ERP Curriculum Innovation System Based on Big Data and Information Technology

Shengxu Lu1,*
1Shandong Management University, jinan, shandong, China, 250100

*E-mail:Lsx.1277@163.com

Abstract. The adjustment of national industrial structure is in urgent need of a large number of talents with innovative and application-oriented ability. For the major of financial management, enterprises need graduates with strong comprehensive ability. Therefore, many universities have started ERP sand table simulation training courses. This experiential teaching mode enables students to be involved in the operation of virtual enterprises. Through the research of ERP curriculum innovation system based on big data and information technology, this paper provides technical Suggestions for the optimization of ERP curriculum. This article first introduced the ERP course about the content and construction of ERP course system used in the algorithm, based on the theory, on the basis of our simulation has set up a platform of ERP teaching, and for two months in a university teaching experiment, the collection of the student for simulation platform of ERP teaching evaluation, the results showed that 83.2% of students satisfied with the innovation of the course. Through the study of this course, students can further master the skills of entrepreneurial team building, strengthen the concept of cost, and hone the sense of competition.

Keywords: ERP Electronic Sand Table, Teaching Platform, Innovation System, Information Technology

1. Introduction

In October 2019, the ministry of education stressed that "curriculum is the core element of talent training, and the quality of curriculum directly determines the quality of talent training". Although curriculum is the most fundamental problem in university education, what it needs to propose to solve is the most fundamental problem of talent cultivation and talent nature in university education [1-2]. As application-oriented undergraduate universities, it is imperative for them to undertake the task of training professional talents needed in the transformation of the structure of old and new industries, so as to construct the undergraduate courses of "gender degree" (featuring high order, innovation and
great challenge)\textsuperscript{[3-4]}. Sugunah Supermane mainly discussed the influence of knowledge management and teaching activity innovation on teacher education institute of Malaysia. Data were collected from 100 randomly selected respondents using a cross-sectional survey design. The interviewee is an academic lecturer at a teacher education institution in southern Malaysia. The five point Likert scale was used to conduct the compacted questionnaire survey, and the raw data of all 100 respondents were collected. Pearson correlation coefficient is used to test whether there is a correlation between knowledge management and innovation in teaching and learning activities\textsuperscript{[5]}. To some extent, innovation, entrepreneurship and environmental sustainability have been well aligned with organizational and social opportunities. An entrepreneurial mindset can promote openness and management of organizational and environmental protection. Therefore, Eliana Andrea Severo aims to analyze the perceptions of students in higher education institutions in southern Brazil in building the relationship between teaching innovation, teaching environmental sustainability and entrepreneurship \textsuperscript{[6]}. Business English teaching is attracting more and more attention and showing unprecedented strength. However, there are still many problems in business English teaching in ethnic colleges and universities, which seriously hinder the improvement of business English teaching quality and the development of business English. Starting with the connotation of business English, Chunling Geng reveals the common problems in business English teaching, analyzes the causes of the problems\textsuperscript{[7]}. 

Based on big data and information technology, this paper elaborates the basic theory of ERP course and constructs an ERP teaching platform based on the teaching content of ERP \textsuperscript{[8]}. Then, the simulated teaching platform was put into use in a university and studied and observed for two months. Finally, the advantages and disadvantages of the existing ERP teaching methods are analyzed through the operation of the platform, and Suggestions on the optimization model are proposed\textsuperscript{[9-10]}. 

2. Proposed Method

2.1. ERP Course

ERP, the enterprise human resources integration plan requires companies to create a variety of internal and external human resources to complete the plan. To some extent, it must pay close attention to the actual needs of the business market. Taking full advantage of the powerful business information management system will include various internal and external human resources. Reasonably integrate the actual information of the resource supply chain to promote the pursuit of maximizing the operating profit of the entire enterprise.

ERP sand table training is a comprehensive business table sand management training course. Throughout the course, the entire class is divided into several practical learning simulation groups, namely many actual simulation companies. Every simulation company should have a very intuitive and comprehensive simulation to reflect the overall growth of the business.

2.2. Build the Big Data Algorithm of the Teaching Platform

Are known and these classes in d d M class object characteristics of the statistical distribution of the space, namely the known types of $w_j = 1, 2, \ldots, M$ prior probability and conditional probability density,
for the sample under test, the bayesian formula can calculate the probability of the samples are all kinds of other, can calculate the objects belonging to a posteriori probability of said recognition, test sample X features belong to which class the most likely, it will most likely X belongs to the class:

$$P(w_i|X) = \frac{P(X|w_i)P(w_i)}{\sum_{j=1}^{U} P(X|w_j)P(w_j)}$$

(1)

In the problem of teaching platform construction, the statistical data generally satisfy the normal distribution, which is reasonable and extensive in physics, and the normal distribution is relatively simple in mathematical processing. The normal distribution function is adopted as the function form of conditional probability density, which can be obtained by estimating the expectation and variance of a large number of samples within the function, so as to facilitate the determination of conditional probability density:

$$P(x) = \frac{1}{\sqrt{2\pi}\sigma} \exp \left[ -\frac{1}{2} \left( \frac{x-u}{\sigma} \right)^2 \right] = N(u, \sigma^2)$$

(2)

3. Experiments

3.1. Experimental Background

ERP practical training courses mainly focus on teaching practical students how to correctly use software and how to master the basic functions of software. During the practical training, students tend not to pay too much attention to the theoretical knowledge of software, so they often ignore the basic learning of theoretical knowledge of software in class. Due to the lack of practical teaching theory knowledge, it is difficult for students to systematically understand the teaching process of classroom operation, and it is difficult for them to master and integrate with practice. Due to the large capacity of classroom experiment teaching operation of the course itself, in the absence of systematic combing of the course foundation, the limitation of the length of class hours will make it difficult to get in-depth and effective classroom teaching. Students did not fully enter the whole experimental teaching process with the consciousness of experimental problems, leading to the part of experimental theory that students are not interested in listening at all, and do not have the practical ability to organize and design independently.

3.2. Experimental Design

ERP course reform plans to establish a set of effective experimental teaching platform, at the same time of imparting knowledge, can efficiently for students to evaluate the performance of the whole learning process and results, the performance of the learning process mainly by procedural examination, including: daily attendance, lab assignments, midterm paper comprehensive testing, operation, etc. The evaluation of the results is realized by the paperless test. This kind of assessment system with objectivity and multiple aspects can make a comprehensive and detailed evaluation of students' abilities, so that students can know their real level in the evaluation scores, so as to know what aspects they should improve and progress. This experiment was put into use among sophomores
majoring in financial management in a university. The feedback of the results is shown in Table 1.

| The dimension                          | The coefficient of Cronbach α | The number of projects |
|----------------------------------------|-------------------------------|------------------------|
| Collect data and use tools             | 0.904                         | 8                      |
| Problem consciousness                  | 0.807                         | 9                      |
| Question consciousness                 | 0.803                         | 5                      |
| Persistence, self-control, concentration | 0.890                        | 23                     |

4. Discussion

4.1. Specific Analysis of ERP Curriculum Innovation System Based on Big Data and Information Technology

As shown in Figure 1, the course tries to adopt the dualistic teaching model of "theory + practice", with theory first and practice second. In the practice process, the attendance rate of students before and after using the platform is significantly different, only 73.2% before using the platform, but it rises to 92.3% after using the platform, which proves that the new ERP teaching platform has certain attraction for students. Teaching the system service platform is the first commercial enterprise data management in virtual simulation economic management business on the basis of the prototype, data management system on enterprise supply chain relevant theoretical knowledge and enterprise information technology environment of the all important business data processing process, function and practical steps, etc., complete teaching theory knowledge system, the second platform for all students proficient in use of enterprise theory knowledge system to finish the corresponding software system operation management tasks, students can realize the internalization theory knowledge system. Classroom instruction set to work in the enterprise's internal business management teaching process and the use of ERP system teaching software combined closely with the actual operation process, teachers teaching the teaching module of system software theory knowledge, require all students through the real-name registration login using ERP system software and make the system run independently finish school teachers system arrangement of the teaching tasks, avoid student plagiarism, and so on and so forth. Teachers conduct in-depth research into the classroom teaching, most of the students may encounter a variety of teaching problems in the use of software, students are required to carry out group discussion to solve, or with specific language clearly expressed, teachers can carry out one-to-one teaching guidance; If most college students are widespread problem also is the difficult point problem in classroom teaching, the teachers can use multimedia teaching system on many times the collective teaching and counseling and special explanation, which greatly exercise most students language expressive communication and comprehensive ability, analysis key problems and help solve the problem of key comprehensive ability.
In order to provide students with interesting classrooms, entertainment and teaching will damage students' interest and learning motivation. As shown in the figure above, 96.3% of the students in the experimental group think that the ERP course is interesting and highly motivated. 82.1% of the students in the control group found the ERP course very interesting. Explain that the ERP course itself is an interesting subject, involving many aspects of knowledge, teachers need to pay attention to teaching ERP courses and innovation movements. Teaching practice based on big data platform and information technology can make more students realize the importance of ERP and improve their ability to transfer applied knowledge to other fields. In addition, 8.1% of the students in the experimental group did not realize the importance of ERP courses, and 12.2% of the students in the control group did not realize the importance of ERP courses. Teachers need to pay close attention to these students in the teaching process, understand the reasons in depth, and promote student development.

As shown in Figure 2, after two months of study, financial management students' ability to master ERP has increased significantly. Excellent financial management requires students not only to have strong practical business skills, but also to fully understand the relevant professional knowledge about international financial companies, tax laws and daily large-scale commercial risk management. For the actual business skills requirements of such young graduates, companies have submitted higher professional requirements. In the process of simulating ERP for teaching and training enterprises, each training team is itself an entity-based virtual enterprise, including areas where the entire enterprise must engage in daily activities, such as product marketing, production management, financial management, information system management, etc. Through in-depth study of this vocational course, students can not only have a deep understanding of the actual progress of applying various vocational courses in the actual company career. In addition, it provides a good opportunity for school students to conduct comprehensive knowledge analysis and solve practical work problems. In the actual operation of virtual enterprises, students can also assume leadership roles and develop team communication and leadership skills. The team emphasizes collaborative leadership skills, strategic action planning and control skills, analysis and judgment skills to solve problems, adapt to pressure, innovation and Ability
to succeed, business leadership, etc. This also benefits from their practical research on large companies.

Figure 2. Students' test after the teaching

In addition to the teaching platform, ERP curriculum innovation can not be promoted without detailed teaching planning. At the beginning of the term of formal application, the teacher will distribute the prepared teaching calendar to the students, on which the weekly teaching progress of the semester will be explained in detail. According to the progress of the teaching calendar, teachers should upload teaching navigation resources at least one week before the next class for students to watch and read before class and ask students to find and raise questions. In class, students will not be given too much explanation of some basic knowledge and theories, but will be asked to answer the questions raised by students after group discussion, and then be asked to complete the corresponding project operation.

4.2. Suggestions on ERP Curriculum Innovation System Based on Big Data and Information Technology

From the perspective of teaching process:

(1) Flipped classroom teaching method is used in the teaching process. Students learn relevant theoretical knowledge before class, class time can not only be used for computer operation, but also can self-study or software operation process of the problem to the teacher, to improve students' hands-on ability, thinking ability and comprehensive quality. In class, teachers set experimental teaching themes according to the teaching content and students' actual conditions, so that students can understand and master the classroom teaching content through practice, and improve their ability to solve practical problems.

(2) Ask questions based on the teaching process. Ask students some enlightening questions to
stimulate their enthusiasm and curiosity, let them stimulate their independent learning and promote the learning of the course;

(3) The process of increasing the simulation experience. Add examples of simulation experience teaching in the teaching process, allowing students to experience a sense of knowledge in an exciting simulation environment.

(4) Try to adopt the teaching method of flipped classroom to enhance the participation of students in classroom learning, guide students to learn outside the classroom, and improve the teaching quality.

5. Conclusions

ERP course is a highly comprehensive practical course, closely centering on the process of enterprise operation, which well integrates theoretical knowledge into practice, cultivates practical skills, and enables students to understand the operation mode of enterprise operation in a very short time. Based on big data and information technology, this paper combines the reform of ERP course with advanced algorithm, and constructs a simulation teaching platform. The operation of the platform shows that its teaching effect is good, which is conducive to the promotion of ERP course.

References
[1] Samuel Domínguez-Amarillo, Fernandez-Aguera J, Fernandez-Aguera P. Teaching innovation and the use of social networks in architecture: Learning building services design for smart and energy efficient buildings[J]. International Journal of Architectural Research, 2018, 12(1):367.

[2] Norberto Pelegrin Entenza, Yurisley Toledo Leal, Maria Rosa Naranjo Llupart. Teaching innovation in the teaching-learning process administration [J]. International Journal of Advanced Research, 2016, 4(9):427-433.

[3] Hashem I A T, Yaqoob I, Anuar N B, et al. The rise of 'big data' on cloud computing: Review and open research issues[J]. Information Systems, 2015, 47(jan.):98-115.

[4] Lv Yisheng, Duan Yanjie, Kang Wenwen, et al. Traffic Flow Prediction With Big Data: A Deep Learning Approach[J]. Intelligent Transportation Systems, IEEE Transactions on, 2015, 16(2):865-873.

[5] Sugunah Supermane, Lokman Mohd. Tahir. Knowledge Management in Enhancing the Teaching and Learning Innovation[J]. International Journal of Academic Research in Business & Social Sciences, 2017, 7(76):2222-6990.

[6] Eliana Andréa Severo, Becker A, Guimares J C F D, et al. The teaching of innovation and environmental sustainability and its relationship with entrepreneurship in Southern Brazil[J]. International Journal of Innovation and Learning, 2019, 25(1):78-105.

[7] Geng Chunling. On the Teaching Innovation of Business English Teaching: A study on Multimodal Communicative Competence of Ethnic Universities[J]. Theory and Practice in Language Studies, 2017, 7(4):322.

[8] Singh D, Reddy C K. A survey on platforms for big data analytics[J]. Journal of Big Data, 2015, 2(1):8.

[9] Zaharia M, Xin R S, Wendell P, et al. Apache Spark: A Unified Engine for Big Data Processing[J]. Communications of the Acm, 2016, 59(11):56-65.

[10] Perez J A, Poon C C Y, Merrifield R D, et al. Big Data for Health[J]. Biomedical & Health Informatics IEEE Journal of, 2015, 19(4):1.