Effect Evaluation and Promotion Strategy of Curriculum Teaching Content System Restructuring for University Industry-Education Integration Empowered by AI

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Abstract: Scientific effect evaluation is a key link in testing the effectiveness of teaching reform, diagnosing existing problems and optimizing reform paths, while effective promotion strategies can extend the value of reform achievements from individual majors to broader fields. Focusing on the AI-enabled restructuring project of teaching content system for industry-education integration courses in universities, this study aims to construct a multi-dimensional effect evaluation system and propose systematic promotion strategies. Based on the four-level model of reaction, learning, behavior and results, the evaluation system integrates quantitative and qualitative indicators, and emphasizes the measurement of core dimensions such as content-industry matching degree, teaching efficiency improvement and students' competency attainment. The promotion strategies are carried out from four levels: campus demonstration and guidance, inter-university collaborative sharing, industry-education alliance linkage, and standard solidification and output, exploring how to transform pilot experience into a replicable and scalable general model. This research provides a reference framework for similar universities to conduct effect inspection and achievement transformation of AI-enabled teaching reform.

Keywords: AI Empowerment; Industry-Education Integration; Curriculum Reform; Effect Evaluation; Promotion Strategy

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1.Introduction

With the in-depth application of artificial intelligence technology in the education field, various teaching reform projects themed on AI empowerment continue to emerge. However, the core conceptual framework, technical tools and reform experience of many projects fail to be continuously applied and widely disseminated, resulting in the waste of valuable reform resources and intellectual investment. There are two underlying reasons for this phenomenon: first, the lack of a scientific, systematic and operable effect evaluation system; second, the absence of clear, hierarchical and sustainable promotion strategies, which confine successful reform experience to a small number of pilot majors and core teachers, making it impossible to spread naturally to broader disciplinary fields.

This paper has conducted systematic exploration in constructing an AI-driven dynamic curriculum content framework and developing an intelligent teaching resource platform. It systematically elaborates on the construction of evaluation indicator system, selection of evaluation methods, and design of multi-level promotion paths, so as to provide useful references for similar teaching reform projects.

2.Construction of Effect Evaluation System for AI-Enabled Curriculum Content System Restructuring

The evaluation system of this study draws on the Kirkpatrick four-level evaluation model, which is widely applied in the field of education and training with a mature theoretical framework, and makes adaptive optimization combined with the particularity of industry-education integration courses.

The first level is the reaction level, which mainly evaluates students' acceptance and subjective satisfaction with the new AI-assisted teaching mode, restructured teaching content and AI tool platform. Data at this level are usually collected through questionnaires and seminars, which can timely capture whether the reform has gained basic

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recognition in user experience.

The second level is the learning level, focusing on evaluating whether students have achieved significant improvement in professional knowledge mastery, industrial cognitive level and AI tool application ability through the reformed curriculum compared with the traditional teaching mode.

The third level is the behavior level, which concerns whether students can transfer the knowledge and skills learned in the curriculum to new, real and complex problem situations.

The fourth level is the result level, which assesses the long-term value ultimately brought by the teaching reform.

On the basis of the above four-level framework, this study further refines several core evaluation dimensions.

First, content-industry matching degree. It can be quantitatively measured through AI-assisted comparative calculation of the coincidence rate between curriculum knowledge points and skill requirements of mainstream recruitment posts, as well as by tracking the average launch time of technologies or products involved in curriculum cases and projects.

Second, teaching efficiency and quality. It mainly investigates whether teachers' average weekly time spent on collecting teaching cases and updating courseware has decreased significantly, and whether students' behavioral indicators on the learning platform have been improved, including completion rate of pre-class preview resources, frequency of classroom interaction and click volume of after-class extended resources.

Third, students' competency attainment. Specific indicators include the frequency and accuracy of students citing the latest industrial data and reports in course reports and works, the quality of student project works scored blindly by enterprise experts, as well as the frequency and self-evaluation of proficiency in actively using AI tools for information retrieval and data analysis during learning.

Fourth, resource system efficiency. It mainly measures the actual adoption rate of AI-recommended teaching content by teachers, the changing trend of the number of cold knowledge points that have not been accessed or updated in the knowledge graph for a long time, and the reuse rate of platform-generated or recommended resources across different courses and teachers.

In terms of evaluation methods, this study adopts a mixed research approach. Quantitative data are mainly derived from behavioral log records of learning platforms, score analysis of standardized tests and structured scale questionnaires. Qualitative data come from semi-structured in-depth interviews with teachers and students, classroom observation records, content analysis of students' open-ended works, and seminar feedback from cooperative enterprises. By setting up a parallel control group for pre-test and post-test comparative analysis, the actual effect brought by teaching reform can be attributed more scientifically.

3.Expected Empirical Evaluation Effects of AI-Enabled Curriculum Reform

Based on the above evaluation framework, positive effects are expected to be observed in the pilot application of majors such as Cultural Industry Management.

Firstly, teachers' lesson preparation efficiency will be significantly improved. The work of screening teaching cases from massive information, which used to take teachers a lot of time, can now be efficiently preliminarily screened and recommended by the AI system, allowing teachers to devote more energy to creative personalized tutoring and classroom interaction design.

Secondly, students' attention and sensitivity to industrial frontier trends will be markedly enhanced. Since curriculum content and supporting resources are derived from real-time tracking of industrial demands, students will naturally form a habit of continuously paying attention to industrial changes in the learning process.

Thirdly, the compatibility of students' course project works with real enterprise demands will be greatly improved, which can be directly reflected in the project evaluation involving enterprise tutors.

Finally, students' comprehensive performance in disciplinary competitions and internships will also show a positive improving trend.

Meanwhile, the evaluation process is likely to identify new problems. For instance, some teachers may face difficulties in adapting to AI tools and require a longer training cycle and more detailed technical support; a small number of AI-generated or recommended resources may have defects in content accuracy, necessitating a stricter manual review mechanism; improper design of personalized recommendation algorithms may trap students in an information cocoon, hindering the expansion of their knowledge vision. These problems will be truthfully recorded in the evaluation report and serve as an important basis for optimizing the reform plan in the next stage.

4.Promotion Strategies for AI-Enabled Curriculum Reform Model

Based on the research and practical experience of this project, a multi-level promotion strategy of from point to area and from inside to outside is proposed.

Campus Demonstration and Hierarchical Promotion

The primary task is to build mature demonstration courses. Specifically, select one or two core courses in the School of Cultural Industry Management for in-depth and whole-process polishing, and form a complete reform toolkit, including optimized teaching syllabi, detailed operation guidelines for AI tools, typical case collections for digital development of teaching resources, and complete evaluation reports. After the demonstration courses are mature, immersive teacher training workshops will be organized, with project team members conducting concept publicity and practical skill training for teachers from other schools in the university.

Inter-university Collaboration and Alliance Sharing

We can unite similar applied universities in the region and across the country to jointly establish an AI + Industry-Education Integration Curriculum Reform Alliance. Member universities can share core resources such as desensitized industrial demand analysis data, transformation case libraries of scientific research achievements, and verified effective AI prompt word libraries, so as to greatly reduce repeated development costs of each member. Meanwhile, the alliance can regularly hold special academic seminars, jointly release annual Blue Book of AI-enabled Industry-Education Integration Curriculum Reform, share the latest practical cases, evaluation data and common problems of member universities, and form solutions through collective wisdom.

In-depth Industry-Education Integration and Linkage

It is necessary to actively absorb leading enterprises in the industry to enable reform achievements to go out of campus and feed back to the industry. Furthermore, cooperating with industry associations and leading enterprises, we can jointly develop micro-major programs and vocational skill certification projects based on post competency models analyzed by AI. This enables curriculum reform achievements to directly connect with the vocational qualification certification system of the industry, thereby greatly enhancing the social recognition and sustainable influence of reform outcomes.

Standard Solidification and Achievement Publication & Transformation

It is essential to refine the universal elements in reform practice in a timely manner, and compile the Guidelines for the Construction of AI-enabled Industry-Education Integration Courses in Applied Universities. The guidelines can provide referable operational standards and unified technical specifications for wider promotion, lowering the threshold for experience replication and technology migration among different universities.

5.Conclusion

This study constructs an effect evaluation framework for the restructuring of AI-enabled industry-education integration curriculum content system, covering four levels of reaction, learning, behavior and results, integrating quantitative and qualitative methods, and highlighting core dimensions including content-industry matching degree, teaching efficiency and students' competency attainment. Meanwhile, it designs a three-dimensional promotion path

from campus pilot demonstrations to inter-university popularization and further to the construction of industry-education ecological pattern. The evaluation focuses not only on the direct improvement of students' knowledge and skills, but also on the dynamic matching between curriculum content and industry as well as teachers' empowerment experience; the promotion goes beyond simple experience sharing and turns into a comprehensive model of platform sharing, standard co-construction and ecological win-win.

In the future, with the continuous evolution of AI technology and the expansion of application scenarios, the indicator system of effect evaluation and specific forms of promotion strategies need dynamic adjustment. Nevertheless, its core guiding ideology — adhering to student competency development as the center and real data-driven decision-making — will remain unchanged, and continuously guide the reform practice toward deeper and more sustainable development.

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