



Research on ERP Curriculum Reform Based on Engineering Certification

Jiaju Wang^(✉)

School of Industrial and Commercial Management, Jimei University,
Xiamen 361021, People's Republic of China
Jiajuwang1@163.com

Abstract. ERP is a discipline that closely combines application and practice, and is also a necessary knowledge system for enterprise informatization. Information engineer engineering certification based on enterprise informatization is a powerful means to ensure the demand for enterprise informatization talents. Reforming teaching content and adjusting teaching timing are of great significance for increasing the breadth of students' knowledge, meeting the knowledge structure required for engineering certification, and cultivating informatization talents that meet the needs of enterprises. Cultivating students' practical ability and improving their ability to adapt to the needs of enterprise informatization is of great significance for promoting the implementation of enterprise informatization and enterprise ERP to a greater extent.

Keywords: engineering certification · ERP curriculum reform · information engineer · practice

1 Introduction

ERP (Enterprise Resource Planning) course is a basic course for management majors [1]. At present, many majors in Chinese universities have offered ERP courses, which have become a necessary means for the development of “new engineering” enterprises and the application of information technology in enterprises.

The engineering education certification refers to the specialized certification of engineering education offered by professional certification institutions for higher education. It is conducted by specialized professional or industry associations (federations), professional societies, together with education experts in the field and relevant industry enterprise experts, aims to provide pre-education quality for relevant engineering and technical talents to enter the industrial industry.

Engineering education is an important component of higher education in China, in the higher education system, engineering education occupied one in three parts of the world. In the process of national industrialization, engineering education has played an irreplaceable role in the formation and development of a fully and independent industrial system [2]. The engineering education certification is an internationally accepted quality assurance system for engineering education, and is also an important foundation

for achieving international mutual recognition of engineering education and engineer qualifications. On June 26, 2022, the Ministry of Education issued a notice on the list of professions that have passed engineering education certification. The notice clearly stated that professional certification is an important component of the quality assurance system of higher education [3].

2 The Significance of Engineering Certification

2.1 Certification and Training Examination System

Currently, fierce market competition and rapid development of technology make enterprises in urgent need of complex information technology talents. In order to meet the needs of enterprises for talents, cultivate ERP professional application talents, and promote the popularization and development of enterprise informatization, the dual certification of “National Informatization Engineer ERP Application Qualification” has established reference standards for many enterprises to select ERP application talents. ERP software vendors have collected the information needs of more than 400000 enterprises, accumulated 17 years of experience, and introduced ERP certification training and examination systems to the community [4]. Figure 1 shows Information Engineer ERP Qualification Certification Module.

Currently, certification related to ERP course content mainly focuses on e-commerce operations and information technology, while certification related to information technology mainly focuses on obtaining the qualification of information technology engineer.



Fig. 1 Information Engineer ERP Qualification Certification Module

Information Engineers is a national level government certification system for IT professionals organized and implemented under the leadership of the Ministry of Industry and Information Technology. It consists of a series of certification exams such as network, information security, database, information resource management, e-commerce, and information engineering supervision [5].

2.2 Certification and Training Examination System

As our society enters the 21st century, the rapid development of information technology and increasingly fierce market competition have made enterprises face more challenges. The speed of response has become the most critical competitive factor for the survival and development of enterprises. Informatization has swept across all the country, so ERP has become the mainstream of enterprise management informatization.

By using ERP systems, enterprises can implement advanced management ideas into specific production and operation management processes, thereby achieving organizational innovation, process optimization, and management reform. However, talent shortage has become a major factor restricting the application of ERP in enterprises. Therefore, through engineering certification, a win-win stage has been established for students and enterprises.

Firstly, for enterprises, engineering certification establishes a reference standard for selecting ERP application oriented talents. The introduction of this certification system provides talent protection for enterprises to implement ERP, increases their core competitiveness, and increases employment opportunities.

Secondly, students have mastered the core concepts of ERP, become familiar with the use of ERP software, and understand the application mode of enterprise ERP. According to the requirements of the enterprise, it can optimize and improve enterprise management and become a first-class ERP application talent.

Moreover, the dual certification of "National Informatization Engineer - ERP Application Qualification" is a proof of the holder's ability and a pass for employment; The holder will join both the national information technology engineer talent pool and the ERP talent pool. Students with information technology engineer certificates can obtain priority employment opportunities in the employment competition of ERP users.

Finally, engineering certification provides criteria for talent selection and evaluation, making it easy for enterprises to obtain talent. This is the key to the successful implementation of ERP in enterprises. "National Information Engineer - ERP Application Qualification" dual certification is an important standard for ERP users to recruit talents, and is also the basis for enterprises to select, cultivate, and evaluate ERP talents.

At present, certification certificates have become the main indicator for enterprises to identify information technology talents, and also the assessment indicator for enterprises to hire talents. Currently, the main personnel participating in project certification are as follows: First, college students who want to gain enterprise operation experience in advance through learning ERP knowledge; Accounting personnel, business personnel, department managers, and senior leaders who meet the requirements of information technology; Operators who want to improve their competitiveness through the use of ERP; In addition, there are also some people who hope to have greater and better job

opportunities in the construction of enterprise informatization, while others are willing to improve their ERP application experience.

3 Problems in ERP Courses

ERP is the most widely used enterprise management information system. From the perspective of curriculum teaching, ERP is a comprehensive course that includes management, mathematics, computers, and economics. It includes knowledge modules such as production operations and management, human resource management, e-commerce management, and supply chain management and so on. A qualified ERP talent should not only have specialized technical knowledge, but also have comprehensive qualities for the needs of modern enterprise management [5]. Only by mastering these module knowledge can qualified ERP personnel boost their skills in enterprise informatization and ERP implementation, and can they better help enterprises achieve the goal of resource optimization. Figure 2 indicates the possessions knowledge structures about Enterprise Resource Planning (ERP).

ERP is a new comprehensive course emerged in the new situation to resolve the scarcity of enterprise resources and improve the competitiveness of enterprises. It has unique characteristics and content different from other courses. The teaching system planning and teaching effectiveness of ERP courses will directly affect the quality of enterprise informatization and ERP implementation [5]. Therefore, the teaching ideas and planning of courses in colleges and universities determine whether the talents can adapt to the requirements of the new era and meet the needs of enterprises. Therefore, reasonable planning of ERP course teaching content, strategic arrangement of teaching plans, and standardized design of talent cultivation mode have become the main segment of ERP course teaching. However, for a long time, due to various reasons, there have been a series of problems in the teaching process of ERP courses in schools, mainly manifested in the following aspects:



Fig. 2 Knowledge structures of ERP.

3.1 Lack of Systematic Integration in ERP Modular Teaching

With the needs of social development, the division of labor among people is becoming increasingly sophisticated. Currently, there are also corresponding module divisions in the setting of university courses, and each course is responsible for teaching a portion of the content. Although this has some help in cultivating professional talents, but it has also brought a lack of comprehensive knowledge, this made a certain gap to the composite talents required by society. In the current teaching of ERP courses, due to the professional limitations of students, corresponding modules are also selected for teaching during the teaching process, resulting in the lack of the ability of comprehensively application for the entire system.

3.2 Insufficient Connection Between Theory Teaching and Practice

Currently, most schools use multimedia for teaching, and the teaching content is prepared in advance on the courseware. Teachers explain according to the courseware content, while students passively accept the relevant content. ERP course is a highly theoretical and practical course, which requires students to have a strong grasp of theoretical knowledge and practical ability. The traditional teaching mode is a passive and receptive learning process for students, which has considerable limitations in cultivating students' ability to firmly grasp the subject content and improve DIY operation and practice.

3.3 Lack of a Theoretical and Practical Teaching Platform Truly Reflecting the Connotation of ERP

Currently, many university textbooks focus on theory learning, which is beneficial to students' understanding and learning of discipline theories. However, the operation of relevant practice content is insufficient and relevant ERP software developers lack theory support for software use and operation manuals, which has less help for students to learn the course. At present, whether ERP software being implemented by enterprises or ERP software used by domestic universities as a practice platform, most of its predecessors is financial software, which is actually grafted with other modules on the basis of financial software. Naturally, these softwares inherently have a situation of isolated modules and closed information, leading to the fact that enterprises still rely on departmental boundaries and cannot share information during the implementation of ERP, the final result is that ERP has become an electronic collection of multiple departments of the enterprise.

3.4 Disjunction Between Talent Cultivation and Enterprise Needs

At present, many curriculum learning and teaching plan formulation in most universities are more or less characterized by the phenomenon of closing doors and building vehicles, lacking sufficient communication with enterprises, and lack practicality. Therefore, although the students have a complete theory system and a clear, complete theoretical foundation and knowledge system, they cannot meet the requirements of enterprises and

be able to solve the problems that enterprises need to solve, especially the implementation of ERP for specific enterprises.

Currently, the teaching content and mode of ERP cannot meet the requirements of the new situation, nor can it meet the needs of the “mass entrepreneurship and innovation” era. With the development of information technology, ERP (Enterprise Resource Planning), as an advanced enterprise management idea and management model, is becoming increasingly popular in enterprises. It has also become an inevitable choice for enterprises to improve their own capabilities and become larger and stronger. In order to maximize to meet the quality requirements of enterprises for talent needs, ERP curriculum reform has also become an inevitable trend in current curriculum planning and design.

4 Reform Content Based on Engineering Certification

In the context of engineering certification, enterprises have put forward higher requirements for talent. In order to benefit to talent cultivation and adapt to the needs of education engineering certification, to the existing problems in ERP teaching, it is imperative to reform the teaching content and process. Reform should be carried out in the teaching content, teaching hours, talent cultivation mode, and other aspects to improve the quality of students and enterprise adaptability. The idea of curriculum teaching reform, teaching should be carried out in modules and specialties. In the teaching process, it is not only necessary to introduce education engineering certification examinations to motivate students' learning enthusiasm, but also achieve engineering certification, enterprises need and teaching process integrated organically.

4.1 Exploring the Combination of ERP Teaching Width and Teaching Depth Based on Engineering Certification

In the teaching process, students are first given a comprehensive teaching of ERP theory and practice, and then targeted module teaching is conducted based on the characteristics of each major and according to the classification of engineering certification modules, conducted module teaching for the important points to improve the breadth of students' certification knowledge and the depth of learning in the corresponding majors. Students trained in this way not only have a comprehensive grasp of the theory knowledge of ERP, but also have strong practical abilities in their respective majors. They can quickly obtain engineering certification certificates for professional modules, quickly adapt to the requirements of enterprises for information technology, and meet the requirements of enterprises for information talent majors.

4.2 Combination of Module Teaching and Education Engineering Certification

The content involved in the certification exam for information technology engineers is mainly the main knowledge part of the ERP course, including: general ledger management, report management, payroll management, fixed asset management, accounts receivable and payable management, procurement management, sales management,

inventory management, inventory accounting, system management, etc. In the teaching, different modules of training are arranged based on different majors, while students are also arranged to conduct simulated confrontations using electronic sand tables and manual sand tables, allowing them to experience the operating environment and processes of the enterprise. Strengthen ties with enterprises, organize students to study in enterprises, organize students to participate in the national college student simulation operation competition, cultivate learning enthusiasm, and complete the transition from passive learning to learning.

4.3 Strengthen Industry-University-Research Cooperation with Software Companies

Strengthen contacts with certification bodies and software companies, especially influential software providers in the industry. Teaching staff actively participate in the development process of ERP teaching software, providing a description of teaching needs for software development, better reflecting the teaching content in software implementation, and fully reflecting the talent cultivation idea of teaching. Become more familiar with the application platform of engineering certification, and integrate the certification system into teaching practice. At the same time, understand the module division of the platform, add teaching needs to the system analysis of the corresponding software, and develop software that effectively meets teaching needs.

4.4 Certification Integrating with Teaching and Enterprise Needs

Actively liaise with the enterprise and involve students in the enterprise's ERP implementation process. In the demonstration of the teaching plan and talent cultivation plan, invite personnel familiar with or responsible for ERP implementation from the enterprise to participate to understand the understanding and needs of the enterprise for engineering certification. The requirements of enterprises for talents should be reflected in the teaching plan and training system, and reasonable education and practice plans should be formulated according to the needs of the enterprise, so that the trained talents can meet the needs of the enterprise.

Strengthen the concept of education serving society and employment. Incorporating engineering certification into teaching is also a new requirement for talents in the new era of society. Colleges and universities undertake the important task of cultivating talents for enterprises and society, and are a major event of national rejuvenation. Therefore, teaching should reflect the needs of enterprises and the requirements of society for innovation, and integrate serving society and enterprises into teaching. Only by clearly understanding the requirements of the times and enterprises for talents, rational planning, and scientific implementation can universities cultivate outstanding talents for society.

5 Conclusions

Through teaching reform, the integration of teaching and certification has been achieved, and students have both mastered ERP knowledge and obtained certification certificates. This is not only realistic for the needs of enterprises and the employment of students, but

also significant for creating professional characteristics, promoting professional teaching management, establishing a scientific and standardized teaching quality management and monitoring system, and improving the level of teaching management. It has strengthened the connection between schools and enterprises, and enhanced the international competitiveness of China's enterprises and education. This is conducive to the fair participation of engineering and technical personnel in the competition in the international employment market, meeting the practical requirements for enterinrnational employment market, obtaining fair treatment, and enhancing ernational competitiveness.

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