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Enhancing Practice-oriented Learning in Human Resource Management Education: A Case Study of Hybrid the CDIO Framework and the O-AMAS Teaching Model from the Perspective of Digital Intelligence for Hanshan Normal University

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Abstract: In the context of the digital intelligent era, the role of enterprises for human resource management (HRM) is shifting towards integrated and innovative professionals, not only concentrate on the requirement of traditional operational capabilities. However, the university education is in a structural dilemma of overemphasis on the academic studying at the expense of practice-oriented learning and insufficient digital integration. This paper establishes a teaching practical system driven by digital intelligence with "project-module" pattern through combining the CDIO framework and O-AMAS effective teaching model as the teaching practical reformation of HRM in Hanshan Normal University. The five stages of O-AMAS are embedded into the whole process of CDIO through creative O-AMAS three-dimensional interactive model matrix and diversified digital teaching platform of HRM. The results show that the problems of disconnection between teaching and industrial desired, students' low participation rate, and the hollowing-out of ability cultivation are solved effectively, then the students' digital intelligent and complex problem-solving ability have been significantly enhanced. This research serves as a reference for the undergraduate universities of digital-intelligence management teaching reformation on account of the re producible and scalable talent cultivation paradigm.

Keywords: Digital Intelligence; CDIO Framework; O-AMAS Teaching Model; Human Resource Management

1. Introduction

The Key Tasks for the Development of the Digital Economy in 2025 promotes the deep integration of digital technology and the artificial intelligence industry, forms a digital-intelligence fusion entity, and reshapes the value of the industrial chain and supply chain of the real economy [1]. Guided by this policy, the demand for engineering talents with digital-intelligence skills and HRM professional competence has risen sharply in various industries. The framework of CDIO (Conceive, Design, Implement, Operate) Engineering Education was first proposed by the CDIO International Cooperative Organization initiated by MIT in 2000, and the CDIO Engineering Education reform program was established. It is designed to develop the students' skills of self-directed mastery of professional knowledge, active learning, self-improvement, career adaptation, organizational communication, and teamwork [2]. As the cornerstone of talent cultivation [3], the HRM major in colleges and universities should base itself on the national engineering education concept and the strategy of cultivating digital-intelligence talents in education. It should closely combine the imparting of theoretical knowledge of higher education with the cultivation of practical ability, and integrate the O-AMAS effective teaching model with digital-intelligence tools under the CDIO engineering education concept. While students learn and practice the traditional HR modules through immersive teaching and operational scenarios, they should also be able to skillfully utilize digital-intelligence tools to analyze and forecast future HR supply and demand in the market and enterprises, thereby improving students' HRM competence [4] to meet the market's needs for continuous empowerment of HRM in various industries, and to facilitate the coordinated development of "science and technology, education and talent".

2. Design of HRM Teaching Practice at

Hanshan Normal University

2.1 Content Composition of the O-AMAS Interactive Teaching Model for HRM

In 2017, the team NKET (Nankai Effective Teaching) of Nankai University self-developed an effective interactive teaching model for offline teaching called O-AMAS. It has five stages: Objective, Activation, Multi-learning, Assessment and Summary [5]. This model, which is mainly applied to HRM students, is student-centered, and aims to achieve the teaching objectives through students' practical operations and to improve teaching quality.

2.2 Overall System Design

2.2.1 Design of the O-AMAS system

In the actual teaching of the HRM major of Hanshan Normal University, the major knowledge module is broken down into various projects and small knowledge-point modules. Teaching activities are always carried out in line with the O-AMAS interactive teaching model for every project and every small module, which runs through the whole process from activation and start to operation and conclusion (Figure 1).

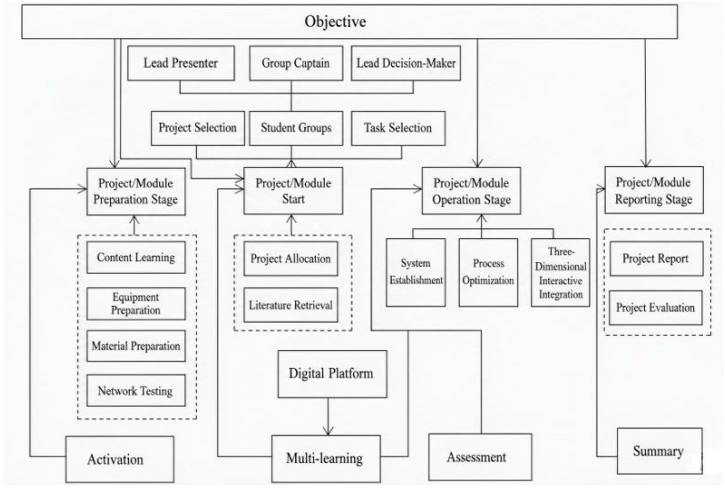


Figure 1. Design of the O-AMAS System

2.2.2 Integrated design of the CDIO concept and the O-AMAS system

The application of the CDIO framework is the cornerstone in the practical teaching with the O-AMAS interactive teaching model. The O-AMAS system is integrated into every stage of CDIO and improves the CDIO processes, and the CDIO processes drive the comprehensive training of "project + module". This combination of the CDIO framework and the O-AMAS system can allow the engineering practice approach to be followed throughout the HRM teaching, and bring each platform and each stage into full play, making the HRM teaching purpose clearer, the design idea more obvious, innovation stronger, and practical value higher (Figure 2).

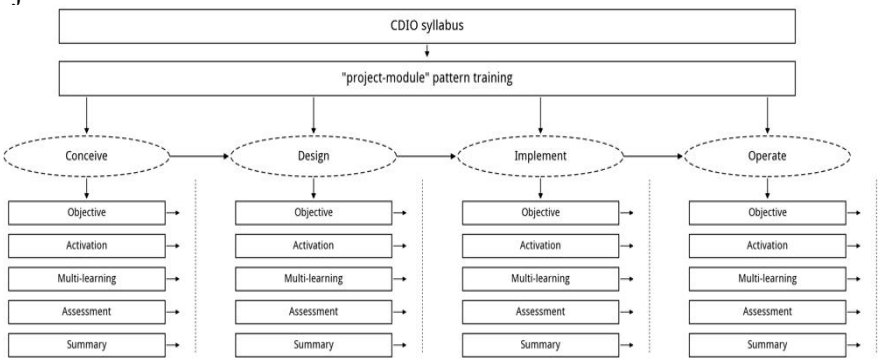


Figure 2. Integrated System Diagram of CDIO Framework and O-AMAS

2.3 Implementation Process of the Reform

The teaching reform of the O-AMAS interactive teaching model based on the CDIO framework has been conducted continuously in the teaching of the HRM major of the School of Economics and Management, Hanshan Normal University. This reform is in line with the actual situation of Hanshan Normal University, and specifically includes three processes and five stages.

2.3.1 Pre-class process — objective design of knowledge modules

The Objective (objective design) stage is part of the pre-class process. The teacher breaks the key knowledge of the course into several small modules and publishes the learning objectives of each small module on the Chaoxing Learning Platform (Xuexitong), WeChat groups and other digital platforms before class. These learning objectives consist of knowledge-point objectives, ability objectives and literacy objectives.

Random grouping is done prior to class. After receiving the learning objectives from the teacher, the students quickly divide the tasks and begin to learn. The division of work — literature search, task completion, material preparation and task reporting — is arranged entirely by the students.

2.3.2 In-class process — rapid activation and multi-learning

The in-class process is the core process of knowledge transmission and transformation, consisting of two stages: Activation (rapid activation) and Multi-learning (multi-learning). Activation means that the teacher, through lively and interesting activities closely related to the classroom knowledge points, such as games and topic discussions, quickly gathers students' attention and prompts them to devote their body, emotion and cognition to the class rapidly [6]; an example is a guiding hot-topic discussion based on a real enterprise case. This stage is to quickly activate students' tacit knowledge and to build a perfect connection with the knowledge points of the lesson.

The stage of Multi-learning is an important stage to give knowledge to students in the classroom and is also the focal point and the center of the teaching reform. It effectively transforms a "teacher-centered classroom" into a "student-centered classroom". The teaching model adopted in this teaching reform is a combination of three teaching models, namely, the teacher-centered direct teaching model, the group learning model oriented to a shared learning tendency, and the student-centered individualized learning model.

First, each group shares how they have covered the pre-class learning objectives (in the form of PPT or mind map). In the report, students externalize knowledge by turning the vague and perceptual ideas (tacit knowledge) that they form in the group in response to the learning objectives set before class, into clear and logical language and diagrams (explicit knowledge).

Second, the teacher implements theoretical teaching with the aid of digital-intelligence means like Chaoxing Learning Platform, DBE Cloud digital-intelligence practical teaching platform and the online open course sharing platform. Based on the students' knowledge externalization results, the teacher addresses students' weak points in understanding and mastery one by one, so as to strengthen students' theoretical base.

Third, the teacher leads the students to integrate scattered knowledge points into a systematic knowledge framework, and introduces the real cases of corporate HRM using methods such as the task method, the project method and role-playing to discuss and analyze. Thus, the connecting link is established between real cases and theoretical knowledge, and the theoretical knowledge moves from the "tactical" level to the "strategic" level so that students can form a deeper understanding.

Lastly, student groups prepare a report on the implementation of HRM practice, which is completed jointly by the group members and presented orally, based on the results from the case analysis and discussion. This reform has resulted in a significant improvement in the level of students' practical application in HRM: students turn "classroom learning" into "practical application".

2.3.3 Post-class process — two-wing, three-party effective assessment and brief summary O-AMAS

Effective assessment (Assessment) in the O-AMAS teaching model means "learning-promoting interactive assessment" [7] 118. The teacher used various forms of real-time assessment and interaction in the teaching practice, including two-wing, three-party forms.

Firstly, two-wing assessment: Assessment occurs throughout the learning process. Comments and exchanges are carried out in relation to the completion of pre-class learning objectives, questions raised by students during the learning process, and the stage of group presentation and reporting. The final closed-book exam focuses on testing students' knowledge and application of the overall structure of knowledge. Two-wing assessment helps secure students' mastery of theoretical knowledge and their practical application in a flexible and in-depth way, so as to lay a solid foundation for employment.

Second, three-party assessment: the teacher, students and the self are the assessment subjects. It is designed to realize "all-round mobilization and multi-angle improvement" by means of the subject-diversified assessment: teacher evaluation, peer evaluation among students and self-evaluation. In this evaluation process, the teacher plays the leading role and controls the overall process: the teacher conducts the main examination and evaluation of students; students express their own views and give scores and rankings for others' answers and presentations, implementing oral evaluation; and students score their own performance, their understanding of knowledge and the effectiveness of their practical problem-solving, conducting self-evaluation so as to promote self-reflection and gain a clearer understanding of their own learning status and the direction for improvement [8].

Third, brief summary: before the end of the class, the teacher summarizes the key points and difficulty of the teaching content, and leads the students to reflect on the knowledge points. The brief summary should be one in which students actively participate, reflect and cooperate [9]. This step guides students to internalize knowledge points as their own abilities, that is, to achieve the internalization of knowledge, thereby enhancing classroom teaching effectiveness [10].

3. Analysis of the Effects of the HRM Teaching Reform at Hanshan Normal University

The effects of the teaching reform of the HRM major are outstanding in three aspects: student development, teaching resource construction and discipline-competition-based education.

3.1 Effects on Student Development

3.1.1 Significant improvement in professional identity and learning participation

Following the reform, good results were obtained with regard to the professional identity, course participation, sense of learning gain and digital-intelligence ability of the students. Their perception of industry value, professional confidence, sense of career belonging and self-motivation were strengthened and their participation in practice increased.

Studies show that the use of digital platforms has significantly increased student participation. Through online discussion, collaborative tools and virtual practice cases, students interact with the textbook and share their ideas more easily, thereby increasing their participation. Meanwhile, students more easily obtain support and resources in the online environment, leading to a better understanding of the course content.

3.1.2 Continuously enhanced employment competitiveness

Supported by digital-intelligence experimental content and systematic practical training projects, the practical teaching of the HRM major enables students to fully combine theory with practice. In the last five years, the employment rate of this major has kept rising, and the major has achieved leapfrog development from disciplinary cognition to professional competence.

3.1.3 Outstanding practical and innovative ability

In the application of the teaching reform, students' knowledge and skills increased rapidly, which greatly stimulated students' interest in learning and their competitive spirit. Students' abilities to manage labor contracts, handle labor disputes, and help enterprises avoid legal risks have been significantly improved.

3.1.4 Overall satisfaction in student feedback

The majority of students were satisfied with teaching on the digital platform. They noted the convenience of online resources, as well as the need for more interaction and real-time feedback.

3.2 Effects of Discipline-Competition-Based Education

Discipline competition is a key platform to test the effects of teaching reform. For five consecutive years, students of this major have won a large number of awards in various national competitions. The discipline competitions have honed students' innovative ability and practical application ability, and the effect of course content and teaching model is remarkable in cultivating composite talents of HRM with high caliber, strong professionalism, business understanding and data proficiency, who meet the needs of digital-intelligence development.

3.3 Effects of Teaching Resource Construction

3.3.1 Construction of industry-education integration resources

A regular collaborative mechanism has been established with enterprises by the practical

teaching and research team of HRM major. The team has conducted mutual staff exchanges and learning with the enterprises, jointly set up virtual teaching and research sections, and, together with the enterprises, developed core teaching resources for the HRM major, ensuring that the practical content is precisely aligned with enterprise needs.

3.3.2 Construction of a digital-intelligence resource repository

A resource repository of digital-intelligence HRM practical courses has been built, covering digital-intelligence scenario simulations for human resources, digital-intelligence tools and the latest industry news, promoting the deep integration of teaching content with digital-intelligence technology. In addition, a case repository for HRM practice has been built as a supporting resource.

3.3.3 Construction of practice platforms

The reform has focused on promoting the establishment of platforms such as off-campus teaching, research and internship bases, smart teaching innovation center laboratories, virtual simulation laboratories, university-enterprise cooperative internship bases, and established an industry-education integration base for the support of innovation and entrepreneurship education.

4. Conclusion

The teaching reform of the HRM O-AMAS teaching model under the CDIO framework has formed a virtuous circle at both the student and teacher levels. It has succeeded in precisely aligning the teaching content with the industry's needs, significantly enhancing students' digital-intelligence practical ability and teachers' teaching innovation capacity, and providing an implementable path for Hanshan Normal University to foster composite HRM talents with "high caliber, strong professionalism, business understanding and data proficiency".

Acknowledgments

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