Reflection and Exploration of Interactive ERP Teaching in Colleges and Universities

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ABSTRACT
Enterprise Resource Planning (ERP) is an important tool for various enterprises and organizations supporting and managing business and making decision. The technology foundation of ERP is based on information techniques. The theory base includes application management theory, system theory, mathematic, computer science and information science. ERP is the information system which combines with advanced management thoughts, methods and instruments. Only if modern management theories and methods integrate into ERP, it can play an important role in management and help enterprises make decisions[2].

This article focuses on the teaching mode of ERP (Enterprise resource planning) course in colleges and universities. It recommends an innovative three dimensional teaching mode, composed of three main parts. The new experimental arrangement is good to improve the students' practical ability, innovation and teamwork ability. It changes the ERP course from "teaching" to "learning[1].

Keywords
ERP; ERP course; three-dimensional, Higher Education.

1. INTRODUCTION
The 21st century is a century full of competition and innovation. Information technology and its applications will become an important indicator of competitiveness of countries and enterprises. It will have a profound impact on all walks of life. As an incubator of the future human force, education needs to attention to the changes in internal and external environment quickly. Therefore, teachers should change their concepts and have the courage to face ourselves. They should change from traditional education to heuristic education full of vigor and vitality. The teachers should pay more attention to practice in ERP teaching. Though the ERP system, teachers can integrate the relevant courses, such as accounting, information systems analysis and design, production operations, SAP Overview, etc. By this way, it is useful to cultivate the ERP applied talents[1].

Enterprise Resource Planning (ERP) implementation project success is influenced by a large number of factors, and most of the times it is difficult to measure them objectively. Usually, the metrics proposed within ERP implementation methodologies are related with milestones and costs aspects. This is particularly due to the fact that these methodologies follow the common definition of project success: basically to be on time and on budget. User involvement and participation is one of the most cited Critical Success Factors (CSFs) in ERP implementation projects[19].

2. LITERATURE REVIEW
An analysis regarding the modeling technique and design of a database realized by the developer in an ERP (Enterprise Resources Planning) type integrated system, namely SAP (System Application Product). Such a database creation can be very easily realized using the system tools, and it is required when the SAP standard, although includes many such models, it is not enough to fulfill the user's requirements. We begin by identifying the main objects - business objects, and then we create a data model (structured object). We link this data model with a relational physical object in the system data director and then we test it[9].

The ERP (Enterprise Resources Planning) integrated informational system is a complex integrated informational system used to manage a company's resources. The new integrated platform SAP is NetWeaver Application Server. The SAP integrated system is multilingual and multitasking, based on the client-server technology[9].

The traditional Enterprise Resource Planning (ERP) has not well adapted to the development of Customer Relationship Management (CRM). In order to cope with such a predicament, the enterprises hope to establish a computer-integrated system for ERP and CRM. However, the integration of the two systems is difficult and complexity. This paper analyzed the integrated problem for ERP and CRM and gave out the solution to the integrated system based on Enterprise Java Bean (EJB), Java Message Service (JMS) and Extensible Markup Language (XML). The integration technology was provided in three aspects of functional modules, information integration and system integration. An example from an enterprise is illustrated to explain the feasibility of the integrated system[10].

The design and realization of ERP system's Procurement management modules. By the way of software engineering, the author had a demand analysis and design of the system; it also seperately analyzes the sub-modules of the design process in detail,which makes use of fully object-oriented language - java language in Borland's products JBuilder X platform[11].

ERP at the retail business production and sales management, Sybase's mobile e-commerce products and technologies, such as Sybase iAnywhere solution7.02, UItralite, Mobi Link three modules together support from a business platform, this platform enables mobile office, real- time synchronous data exchange, data synchronization entry orders a full set of solutions, the program's core is iAnywhere wireless server, which allows customers to access the wireless network equipment e-Business, enterprise data and Internet, enterprise-class wireless application server[5].

The strong features of printing industry and production mode of order-driven make the complexity of the design of printing ERP system. On the basis of the status and characteristics of printing enterprises, this paper presents the demand analysis and builds a framework for ERP system in modern printing enterprise[3]

There have been numerous studies on ERP implementation and several related issues such as implementation procedures, business process and outcomes (e.g. [18], [21], [19], [17], [20], [15] [14]. Although these studies discuss many important issues in detail, even vendor selection and implementation team, research about ERP system in higher education is still at the infancy stage.

Indeed, existing ERP research has neglected the higher education sector worldwide, even though most universities have implemented or are in the process of implementing an ERP system [7]. Thus research in issues related to ERP and users in higher education represents a forward step in analyzing the actual benefits potentially brought by these systems to organizations[6].

Although ERP systems in higher education institutions currently represent their largest software investment, it is not likely to be the final one. Universities are planning to renew and install other enterprise–wide systems in the future [7], this necessitates the call for more research efforts in this area.

3. ERP IN TEACHING

At present, there is a common teaching phenomenon in college and university: teaching is more than learning; indoctrination is more than elicitation; "copy" is more than innovation. In the traditional education model, teachers are the leading actors. They pay more attention to imparting knowledge and emphasize the learning effect of students, but overlook to cultivate students' ability. As a teacher in college and university, our responsibility is not only to impart specialty knowledge to students, but also to cultivate the innovation and operational ability of students. Students can obtain new knowledge and broaden horizon through practice[13].

(i) PRINCIPLE OF INNOVATIVE EDUCATION

Innovative education is the education core on cultivating innovative ability. In other words, innovative education is a educational theory or method which aimed at cultivating innovative consciousness, innovative thought, innovative ability and innovative individuality of students[13].

It contains the following four aspects:

(a).Innovative consciousness
(b).Innovative thought
(c).Innovative skills
(d).Innovative sensibility and innovative individuality

(a).Cultivate innovative consciousness. It asks students to pursue rat-fuck ideas and information when they are learning. They would produce a keen creative motivation under the steering of innovative consciousness. Once students set a new goal, they may exert to their wisdom and potential so that they would go into a condition of exceeding themselves[13].

(b).Cultivate innovative thought. Innovative thought means thought process of discovering or inventing a new way to deal with something, which needs organizing ideas in another order to produce a new thought. It has five characteristics, and respectively, they are pursuing isomerism actively unique knowledge structure and lively inspiration. Therefore, it can help students to discover new problems nimbly, master new knowledge in a high level and accomplish learning tasks successfully with the new knowledge. It is the kernel of creative activity structure, and students should have this kind of thought in innovative education[13]

(c). Cultivate innovative skills. It is the operational ability, which students have, under the restriction of intelligent innovation. It includes information processing, general working, operating in person, mastering and exercising new technology, expressing innovative production and so on. It is very necessary to cultivate innovative skills in Chinese higher schools, because lacking of operational experience and being bad at skills are very common phenomena in our School[13].

(d). Cultivate innovative sensibility and innovative individuality. Innovative process is not only intelligence process purely, but also needs innovative sensibility as motivity, such as long-term dreams, tough faith and sharp innovative enthusiasm. Students' innovative ability would be developed well under the two factors effect of intelligence and innovative sensibility. In addition, individuality also plays an important role in innovative activities. For example, braveness, sense of humor, independence, strong willpower and meticulosity[13].

(ii) PROCEDURAL MODEL

Following our procedural model, we used a multi-level procedure for setting up the courses and selecting the ERP systems adapted from Winkelmann and Leyh [2010]. This model is shown in Figure 1[8].

we first defined the topic that students should examine during the courses (e.g., examination of specific production processes or retail processes) and selected a domain-specific framework to give students some structure and guidance for their experience with case studies and ERP systems. This framework served as a basis for working on the tasks given to the students (Step 1). Afterwards, we selected suitable ERP systems. To this end, we had to gain an overview of the current situation on the ERP market (Step 2) so that we could select the software manufacturers and systems that promised the largest success for learning in line with the defined tasks (Step 3a). Our focus in the two courses was to make the students familiar with one large-scale ERP system and one system for S&MEs. So, the courses primarily focused on software training to provide a first insight in ERP systems. Therefore the selection of one system for large companies and a system for small and medium sized enterprises was necessary[8].

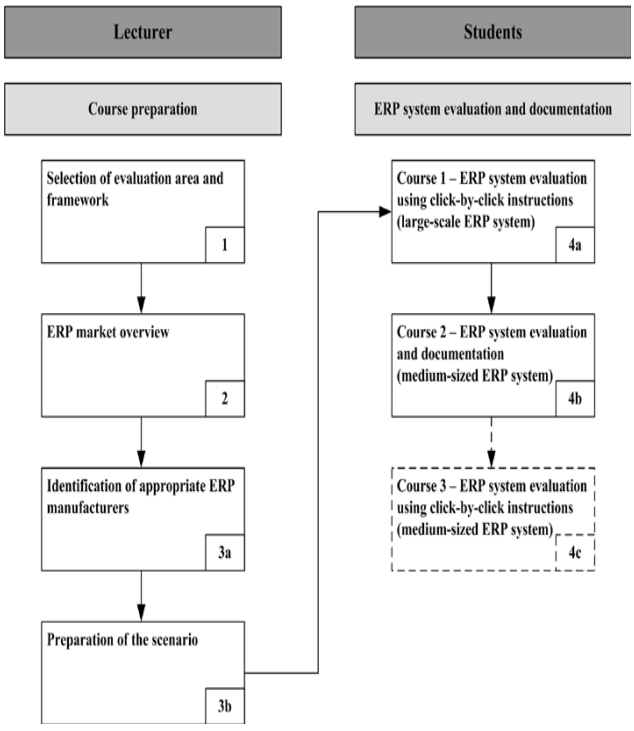

Figure 1. Structure of the procedural model

4. PROPOSED METHODOLOGY

(i)THREE-DIMENSIONAL TEACHING MODEL:

The ERP is a course based of practice. This three-dimensional teaching mode of ERP course means a complete teaching system base of experiment. It is composed of three kinds experiment, such as the principle experiment, the sandbox simulation experiment and the application test. These three parts support each other and become a combination of organic links. The following will introduce the three parts one by one[1].

(a).THEORETICAL TEACHING IN ERP COURSE**:**

The main content of this course is the integrated application of information system and information management. So its teaching syetem is necessary to meet the basic specifications of higher education, but also to meet its practical-oriented characteristics. Guiding principle is to train the understanding and problem-resolving abilities of students in the areas of ERP-related research and development. In the class, we not only focus on the theoretical explanations, but also on practical applications. The teaching context is mainly composed of the the basic theory of ERP foundation, principle, function, application and development[1].

(b). PRINCIPLE EXPERIMENT IN ERP COURSE

The princeple experiments in the course is dedigned to work with the theoretical teaching. By doing exercises using actual data in designed experiments, students can consolidate the theoretical principles further taught in class ERP.

This kind of validation experiment can make students active in the classroom, no longer staying only in the principles of the theory. Considering the time limitation of the class and the importance of every part of content, we only design several experiments on core algorithm of MRP, MPS, RCCP, etc.

These principle experiments let students understand the advanced management ideas in ERP theory and master the core algorithm in ERP applications. Though doing these principle experiments, students understand the real ERP operation and experience the strong role which ERP played in enterprise business[1].

(c).SANDBOX SIMULATION EXPERIMENT IN ERP COURSE

ERP decision-making sandbox simulation experiment is a type of interactive experience of teaching and learning[1]. It deals with almost every part in enterprise management, such as strategic planning, product development, production planning, equipment investment and reform, capacity planning, material procurement, financial planning, marketing and sales, financial analysis of economic indicators, communication and team working, etc.

(ii).STRUCTURE OF THREE-DIMENSIONAL TEACHING MODEL OF ERP COURSE

We have introdued every part of the three-dimensional teaching model of ERP curriculum. The "three-dimensional" means these three parts of ERP course are designed to support and proved each other. In this innovative teaching model, the overall structure which we design is as the following.

We first introduce the concepts and development history of ERP in the class, then instruct students do sandbox simulation experiment. At the same time, the students do the detemined principle experiment as homework after class. Finally, the teachers introduce the every module of U8 ERP product of UFIDA company as an example, and teach the students the common parts in ERP system furtherly. The structure of the specific route are described in Figure 2.

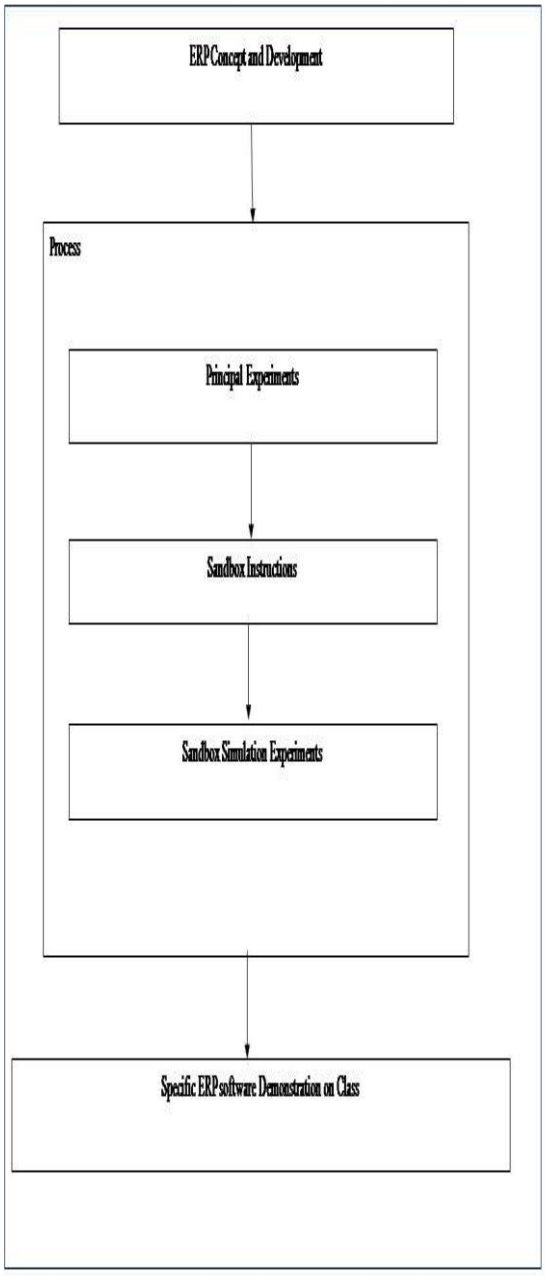

Figure 2. Structure of three-dimensional teaching mode

5. CONCLUSION

Most colleges follow the lot of teaching methodology, that all done with a lot of unsatisfaction. This ERP Teaching methodology will find a good interaction with the students when this is implemented in the class room. Most of the students surely will get the good satisfaction of with this ERP teaching methodology. This will play effective role in the form of ERP Teaching. Three Dimensional Teaching methodology will rely on the higher level of satisfaction among the students because of they can able to send their comments and queries by this ERP Teaching.

Often Students will get motivated through this environment. They can understand technology and methodology easily. If they have any unsatisfaction with this methodology,that can be recovered with in stipulated time.

The concept of "the three-dimensional teaching mode of ERP course" which we propose is based on many years of ERP teaching and thinking. We also want to require some improvement in ERP teaching by this way. It becomes a more complete and integrated set of ERP teaching system that is composed of theoretical knowledge, principle experiments and sandbox simulation experiment. The teaching system in three-dimension works around the sandbox simulation experiment. Every part of this teaching mode is related to the sandbox simulation experiment. It is a organic system. We want do more to improve the teaching effect in ERP course. And it is more important to stimulate the students' interest.

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