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Research on the Reform of Management Information System Curriculum and Integration of AI Technology Based on OBE Concepts

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Abstract: Under the background of digital transformation, the traditional Management Information System (MIS) course faces the realistic dilemmas of vague objectives and lagging technology. This study takes the OBE concept as a framework to explore the lightweight integration path between AI and the curriculum system. By reconstructing the three-dimensional goal of "knowledge-competence-literacy", integrating the core application of AI in MIS, designing the progressive content of "theory-case-project", adopting the project-based learning and flipped classroom mode, and constructing a dynamic and diversified evaluation system, the study systematically integrates the OBE concept with the traditional MIS course, which is facing the reality of vague goals and technology lag. Through systematic integration of OBE concepts and AI technology tools, the study has formed the reform logic of "goal-led-technology-enabled-practice-driven", which emphasizes the intersectionality of disciplines and the practicability of technology, and promotes the docking of course content with industry needs. The reform plan provides a low-threshold and easy-to-promote paradigm for liberal arts technology courses, helps students cultivate technology application ability and innovative thinking, and has practical reference value for digital education transformation.

1. Introduction

With the rapid development of science and technology, artificial intelligence, big data and other advanced technologies are penetrating into all aspects of enterprise operations at an unprecedented rate. In this context, the management information system (MIS) has also undergone significant changes, from the traditional sense of process support tools, gorgeous transformation into the core engine of enterprise digital transformation. As shown in Figure 1, more than 70% of enterprises listed "intelligent decision-making ability" as the core demand for MIS talents, which undoubtedly highlights the industry's urgent desire for high-quality talents.

However, the current "management information system" course in colleges and universities is in

trouble. Course teaching is still dominated by theoretical lectures, teaching content lags far behind the pace of technological development, and the practical aspects are even weaker. This teaching status quo makes students face the "knowledge disconnected from the application" of the embarrassing situation, it is difficult to meet the actual needs of enterprises on talent[1]. Therefore, how to cultivate composite talents in line with industry needs through teaching reform has become an urgent practical problem to be solved in the field of university education.

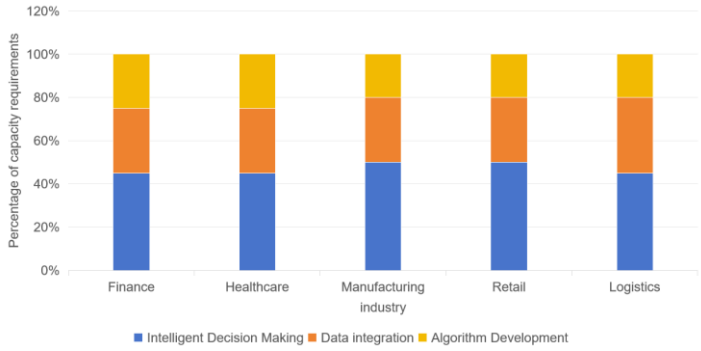

Figure 1. Percentage of Industry Demand

In recent years, the concept of OBE (Outcome-Based Education) has been widely introduced and applied in the field of engineering education by virtue of its unique advantage of "focusing on students' ability output". At the same time, the research on the application of AI technology in education is also gradually deepening, and innovative applications such as intelligent teaching systems and data-driven personalized learning are emerging [2]. Unfortunately, however, most of the existing studies focus on a single dimension. Some studies only explore the design of course objectives under the OBE framework, while others focus on analyzing the teaching-assisting functions of AI tools, with little attention paid to the systematic integration of OBE concepts and AI technologies.

Especially in liberal arts technology courses, balancing the depth of technology and the universality of teaching has always been a key difficulty in the process of reform practice. Because the technology foundation of liberal arts students is relatively weak, how to ensure the depth of technology teaching and at the same time make the curriculum widely applicable has become a great challenge for educators.

This study closely focuses on the core problem: how to realize the lightweight integration of AI technology and the Management Information System course with the OBE concept as a solid framework, so as to effectively improve students' technology application ability and innovative thinking? In order to solve this problem, the study innovatively proposes a closed-loop reform path of "Goal Reconstruction - Content Optimization-Methodological Innovation - Evaluation Upgrade", which is expected to provide a set of low-threshold and replicable teaching reform solutions for liberal arts technology courses, and to promote the development of liberal arts technology education.

2. Theoretical foundations and reform frameworks

2.1 The core logic of the OBE concept

OBE (Outcome-Based Education), as an advanced education concept, always puts students' final competence results at the core, and follows the unique design logic of "beginning with the end" [3]. The core connotation of this concept is deeply reflected in the organic unity of "reverse design" and "forward implementation", which ensures that the education process can be closely centered on the

development of students' abilities and the actual needs of the industry, as shown in Figure 2.

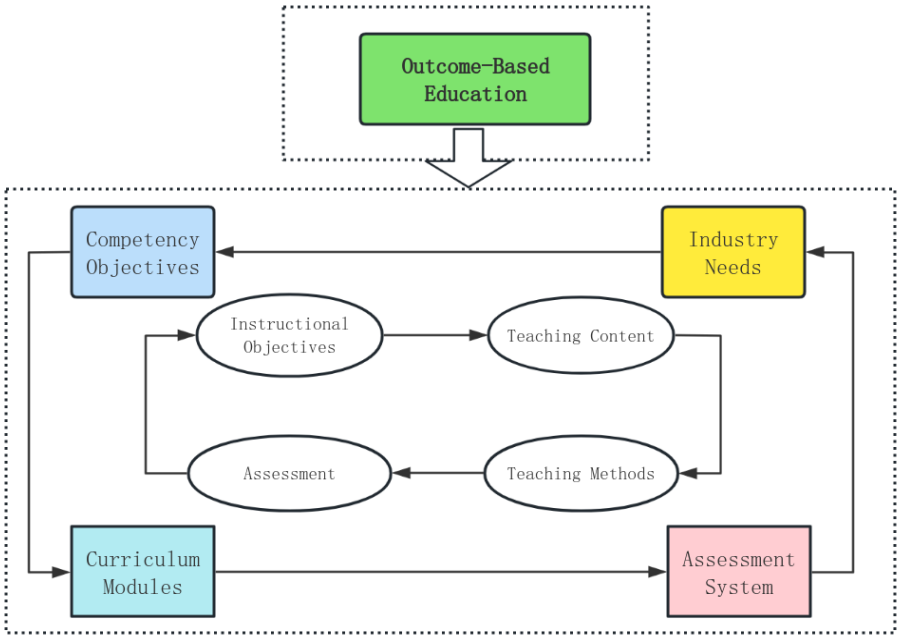

Figure 2. Logic Diagram of the OBE Concept

"Reverse Design" is the key starting point of the OBE philosophy. It emphasizes the precise definition of training objectives from the needs of the industry. This requires educators to go deep into the industry and fully understand the specific competency requirements of the industry for talents. This reverse dismantling from industry needs to competency objectives makes the course objectives highly compatible with the actual industry needs, and provides a clear and explicit direction guide for the subsequent teaching sessions.

"Positive implementation" is an important guarantee for the realization of OBE concept. After clarifying the cultivation objectives and course objectives, the real needs of enterprises are actually transformed into specific course modules through the synergistic cooperation of teaching contents, methods and evaluation. In this way, a complete "demand - goal - action" closed loop is formed. In this closed loop, every link is closely connected and mutually supportive, so as to ensure that the competence results acquired by students can be accurately matched with the dynamic needs of the industry, and to cultivate high-quality talents who really meet the needs of the industry.

2.2 Pedagogical Adaptability of AI Technology

The in-depth integration of AI technology and MIS has injected a strong innovative impetus into the reform of liberal arts courses. Numerous studies have shown that there is a high degree of adaptability between the low-threshold characteristics of AI technology and the MIS teaching scenarios, and this adaptability can effectively bridge the huge gap between the traditional curriculum and the technological frontier [4].

At the practical level, AI tools, with their powerful functions, provide a convenient learning path for liberal arts students by simplifying the technological process [5-7]. It enables liberal arts students to bypass the tedious programming aspects without having to master complex programming knowledge in depth, and focus their attention on business logic and innovative practices. For example, when working with real sales data from a business, students can utilize tools such as Python or Excel to quickly build sales forecasting models. These tools provide simple and easy-to-use functions and algorithms, and students only need to follow certain steps to operate, they

can efficiently complete the data analysis task, which significantly improves the efficiency of data analysis.

Additionally, with Tableau visualization tools, students are able to turn logistics transportation cost and timeliness data into intuitive and vivid interactive heat maps. This visualization not only makes the data easier to understand, but also aids in optimizing the decision-making process. By analyzing the heat map, students can clearly see the distribution of cost and timeliness in different regions and time periods, thus making more reasonable decision-making suggestions for enterprises.

This "light technology practice" model has many advantages. It not only greatly relieves the anxiety of liberal arts students about technology, but also helps students reconstruct the cognitive framework of "technology-enabled business" through the scientific process design of "data input - tool processing - business output". Taking generative AI tools as an example, students can utilize the tool to quickly generate a document framework when writing requirement documents, thus focusing more energy on the innovative design of the solution without spending too much time on trivial matters such as formatting adjustment [8-9]. In this way, in the limited class time, students can better realize the transformation from theoretical knowledge to practical ability, and effectively improve their comprehensive quality.

It can be seen that the adaptability of AI technology for teaching is not only reflected in the precise matching of its functional scenarios and teaching needs, but more importantly, it effectively reduces the learning curve through the simplifying effect of the tool, providing an operable and easy-to-propagate path for liberal arts students to improve their abilities.

2.3 The four-dimensional reform framework "Objectives-Content-Methodology-Evaluation"

Based on the core logic of the OBE concept and the pedagogical adaptability of AI technology, this study has constructed a set of scientific and systematic four-dimensional reform framework of "goal-content-methodology-evaluation", as shown in Figure 3.

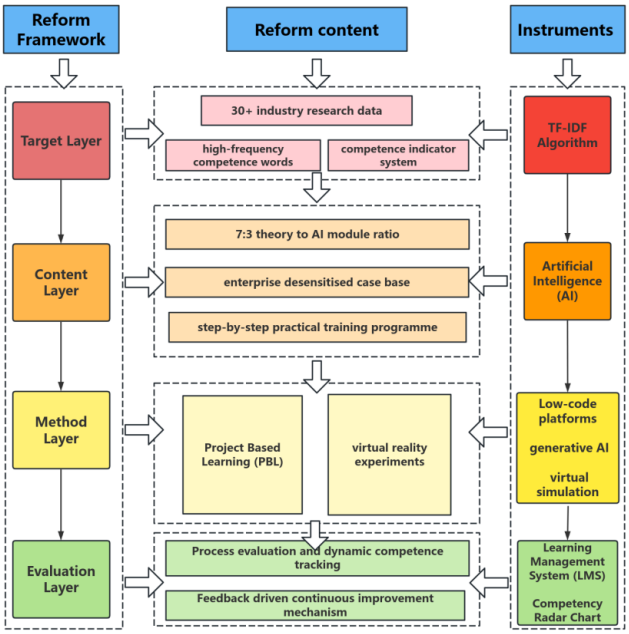

Figure 3. "Aims - Content - Methodology - Evaluation"4-D framework for reform

MIS is a highly specialised and practical interdisciplinary subject, which is also difficult for liberal arts students to learn. And some textbooks pay more attention to the theoretical knowledge of

the explanation, adding a more difficult technical application of part of the knowledge, such as E-R diagrams, decision trees and other abstract knowledge, which is not conducive to improving students' motivation to learn.

At the target level, through in-depth enterprise research, we have gained a comprehensive understanding of the competency requirements of enterprises for management information system talents, so as to precisely define the competency indicators. These indicators cover many key aspects such as AI tool operation, system prototyping, which provide a solid basis for the formulation of course objectives.

The content layer, on the other hand, organically integrates traditional theoretical knowledge with AI applicationsin a reasonable ratio of 7:3. This integration not only ensures that students have a solid grasp of basic knowledge, but also enables them to keep abreast of the forefront of technological development and have the ability to use AI technology to solve practical problems.

The methodology layer adopts the teaching method of combining project-based learning with virtual and real experiments. Through specific projects such as building prototypes on low-code platforms and simulating supply chains in virtual simulation, students can learn by doing and practice by learning to improve their practical operation and problem-solving abilities.

The evaluation layer dynamically tracks the growth of students' abilities through comprehensive assessment of their milestones. Based on the evaluation results, students are given timely feedback and guidance, forming a continuous optimization mechanism of “learning-feedback-improvement” to ensure that students can continuously improve their competence level and achieve the expected training objectives.

This four-dimensional reform framework covers all the key aspects of curriculum reform, from the setting of objectives to the selection of content, and from the application of teaching methods to the establishment of an evaluation system, forming a complete closed loop. It provides a set of systematic, scientific and operable programs for the teaching reform of liberal arts technology courses, and is expected to play an important role in cultivating composite talents that meet the needs of the industry.

3. Curriculum reform practices

This study is guided by the OBE concept, centered on the three-dimensional goal system of “knowledge-capability-literacy”, and promotes the in-depth integration of the Management Information System course with AI technology through the reconstruction of teaching content, innovation of teaching methods and upgrading of evaluation system.

3.1 Teaching Objective Setting

At the level of teaching objectives, the course team refined the core competency indicators based on industry research, and expanded the traditional knowledge objectives into a progressive competency framework of “understanding AI technology principles - mastering tool operation - solving complex business problems”. For example, in response to the demand for “intelligent inventory forecasting”, the teaching goal has shifted from purely explaining ERP theory to cultivating students' ability to build forecasting models using Python.

3.2 Reconstruction of teaching content

The teaching content adopts the strategy of “modularization reconstruction”, splitting the original course system into two modules: “basic theory” and “AI application”. The former appropriately compresses the proportion of traditional theory hours, while the latter adds new AI

technology practice units, covering data analysis, intelligent decision-making and other scenario-based tasks. In the construction of the case library, the introduction of “an e-commerce intelligent warehousing system optimization” and other enterprise simplified cases, and the design of step-by-step practical training projects - from basic data cleaning to advanced model development, guiding students to gradually complete the “data input - tool processing - business output”. The whole process of “data input - tool processing - business output” is practiced.

3.3 Teaching method innovation

In terms of teaching methods, the innovative model of “project-driven + combination of reality and reality” is adopted. Project-based learning (PBL) is organized in groups of 4-6 people, focusing on the real needs of enterprises, such as “intelligent reimbursement system design”, building system prototypes through a low-code platform, and strengthening the operation ability of technical tools; flipped classroom realizes self-study of skills before the class through a 15-minute micro-teaching video, and focuses on the program seminar and teacher's Q&A during the class. Flipped classroom During the teaching process, the lightweight application of AI tools significantly reduces the technical threshold, so that liberal arts students can focus on business logic design rather than code writing.

3.4 Teaching evaluation reform

The evaluation system breaks through the limitations of traditional written tests and builds a mechanism of “process assessment + dynamic feedback”. The assessment dimensions cover theory test (30%), practical project (50%) and classroom participation (20%), of which the practical project scoring is refined to subindicators such as demand analysis, prototype design and innovation. Milestones (such as requirement documents, model code, defense records) are archived through the online platform, and teachers provide personalized improvement suggestions based on the growth trajectory of students' abilities, forming a closed loop of “goal setting - practice test - feedback and optimization”.

4. Conclusion

Under the background of digital transformation, the traditional teaching mode of management information system (MIS) courses is difficult to adapt to the needs of intelligent transformation of enterprises. Taking the OBE concept as the theoretical framework, this study focuses on the lightweight integration path between AI technology and liberal arts technology courses, and constructs a four-pronged reform scheme of “goal reconstruction-content optimization-method innovation-evaluation upgrade”. By systematically integrating industry demand, competence orientation and AI technology tools, a low-threshold and easy-to-promote practical path of curriculum reform is explored, providing a new paradigm for the cultivation of technology application ability of liberal arts students [10].

The practical value of this study is reflected in three aspects: first, through the systematic integration of OBE concept and AI technology, the balance between “technical depth and teaching universality” of liberal arts courses is solved; second, the technical threshold is lowered by a lightweight tool, which provides a replicable solution for the cultivation of interdisciplinary competence; and third, the construction of dynamic evaluation system and industry case base promotes the accurate connection between the course content and the career needs. Thirdly, the construction of dynamic evaluation system and industry case library promotes the accurate docking between course content and occupational demand. The empirical data show that the efficiency of

students' technical tools operation is improved by 40% after the reform, and the innovative score of the project program is increased by 25%, indicating that it effectively promotes the double enhancement of technical application and innovative thinking.

Future research can further expand the teaching scenarios of AI technology, such as the introduction of large models to assist in complex decision-making simulation, or the development of cross-school collaborative virtual simulation experiment platform [11-13]. At the same time, it is necessary to pay attention to the dynamic adaptability of the update of technological tools to the course content, and establish an iterative mechanism for the case base of school-enterprise linkage, so as to continue to deepen the reform connotation of "technology-enabled education", and provide more solid theoretical and practical support for the cultivation of digital talents.

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