

Teaching Innovation of Economics and Management Courses under the Background of Digital Transformation: Exploration of Four-in-one Practice Teaching of Production, Teaching and Research Competition in ERP Simulation Drill Course

Ling Huang

Department of Economics and Management, Sichuan Minzu College, Kangding, China

Abstract: Under the background of education digitalization, integration of production and education and comprehensive literacy cultivation of new business talents, the teaching goal of economics and management courses has shifted from knowledge transfer to equal emphasis on knowledge, ability, literacy and data awareness. ERP simulation drill course integrates enterprise operation cognition, management decision-making training, data analysis application and team collaboration practice, and is a typical carrier to observe the digital transformation of such courses. This paper takes the course of "Professional Comprehensive Practical Training-ERP Simulation Drill" set up by Sichuan University for Nationalities for a long time as an example, and relies on UFIDA New Road Business War System to put forward and construct the four-in-one practical teaching mode of "Production, Teaching and Research Competition". This model takes enterprise situation as the carrier, platform system as the starting point, competition-driven as the strengthening mechanism, and teaching reform research as the feedback path. It effectively improves the problems of traditional teaching such as single situation, uneven student participation, insufficient case authenticity, and evaluation bias to results, significantly improves students' digital management understanding ability, collaborative decision-making ability, data recovery ability and innovative practice ability, and provides a replicable, portable and iterable teaching innovation paradigm for the reform of economics and management practice courses in colleges and universities in ethnic minority areas.

Keywords: digital transformation; Production, Education and Research Competition; Practical teaching

1. Introduction

Under today's trend of higher education globalization, digital transformation is an important engine for artificial intelligence to empower the high-quality and innovative development of higher education, and digital transformation has become an important external driver of higher education teaching reform^[1]. On the one hand, the operation of enterprises has accelerated from informatization to digital intelligence, and the job capability structure has shifted from single professional skills to compound capabilities such as data understanding, process collaboration, business decision-making and cross-departmental communication; On the other hand, policy documents such as education digitalization, integration of industry and education, and undergraduate education reform have been issued successively at the national level, emphasizing the systematic reconstruction of curriculum, teaching materials, teaching and evaluation systems. As far as economics and management majors are concerned, the traditional curriculum organization mode based on theoretical lectures and static cases is difficult to fully adapt to the requirements of situational, comprehensive and practical combat in the training of new business talents. The purpose of teaching should closely follow "industrial demand, technological frontier and competitive ability", and transform the actual combat, scientific research achievements and competition projects of enterprises into realizable teaching resources, so that the teaching of economics and management can truly integrate with enterprises, scientific research and competition^[2].

The ERP simulation drill course has significant comprehensive practical attributes. By simulating virtual enterprise operation scenarios, the course allows students to complete continuous decision-making tasks such as market analysis, production planning, procurement arrangement, capital budget, financial statement preparation, competitive strategy formulation, etc. within a limited time, and can

present the core logic of enterprise management in a more concentrated way. Especially with the support of digital platforms such as UFIDA New Road Business War System, the course can not only realize multi-role collaboration and multi-round business confrontation, but also precipitate process data such as decision-making, reports, indicators and rankings, thus providing stronger evidence for practical teaching evaluation.

However, from the existing practice, there are still some common problems in ERP courses: First, there is still a disconnect between the simulated enterprise and the real enterprise environment, and students tend to stay at the level of "rule operation" rather than "business thinking"; Second, although group-based teaching improves the activity of classroom, it may also appear role imbalance, uneven participation and "free-riding" phenomenon; Third, some courses pay more attention to the competition results and despise the accumulation of teaching research, failing to form a closed loop of "curriculum-case-data-research-improvement". Based on this, how to organically connect curriculum teaching, enterprise collaboration, teaching research and subject competition under the background of digital transformation has become an important proposition of economic and management curriculum reform.

2. The Necessity of Digital Innovation in Economics and Management Courses

2.1 Digital transformation puts forward new requirements for the reform of economics and management courses

The Outline Plan for Building a Powerful Country in Education (2024-2035) proposes that education digitalization should be an important breakthrough to promote education reform and innovation^[3]; The Opinions on Accelerating the Digitalization of Education issued by the Ministry of Education and other nine departments further emphasized the need to promote the digital transformation of curriculum, teaching materials and teaching, build an ability map, and improve the digital literacy and skills of teachers and students^[4]. These policies not only put forward new requirements for the construction of economics and management courses, but also mean that the reform of economics and management courses should not stay at the technical level of "embedding information technology in the classroom", but should be reconstructed as a whole from multiple dimensions such as training objectives, curriculum content, practice environment, teaching evaluation and teacher development^[5]. The ERP simulation exercise course just meets the national demand for education and teaching reform, so it has strong demonstration significance for reform.

2.2 Integration of production and education and integration of competition and education provide path support for practical teaching innovation

The "Several Opinions on Deepening the Integration of Industry and Education" issued by the General Office of the State Council clearly states that it is necessary to promote the organic connection between education chain, talent chain, industry chain and innovation chain, strengthen practical teaching, and build a collaborative education mechanism between schools and enterprises. The Ministry of Education's "Opinions on Deepening the Reform of Undergraduate Education and Teaching to Overall Improve the Quality of Talent Training" emphasizes strengthening practical education, deepening the reform of innovation and entrepreneurship education, and promoting the cultivation of high-level applied talents. From the perspective of the reform practice of economics and management courses, simple "on-campus simulation" is often difficult to solve the problem of insufficient real business embedding, and it is difficult to meet the controllability requirements of teaching organizations simply relying on enterprise practice. Therefore, it is necessary for the government to promote the integration of enterprises and universities, enterprises actively integrate with universities, and universities actively integrate with enterprises^[6], forming a multi-dimensional linkage of "enterprises entering campus-platform simulation operation-competition strengthening inspection-teaching research feedback" within the curriculum.

At the same time, promoting learning through competition and promoting teaching through competition has gradually become an important starting point for the construction of practical courses in economics and management. According to the Ministry of Education's notice on the winners of the China International College Student Innovation Competition (2025), a total of 5,673 schools, 6.19 million projects and 24.43 million people signed up nationwide, reflecting the increasing linkage between practical teaching and competition activities in colleges and universities. For ERP simulation drill courses, competition is not an accessory of the course, but should be an important support for achieving course goals, iterating strategies and manifesting results. Only by incorporating competition into the curriculum

task chain rather than splitting it into extracurricular training can the integration of competition and teaching truly serve the cultivation of talents.

3. Practical Problems Faced in Teaching Practice and Reform

ERP simulation drill course is for undergraduate and junior college students in economics and management. Since then, I have undertaken about 600 class hours. The college and UFIDA Xindao jointly built enterprises into the campus-business professional training room, introduced ERP business war simulation application platform, and built ERP sandbox entrepreneurship society on the basis of course practice teaching to organize training and support provincial competitions for a long time. Although the college actively promotes the reform of teaching practice, combining the competition and teaching experience, the following practical problems still exist in the reform practice of ERP simulation drill course, as shown in Table 1.

Table 1 Curriculum Problems and Reform Directions

Problem Dimension	Key Performance	Impact on learning effectiveness	Corresponding reform thinking
Single situation	The simulation rules are relatively fixed, and the differences of real industries are insufficient	Operational understanding stays at the level of rules	Introducing enterprise cases and industry tasks
Uneven participation	Unclear division of roles among group members, freeriding exists	Weakening of synergistic ability and sense of responsibility	Role Evaluation and Process Recording
Disconnect between production and education	Insufficient participation of enterprise experts and limited authenticity of cases	Unclear path of knowledge transfer to post	School-enterprise co-construction cases and special workshops
Evaluation Single	Mainly based on ranking or finishing grades	Neglect data analysis and reflective ability	Establishing a Multi-process Evaluation System

First, situational issues. Although the curriculum takes business simulation as the core, it still tends to standardize practice and simplify in case design, market change and decision constraints, which makes it difficult for students to perceive the complexity and uncertainty in the real business environment. Second, the issue of participation. The curriculum mostly adopts the form of group confrontation. Although it is conducive to collaboration, some members are easily marginalized and free-riding because of unclear roles and responsibilities and single evaluation methods. Third, the problem of conversion. The connection between the curriculum and real corporate cases, job processes and industry mentors is not close enough, and students have insufficient understanding of "what to learn, why to learn, and how to migrate to real scenes". Fourth, the evaluation problem. Traditional assessment usually focuses on final ranking or results indicators, and process data and reflective results are not fully incorporated into the assessment system.

4. Construction of four-in-one teaching mode of "production, teaching and research competition"

In recent years, talent training in colleges and universities began to pay more attention to the all-factor reform of the whole education system and the all-round construction of educational ecosystem, integrating industrial resources inside and outside the school, integrating scientific research practices of enterprises, and exploring new ways of talent training [7]. Combined with the new requirements of talent cultivation, aiming at the above problems, this paper puts forward an innovative teaching mode of ERP simulation drill course with the four-in-one "production, teaching and research competition" as the core. The so-called "four-in-one" refers to the integration of industrial scene introduction (production), curriculum reconstruction implementation (teaching), educational reform research feedback (research) and competition test strengthening (competition) into the same curriculum operation mechanism. Its essence is not to simply superimpose four modules, but to couple them through task chain, data chain and evaluation chain, forming a closed loop of "enterprise situation drive-course task implementation-process data precipitation-research improvement iteration-competition output test".

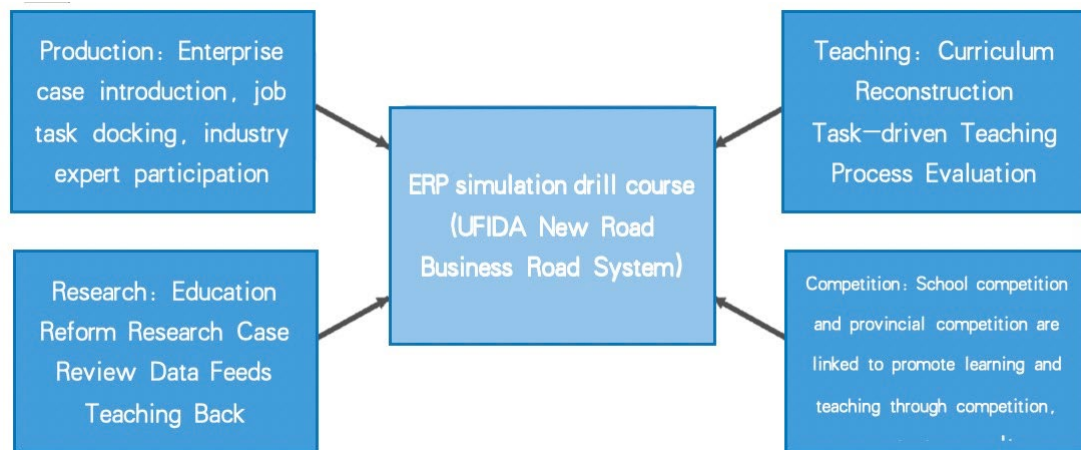


Figure 1 Teaching innovation model of four-in-one ERP simulation drill course of "Production, Teaching and Research Competition"

In the dimension of "production", the course takes enterprise cases, industry mentors and job tasks as external inputs. The aim is not to fully enterprise the on-campus curriculum, but to help students understand the real business logic behind the simulation platform through the introduction of typical cases and job elements. The collaboration between production and education is mainly reflected in: case co-construction, experts entering the school, job process interpretation, curriculum plan consultation, etc.

In the dimension of "teaching", the course shifts from the traditional linear process of knowledge import-rule explanation-simulation confrontation to the comprehensive design of task-driven, role division, data review and achievement presentation. The role of teacher shifts from rule instructor to learning organizer, process observer and review guide, while the student shifts from passive participant to action subject who undertakes the tasks of planning, executing, monitoring and reporting in the role responsibilities.

In the dimension of "research", the curriculum is no longer just the teaching activity itself, but the data, cases, problems and student performance generated in the classroom are transformed into teaching and research materials. Including the refinement of typical business mistakes, the observation and recording of role collaboration problems, the analysis of the differences between competition results and classroom performance, and the continuous revision of curriculum evaluation system. This can not only improve the evidence base of curriculum reform, but also promote teachers to move from "experience-based teaching" to "research-based teaching".

In the dimension of "race", the course incorporates competition training into the main line of the course, rather than additionally attaching it after class. The value of competition is mainly reflected in three aspects: Firstly, competition provides stronger strategic confrontation and time pressure, which helps to test students' comprehensive management ability; Secondly, the results of the competition can reversely correct the task design and evaluation key points of the course; Thirdly, the results of the competition can be transformed into curriculum presentation, academic training and case resources, thus forming a continuous communication effect.

5. Instructional Implementation Design: A Case Study of 36 Hours in a Round

5.1 Course Modules and Hours Arrangement

In order to enhance the operability of the model, based on the existing ERP simulation drill course of Sichuan University for Nationalities, a 36-hour course implementation sample table was designed. Among them, the leading module pays attention to rule understanding and role positioning, the middle module highlights business simulation and data review, and the latter module strengthens enterprise case comparison and competitive training, and finally realizes a closed loop through achievement display and course reflection report. It should be noted that the school hours arrangement belongs to the curriculum reform design data, which is not equivalent to the only fixed class hours scheme in the school education affairs system, but it can present the reform ideas more completely.

Table 2 Course Implementation Sample

Module	Main Contents	Correspondence ability	Academic Hours	Data attributes
Module 1	Digital Enterprise Cognition, Course Introduction and Capability Exploration	Business understanding and learning preparation	4	Curriculum design data
Module 2	Explanation of rules, division of roles, training	Role cognition, collaborative preparation	4	Curriculum design data
Module 3	Integrated simulation of production, supply, marketing and finance, multi-round operation decision-making	Integrated decision-making and resource allocation	8	Curriculum design data
Module 4	Business data analysis, report generation and review	Data analysis, problem diagnosis	4	Curriculum design data
Module 5	Enterprise Case Introduction and Industry Situation Discussion	Migration application, job understanding	4	Curriculum design data
Module 6	Competition strengthening, achievement reporting, reflection and improvement	Strategy optimization, expression display	12	Curriculum design data

5.2 Task Chain Design and Process Organization

According to the requirements of design and reform, the implementation of the curriculum no longer takes "completing a simulation training" as the only goal, but promotes students to complete progressive learning and growth in multiple operations with interlocking task chains, so as to realize the cognition of enterprises and the awe of the market. The first stage is the "diagnosis-construction" task chain, which focuses on solving students' understanding of enterprise management, ERP course logic and course rules, and cultivating students' strategic thinking; The second stage is the "operation-decision" task chain, which requires students to make continuous decisions around key variables such as market, procurement, production and finance on the basis of the division of job roles, so as to cultivate students' ability to make correct decisions in the face of market changes; The third stage is the task chain of "analysis-revival", which requires students to refine reasons from reports, indicators, rankings and business results, form data-supported revival conclusions, and cultivate students' analytical ability; The fourth stage is the "migration-expression" task chain, which promotes students to transform simulation experience into expression ability and scheme design ability closer to real positions through enterprise cases and competition training. For specific task chain design, see Table 3.

Table 3 Four-in-one Task Chain Design of "Production, Teaching and Research Competition"

Stage	Core Mission	Platform support	Teacher behavior	Student output
Pre-class/Import	Ability mapping, enterprise cognition, role claiming	Questionnaire/Platform Account	Diagnosis requirements, explanation framework	Teaming scheme, role card
Rule training	Rule understanding, tool sheet practice	Basic training of commercial warfare system	Demonstration, answering questions and correcting deviations	Operation records, training tables
Simulated operation	Multiple rounds of decision-making, cross-role collaboration	Business Simulation Platform	Observation, prompting, process evaluation	Decision table, operating data
Review and Discussion	Report analysis and case comparison	Business data export, case library	Organizing review and guiding reflection	Review Report and Case Analysis
Competition Display	Competitive drill and defense report	Competition rules, display templates	Evaluation, summary, research and refinement	Show PPT, reflection log

5.3 Construction of Multiple Evaluation System

Curriculum evaluation is the key to whether curriculum reform can be implemented. Colleges and universities should follow the principles of more comprehensive, more scientific and more operational to carry out multi-evaluation, and pay more attention to students' innovative practice ability and methods [8]. The evaluation of traditional ERP simulation drill courses is often mainly based on the final business ranking or results, which easily leads students to only pay attention to "winning and losing" and neglect data analysis, team collaboration and job responsibilities. Therefore, this paper advocates establishing a composite evaluation system that combines "result evaluation + process evaluation + reflection evaluation", and incorporates the continuous performance of students in platform operation into the evaluation evidence. Specifically, process evaluation focuses on classroom participation, job responsibilities, stage task completion, and teamwork; Results evaluation focused on business performance, report quality and business plan presentation; Reflective evaluation focuses on business data interpretation, business problem diagnosis and improvement suggestions.

Table 4 Design of Course Assessment System

Assessment dimension	Main Observation Point	Weight (%)	Data attributes
Classroom participation	Attendance, discussion, task engagement	20	Curriculum design data
Role Performance	Job Responsibility Completion, Cross-role Synergy	20	Curriculum design data
Operating data and reports	Decision quality, report accuracy	20	Curriculum design data
Competition/Simulation Ranking	Competitive training performance	20	Curriculum design data
Defense of achievements	Team Reporting, Presentation and Response	10	Curriculum design data
Reflection Report	Problem diagnosis and suggestions for improvement	10	Curriculum design data

From the perspective of teaching logic, this evaluation system has three advantages: First, the evaluation index is consistent with the curriculum task chain, which avoids the "disconnection between what to learn and what to test"; Second, the evaluation evidence comes from platform data, post records and display process, reducing the single subjective impression score; Thirdly, the evaluation results can directly feed back the follow-up teaching and research, including identifying high-frequency problems and optimizing competition training strategies.

6. Effectiveness and Popularization Value of Curriculum Innovation and Construction

6.1 Phased Effectiveness Analysis

In the age of intelligence, the evaluation of curriculum has shifted from value judgment to value creation, which is particularly evident in the practical course of ERP. [9] From the logic of curriculum construction, the phased achievements of the project are mainly reflected in four aspects. First, it formed the starting point of reform supported by the real curriculum foundation. Instead of starting from scratch, the curriculum is reformed on the basis of years of accumulation such as continuous opening of classes, platform operation, academic training and competition guidance, so it is easier to form a stable mechanism. Secondly, a clear plan of reconstruction of curriculum structure has been formed. Through the reorganization of school hours, the design of task chain and the reshaping of evaluation indicators, the course shifted from "drilling a platform" to "understanding a set of business logic, completing a round of data review, and experiencing a competition strengthening". Third, it has formed the dual support of school-enterprise collaboration and the integration of competition and teaching. Corporate cases and industry mentors bring the course closer to the job, while competition training makes the course more stressful and challenging, which together enhance the authenticity and practicality of the course. Fourthly, the improvement mechanism of research feedback teaching is formed. The data, reviews and cases in the classroom no longer disappear with the end of the course, but are transformed into teaching research and training programs.

For colleges and universities in ethnic minority areas, this model has additional significance.

Compared with universities in central cities with high concentration of resources, universities in ethnic minority areas often face greater constraints in acquiring enterprise resources, expanding practice scenarios and developing curriculum resources. Using the digital platform to reconstruct the curriculum practice scene, and integrating limited resources with the four-in-one mechanism of "production, teaching and research competition" can make up for the lack of practice opportunities outside the campus to a certain extent, thus improving students' professional quality and ability [10]. Especially ERP simulation drill course, which can be organized with high intensity in school, and can extend external links with enterprise cases through competitions, is more suitable to become the starting point of new business practice teaching reform in colleges and universities in ethnic areas.

6.2 Promotion Value and Direction of Further Improvement

The promotion value of this model is mainly reflected in three points. First, it has strong replicability. Whether it is ERP simulation drill, financial sharing simulation, supply chain management sand table, or innovation and entrepreneurship training, as long as it has platform support and task chain organization conditions, it can learn from the four-in-one structural logic of "production, teaching and research competition". Second, it has strong evaluability. Through the standardized design of academic hours, tasks, roles, reports, defenses and reflections, the effectiveness of curriculum reform can be tracked and compared. Third, it has strong iterability. As corporate cases, competition rules and platform features are updated, the curriculum can continuously absorb new digital elements and maintain open evolution.

Of course, there are still some limitations in this paper. On the one hand, limited by the boundary of data, the article presents more structured research based on the foundation of real curriculum and the formation of sandbox platform, rather than quantitative causal test of large sample; On the other hand, although UFIDA Xindao business war system can better simulate the business logic of manufacturing enterprises, there is still room for continuous expansion for the presentation of platform economy, service industry and new digital intelligence enterprise scenarios. In the future, it can be continuously improved in two directions: first, establish a curriculum operation database to continuously accumulate process data such as student role performance, business results, review reports and competition results; The second is to strengthen the construction of case database, incorporate regional enterprises, industries in ethnic areas and new formats of digital economy into the curriculum situation, and further enhance the locality, authenticity and cutting-edge nature of the curriculum.

7. Conclusion

Under the background of digital transformation, the reform of economics and management curriculum should not only be understood as "moving enterprises into the classroom", but should focus on the systematic engineering of reshaping talent training goals, reconstructing practical scenarios, reconstructing evaluation mechanisms and improving teachers' teaching and research ability. Taking the course of "ERP simulation drill" of Sichuan University for Nationalities as an example, this paper proposes and demonstrates the four-in-one teaching innovation mode of "production, teaching and research competition". This model takes UFIDA New Road Business War System as digital support, enterprise case introduction as the situation source, curriculum task chain as the main line of implementation, competition as the strengthening mechanism, and education reform research as the feedback path, which better responds to the shortcomings of traditional ERP training courses in authenticity, participation, evaluation methods and achievement transformation. Generally speaking, this practice shows that only by transforming "production", "teaching", "research" and "competition" from parallel elements to closed-loop mechanisms can the digital reform of economics and management courses move from local innovation to systematic innovation.

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