corporate IT spending over the past decade. As artificial intelligence (AI) penetrates industries, demand surges for professionals combining strategic business reasoning with intelligent systems deployment.

For programs like Big Data Management and Information Systems, the Business Intelligence course bridges technological tools and commercial applications <sup>[2]</sup>. Educational objectives include mastering AI techniques—data mining, machine learning—and adapting them to e-commerce, financial risk assessment, and customer relationship management contexts.

Delivery faces persistent difficulties. Student prerequisite knowledge varies widely, creating uneven learning

progress<sup>[3]</sup>. Instruction often emphasizes AI algorithm theory while neglecting adaptation to specific business problems<sup>[4]</sup>. AI content integration remains shallow—appending isolated modules without weaving them into BI curriculum<sup>[5]</sup>. Practical components misalign with industry practices; oversimplified cases offer limited exposure to real-world complexities. These shortcomings underscore reform urgency<sup>[6]</sup>.

## **2. Core connotation and theoretical basis**

### **2.1. Core connotation**

The dual-driven reform centers on student ability cultivation, oriented toward enterprise business needs<sup>[7]</sup>. Scenario-based teaching connects abstract BI technology with specific industry contexts—retail sales analysis, e-commerce user operations, inventory management, customer relationship management. Through scenario decomposition and project practice, students master technology while solving real business problems.

Industry-education integration leverages enterprise technical resources, data assets, and personnel to compensate for universities' lack of industrial practice. This alignment connects classroom practice with enterprise reality, shifting from teacher-centered to student-centered approaches<sup>[8]</sup>.

These elements form a mutually supportive system. Scenario-based teaching provides the carrier for industry-education integration; industry-education integration supplies real resources for scenario-based teaching. Together they transform knowledge transmission into ability cultivation<sup>[9]</sup>.

### **2.2. Theoretical basis**

Outcome-Based Education orients toward student learning outcomes, emphasizing that teaching objectives, content, and evaluation focus on ability cultivation<sup>[10]</sup>. The dual-driven reform decomposes enterprise requirements into specific indicators—data analysis technical ability, business scenario decomposition, business decision support, team cooperation.

Constructivist learning theory holds that learning involves active knowledge construction, with real problem scenarios serving as important carriers<sup>[11]</sup>. Scenario-based teaching recreates authentic business situations, allowing students to explore knowledge actively while solving practical problems.

Collaborative education theory emphasizes universities and enterprises forming joint forces through resource sharing<sup>[12]</sup>. Business intelligence's interdisciplinary nature requires university-enterprise cooperation: universities handle theoretical knowledge; enterprises guide industrial practice.

## **3. Re-examination of existing problems**

Teaching content emphasizes theory over application, focusing on databases and machine learning while lacking connection with industry scenarios<sup>[7]</sup>. Content updates lag, failing to integrate cloud computing, AI, and low-code development.

Teaching mode remains teacher-centered, following linear patterns of theoretical explanation and case demonstration. Students occupy passive positions, lacking space for active exploration<sup>[5]</sup>. Online resources mostly migrate offline content without forming integrated online-offline modes.

Practical teaching relies on simulated experiments; cases represent minimalist versions of actual projects. Students operate mechanically, lacking opportunities to develop problem-solving abilities. Faculty often lack industrial experience.

Teaching evaluation emphasizes results over process, relying on final examinations that assess technical

knowledge while ignoring data analysis thinking and team cooperation. Evaluation subjects remain singular—university teachers only—without enterprise input.

Industry-education integration stays superficial—enterprise visits plus internships—lacking deep collaboration. Enterprise resources fail to connect systematically with teaching content. Effect evaluation mechanisms are missing<sup>[13]</sup>.

## **4. Implementation path**

### **4.1. Teaching content reconstruction**

Using enterprise business scenarios as framework, universities and enterprises jointly reconstruct a modular content system<sup>[14]</sup>. Scenario modular division aligns with mainstream BI fields: retail sales analysis, e-commerce user operations, inventory management, customer relationship management, financial risk analysis.

Technology-scenario integration weaves needed BI technologies into each module, forming “scenario problems–technology selection–method application–result interpretation” logic. In retail sales, problems like forecasting integrate data collection, preprocessing, time series prediction, and visualization.

Professional differentiation tailors content to different majors. Computer majors strengthen technology implementation; e-commerce majors emphasize business scenario decomposition; business administration majors highlight data interpretation.

Cutting-edge industrial content brings cloud computing, AI, and large language model applications into teaching through industry partnerships.

### **4.2. Teaching mode innovation**

A three-stage mode emerges: online preview, offline scenario teaching, and industry-education practice expansion.

Online preview uses platforms to release scenario-based resources. Students encounter business scenarios beforehand, entering classrooms with questions.

Offline scenario teaching breaks lecture-listening patterns. Case-driven approaches transform real enterprise problems into classroom tasks. Student groups complete scheme design, technology implementation, and decision recommendations.

Industry-education practice expansion leverages enterprise platforms for real project training. Discipline competitions let students apply classroom knowledge. Enterprise tutors explain technology application through actual cases<sup>[14]</sup>.

### **4.3. Teaching evaluation system**

A multi-dimensional system combines process and comprehensive evaluation<sup>[15]</sup>. Process evaluation accounts for at least fifty percent, covering online preview, classroom participation, and project training. Comprehensive evaluation includes mid-term scenario assessment and final project defense with enterprise partners.

Diversified evaluation subjects introduce four-in-one evaluation: university teachers, enterprise tutors, student self-evaluation, and peer assessment<sup>[12]</sup>.

### **4.4. Deepening industry-education collaboration**

Co-constructing teaching resource databases involves universities and enterprises building BI teaching resources together: real business cases, industry datasets, implementation tutorials.

Co-constructing practical teaching platforms combines enterprise technical platforms with university laboratories, building online-offline integrated practice environments.

Co-constructing dual-qualified teaching teams strengthens teacher industrial ability through enterprise placements. Enterprise experts enter classrooms as tutors.

Establishing effect evaluation mechanisms addresses university teaching quality, student ability improvement, and enterprise talent supply<sup>[7]</sup>.

## **5. Expected effects and implementation guarantees**

### **5.1. Expected effects**

Student abilities improve comprehensively. Through scenario-based teaching and industry-education integration, students master BI application across contexts, developing systematic data analysis thinking and problem-solving approaches.

Teaching quality improves significantly. Teaching content synchronizes with industrial demand; teaching mode aligns with ability cultivation. Course interest and student participation increase markedly.

Industry-education integration deepens. Long-term collaborative mechanisms enable sharing of resources and personnel. Enterprise R&D transforms into teaching resources<sup>[13]</sup>.

Course construction continuously optimizes, providing reference for other interdisciplinary courses<sup>[15]</sup>.

### **5.2. Implementation guarantees**

**Institutional guarantee:** Universities issue policies clarifying responsibilities of academic departments and enterprises. Incentive mechanisms encourage teacher participation, with achievements incorporated into promotion criteria.

**Resource guarantee:** Universities allocate funding for resource database construction and platform upgrading. Enterprises provide technical support, data, and personnel.

**Organizational guarantee:** Teaching reform leading groups composed of faculty leaders, teachers, and enterprise experts oversee design and evaluation. Regular meetings address emerging problems.

## **6. Conclusion**

Current problems—teaching content disconnection from industrial demand, rigid teaching modes, single evaluation dimensions, imperfect industry-education integration—reflect failures in connecting university training with enterprise demand.

The dual-driven reform, guided by OBE, achieves deep integration of business scenarios and industrial resources through content reconstruction, mode innovation, evaluation optimization, and industry-education deepening<sup>[7]</sup>. This addresses core teaching pain points and provides reference for other interdisciplinary courses.

Universities need to strengthen cooperation with enterprises, adjusting content and modes according to industrial development. Exploring interdisciplinary integration and university-enterprise collaboration will further improve BI talent training quality.

## **Disclosure statement**

The author declares no conflict of interest.

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