Research on SAP Implementation Consultant Talent Cultivation under OBE-CDIO Mode

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Abstract: With the increasing competition of enterprises, SAP (Systems Applications and Products in Data Processing) system has become more and more an enterprise to improve the level of informatization, solve management bottlenecks and improve it due to its perfect functions, mature technology and rich practice. An effective means of competitiveness. The demand for professional SAP technology application talents is in short supply, and the number of students sent from our school to the company every year is increasing. This paper takes the training path of the SAP implementation consultant of information management and information system as an example. Based on the OBE-CDIO (Outcomes, based, Education, Conceive, Design, Implement, Opate) education model, it is constructed to meet the requirements. CDIO standard SAP application-type talent training model, training plan, curriculum, teaching mode, teaching quality evaluation and supervision system. Horizontal integration and industrial integration of internal and external practice environment, school-enterprise cooperation practice base and other resources, to achieve school-enterprise professional joint construction, collaborative education; vertical training according to the needs of enterprises to set training objectives, the development of graduation standards, reverse reversal ability indicators, according to The quality, knowledge and ability of the consultant should be implemented. The curriculum system should be set up in accordance with the logic of the professional knowledge, and the results of the students should be carefully set for each link to form a knowledge base of courses, topics, projects, activities and practical practices. Finally, the talent development model of the progressive development of production, education and research integration will be formed, and the SAP system application specialty talents will be created to meet the needs of enterprises for high-level implementation of consultant application talents.

1. Sap Implementation Consultant Talent Training Background and Demand Status

SAP is short for "System Applications and Products." SAP, founded in 1972, is the world's largest provider of enterprise management and collaborative e-commerce solutions based in Waldorf, Germany, and the third largest independent software provider in the world. SAP is the name of its ERP (Enterprise-wide Resource Planning) software. It is the pioneer of ERP solutions and the world's number one ERP software, providing comprehensive solutions for enterprises of all sizes and sizes. Currently, it has more than 60,000 employees worldwide, is located in 130 countries around the world, and has a network of partners covering 11,500 companies worldwide. As the world's leading provider of enterprise management software solutions, SAP helps businesses of all sizes and industries achieve operational excellence.

As a benchmark enterprise in the ERP industry, SAP currently provides services to 86% of Fortune Global 500 companies, providing solutions for ERP, big data and analytics, O2O omni-channel, cloud computing, and industrial 4.0 to more than 12,700 customers in China. Enterprises achieve business innovation.

The process of learning and mastering the business of SAP Business Solutions is the ladder to the golden collar. In Europe and the United States, the average annual salary of such professionals is about twice that of other equivalent experienced professionals. In China, there are no SAP senior consultants with an annual salary of 500,000 or even 1 million RMB. Currently, SAP consultants are among the most talented people in the global and Chinese markets. In the next few years, the demand for SAP implementation consultants will grow rapidly, and the demand for junior talents will be huge, nearly 170,000; the demand for medium and high-end talents is also rising sharply.

On June 29, 2006, Neusoft Group and SAP jointly launched the Everest Plan for the ERP market. The "Everest Plan" is a strategic plan for Neusoft to enter the enterprise management solution field and has a benchmarking significance for cultivating professional business software talents.In cooperation with SAP to carry out multiple business modules, each module has its corresponding expertise. The main modules are SAP FI/CO, SD, MM, PP, PS, PM, ABAP, BASIS.

Neusoft is an IT company that has emerged from Northeastern University. In particular, it hopes to turn its understanding of technology and customer's expectations of technology into a new educational method and concept. It will jointly establish the "Dalian Neusoft Institute of Information" with Dalian Software Park and Northeastern University. To realize the organic integration of education and IT industry and software parks, and to explore IT education reform. Among them, the information management and information system majors use SAP standardized teaching system to carry out project teaching and case teaching. Relying on the real SAP learning platform and system, through the progressive knowledge system of the course, the ERP application, development and implementation consulting capabilities, BA data analysis ability, financial management ability, human resource management ability and project management ability are cultivated for the SAP ecosystem enterprise. Applied talent.

2. Proposal of Sap Implementation Consultant Talent Training Mode under OBE-CDIO Mode

2.1 Conversion from CDIO to TOPCARES-CDIO.

The CDIO engineering education model is the latest achievement in international engineering education reform in recent years. Since 2000, the multinational research organization of four universities, including the Massachusetts Institute of Technology and the Royal Swedish Institute of Technology, has received nearly 20 million yuan from the Knut and Alice Wallenberg Foundation. After four years of research and development, the CDIO engineering education concept was launched. And established an international cooperation organization named after CDIO. CDIO stands for Conceive, Design, Implement, and Operate. It is a centralized summary and abstract expression of "Learning by School" and "Project based education and learning". It embodies the basic capabilities that modern engineers must possess to serve the entire process of modern industrial products from conception, design, implementation to operation. This ability includes not only professional knowledge, but also personal abilities, interpersonal communication skills, and creativity in products, systems, and processes. Most importantly, the CDIO model proposes 12 standards for system capacity development, implementation guidance, and implementation process and results testing, which is highly operable.

In 2008, on the basis of inheriting the advanced CDIO concepts and practices of Europe and the United States, combined with the actual needs of Chinese education, the needs of enterprises and society for financial management talents, our school adjusted and increased the corresponding capability indicators, and built a TOPCARES with Neusoft characteristics. -CDIO Capability Indicator System, TOPCARES is the first English letter combination of 8 first-level ability indicators, namely: Technical knowledge and reasoning, Open thinking and innovation, personal professional ability (Personal and professional skills), Communication and teamwork, Attitude and manner, Responsibility, Ethical values, Practical conceiving, designing, implementing and operating as a contribution to society (Social contribution by application practice). And under TOPCARES-CDIO under 8 first-level capability indicators, it is further subdivided into 32 second-level indicators and

110 third-level indicators. Under some of the three-level indicators, four levels are subdivided according to the specific requirements of specific professions. Achieve the highest attention to student development and education.

2.2 Construction of Talent Training Mode for SAP Implementation Consultant under OBE-CDIO Model.

Outcome-based education (OBE) is a model that organizes, implements, and evaluates education based on student learning outcomes or educational output. It has become an education reform in the United States, Britain, Canada, and other countries. The mainstream concept. Dalian Neusoft Institute of Information is a high-level applied technology university with outstanding industry characteristics. By learning and drawing on OBE results-oriented education concepts and practices at home and abroad, combined with the characteristics of school TOPCARES-CDIO engineering education, OBE results-oriented education is integrated into existing information management. In the information system major, the OBE education concept was adopted to design and reform the existing management professional training program. The talent training program reform adopts an education model based on "learning output". Based on the CDIO engineering education reform practice, the professional level of expected "learning output" is formulated. Through the integrated curriculum design, a matching matrix of curriculum and training standards is established to determine the curriculum. The level of expectation "learning output" and designing appropriate teaching strategies to achieve an actual "learning output" assessment at the professional and curriculum levels.

The Department of Information Management and Information Systems has established a school-enterprise cooperation base with more than 60 companies including SAP, IBM, HP, Shanghai Hande, Guodian Nanzi, Wensi Haihui, Accenture, Neusoft Huiju, and Beijing Brocade. The enterprise transports more than 100 students to practice internships, which effectively guarantees the cultivation of students' professional innovation and entrepreneurship practical skills and promotes high-quality employment. At the same time, the school is co-constructed, and cooperates in the reform of teaching content and curriculum system. It plans and develops a series of succinct courses and teaching materials, and promotes and applies it. It introduces enterprise-level talent training programs and adopts enterprise-level commercialization projects. Teaching methods, exploring the reform of the OBE-CDIO curriculum system, creating an integrated application-oriented talent training system for production, education and research, and better cultivating talents capable of meeting the development needs of the industry. According to the market (enterprise, society, graduates and other stakeholders) on the needs of SAP implementation of consultants, combined with TOPCARES-CDIO concept and SAP training characteristics, determine the training model and training objectives of SAP implementation consultants, and launch information management and information The system professional graduation requirements, and according to the Bloom classification method, the talent development ability index system under the OBE-CDIO mode is decomposed, further decomposed and mapped to the relevant knowledge structure and the corresponding curriculum system, and finally passed the enterprise evaluation and graduates. The survey will feedback the effect of the talent training program, and then achieve the teaching quality inspection and teaching effect evaluation, and continue to improve the training program. The design flow chart of the SAP implementation consultant training education reform under the OBE-CDIO model is shown in Figure 1:
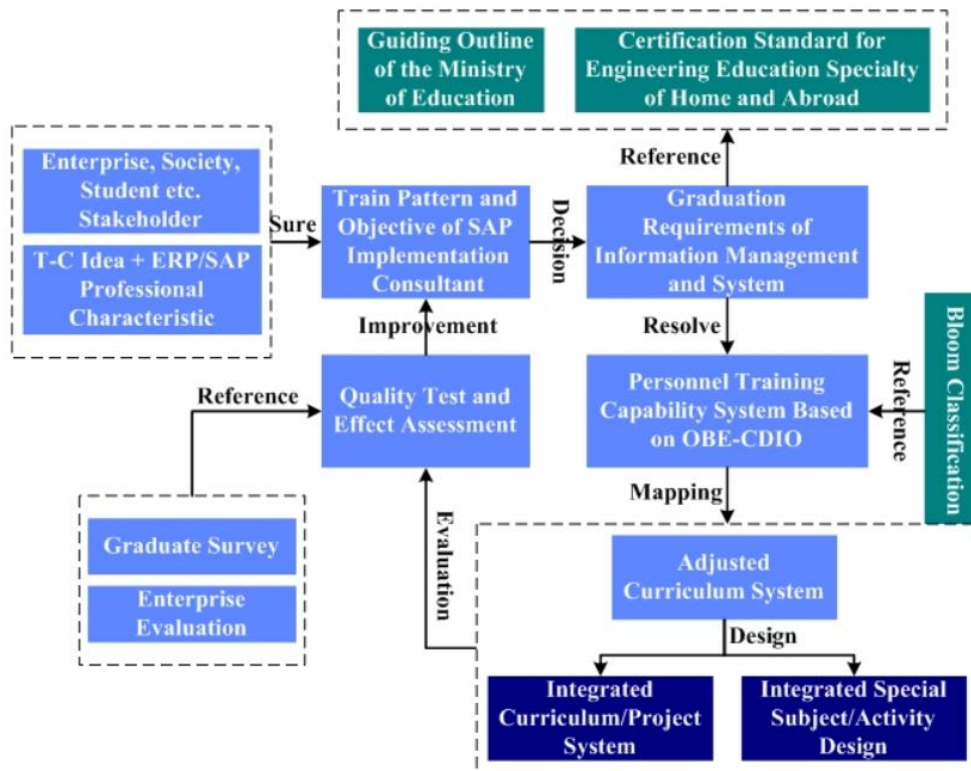
Figure. 1 the SAP implementation consultant training mode under the OBE-CDIO model

3. Design of Sap Implementation Consultant Talent Training Mode under OBE-CDIO Mode

3.1 Establish a Clear SAP Implementation Consultant Talent Training Objectives and Professional Characteristics.

With the signing of the Neusoft Group and SAP "Everest" strategic cooperation plan, the first batch of 35 teachers participated in the SAP implementation consultant international certification course of SAP SAP of Germany, and 33 teachers obtained the international qualification of SAP implementation consultant, and constructed a From the SAP system installation and maintenance, application implementation, secondary development and other comprehensive integration of the faculty. More than 90% of the teachers in the Information Management Department have SAP certification or participate in SAP-related training. At the same time, some teachers participated in the implementation of the SAP project as a consultant. Among them, Mr. Chen Meina participated in the SAP project support of the Neusoft Group's expatriate Gansu Jiuquan Iron and Steel Group Co., Ltd. during the period of 2007.1.16-2007.7.2, 2008.5.4-2008.7. During the period, SAP HR implementation consultant participated in the SAP project support of Shenwei Pharmaceutical Group; Liang Yiduo entered the Qingdao Double Star Dongjiakou ERP implementation project on September 14, 2015; Li Yanling and Gao Zizhen participated in Qingdao with SD consultant and FI consultant respectively. Haier project implementation. Since many teachers have SAP PA consulting qualification and project experience, they have the qualification of the SAP system management module, which lays a solid foundation for the quality and efficiency of teaching tasks.

With the support of SAP China, the information management and information system professional installed SAP mySAP ERP 2005 ECC6.0, SAP IDES, SAP NETWEAVER, SAP CRM/SEM/SCM/SRM, SAP BO and other products with a market value of nearly 10 million. At the same time, the application of SAP products requires the support of information technology and management courses. The main modules are completely matched with the target of information management. Therefore, the professional characteristics of information management and information systems are as follows:

Building a talent training link with SAP business solutions as the core: This project uses SAP standardized teaching system to carry out project teaching and case teaching. Relying on the real SAP learning platform and system, through the progressive course knowledge system, SAP talents with ERP application, development and implementation consulting capabilities and BA data analysis skills will be trained for SAP ecosystem enterprises, as shown below.

(1) Constructing a horizontal and vertical project implementation and curriculum construction system based on SAP technology architecture.

1

Horizontal project:
•Rely on the advantage of professional ERP resources, undertake ERP implementation, ABAP development, training projects（For example: Dalian MAT, neusoft HuiJu, Shanghai Hande et al.）
•Actively expand HANA memory computing, SUP mobile platform and other project channels

2

Vertical project:
•Research on the methods related to the implementation of ERP
•Research on SAP based on big data

3

major courses:
•Introduction of New Technology in ERP, Database and SAP Application course
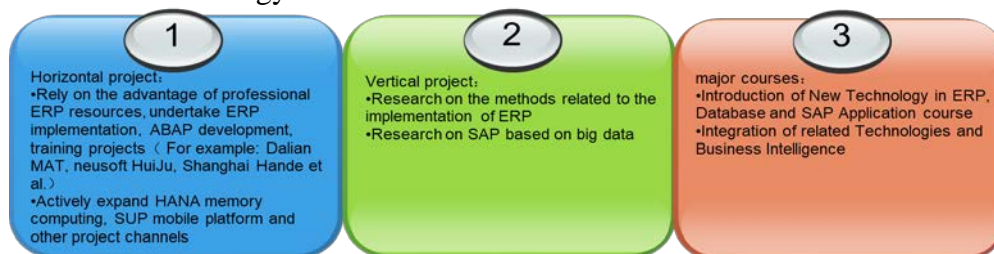•Integration of related Technologies and Business Intelligence

Figure. 2 Project and curriculum system of SAP technology architecture

(2) Constructing a horizontal and vertical project implementation and curriculum construction system based on SAP BO architecture.
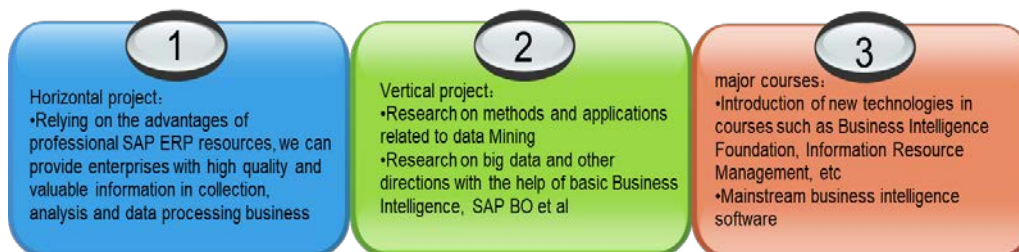

1

Horizontal project:
•Relying on the advantages of professional SAP ERP resources, we can provide enterprises with high quality and valuable information in collection, analysis and data processing business

2

Vertical project:
•Research on methods and applications related to data Mining
•Research on big data and other directions with the help of basic Business Intelligence, SAP BO et al

3

major courses:
•Introduction of new technologies in courses such as Business Intelligence Foundation, Information Resource Management, etc
•Mainstream business intelligence software

Figure. 3 SAP BO architecture project and curriculum system

3.2 Construct the Industry-University Cooperation and Sharing Curriculum System based on "SAP ERP".

Through support for information management and information system professional comprehensive reform, research on talent training model, curriculum and teaching method reform, support professional laboratory construction, promote online learning and teaching management platform resource sharing, conduct teacher training, and promote related professional reform, Reconstruct the teaching content, optimize the curriculum system, improve the teaching quality, and cultivate the applied technical skills talents that meet the needs of industrial development. Improve teachers' latest industry technical level and practical teaching ability. Give full play to the value of school-enterprise professional resources, promote the reform of teaching staff, promote the training of double-skilled colleges and universities, optimize the structure of teachers, and further realize the shared curriculum resources and promote the application.

Relying on the experience of enterprise informatization service project implementation in the industry, we will establish a curriculum resource library with SAP technology as the core, and give full play to the industry advantages and technical advantages of SAP's world number one ERP provider. Work with enterprises to build regional alliances or industry alliance bases, give full play to the advantages and complementarities between universities and enterprises, project co-construction, share of results and win-win results, and provide a solid foundation for all parties to better participate in and carry out related cooperation projects. Convenient conditions.

Focusing on the professional training objectives, the company's projects and cases are introduced into the curriculum system, and relevant professional certifications are introduced into the curriculum system. The professional construction of the industry-university cooperation informatization professional curriculum system represented by "SAP ERP" has fully utilized SAP's powerful information training and R&D platform. The SAP knowledge system has been integrated in

the theoretical courses and practical courses, and a large number of " The SAP ERP implementation consultant features talent (Figure 4).
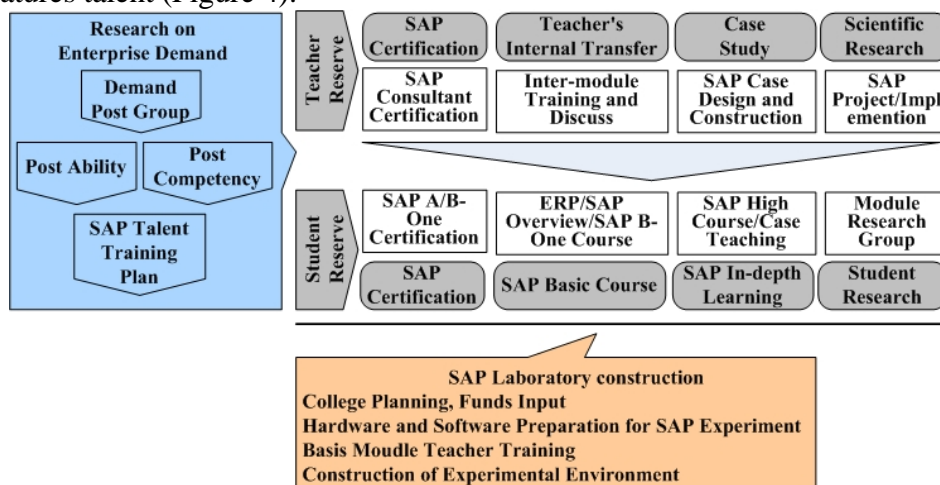

Figure. 4 SAP ERP Industry-University Cooperation Professional Curriculum System

(1) Teaching content and curriculum system reform direction

①Write a teacher's book, a student's book, a development practice course or an experimental instruction book or a practical case set, etc., which can be used for professional course teaching and student training; in addition, a supporting case library is used to enrich the teaching content and provide scientific research materials, and the actual planning hours are not Less than 32 hours, provide teaching materials, training syllabus, teaching PPT, micro video, MOOC and other supplementary materials.

②The application of teaching content and curriculum system reform key projects are SAP FI/CO, SD, MM, PP, PS, PM, ABAP, BASIS module curriculum system.

③Develop a professional certification training resource system, including SAP PA certification, SAP Terp10 certification, SAP B-One certification, combined with the certification of industry standards, development of training programs, curriculum systems and teaching documents, and based on teacher professional knowledge and teaching experience The successful integration of the learning materials for enterprise training with the curriculum resources of the teaching of Neusoft Institute will fully realize the sharing of teaching resources and achievements. The teaching achievements generated during the project construction process are shared by the enterprise and Neusoft Institute.

(2) Two-way mutual employment mechanism between schools and enterprises

Through cooperation with enterprises, we will establish a two-way mutual engagement and mutual integration mechanism between schools and industries, enterprises and practical departments. The school's teaching, teachers' research and industry's latest development trends are closely linked, forming a three-helix intermodal mechanism for production, study and research. "Promoting each other, learning and researching, researching and promoting production, combining production and learning, exerting its unique role, forming a progressive training model for the integration of production, education and research, effectively promoting the cultivation of applied talents and the development of applied technologies." Maintain close cooperation with enterprises, regularly engage industry experts and schools to conduct industry-university exchanges and cooperation, carry out teaching reform and scientific research horizontal and vertical research projects, encourage teachers and industry to deep cooperation, assign teachers to enterprises to rotate and exchange each year. Learning, industrial cooperation research, and promoting the transfer of scientific and technological achievements to the market. Schools and enterprises jointly improve the management system, jointly formulate the content and objectives of human training, and maximize the dissemination and publicity of reform results to expand the influence of cooperative universities and colleges. And copy successful cooperation to other brothers' colleges and departments.

4. Implementation of Sap Implementation Consultant Training Model under OBE-CDIO Mode

4.1 Build and Implement the School-Enterprise Cooperation Mechanism and Model with SAP Characteristics.

The information management and information system professional through the "Everest" cooperation program of Neusoft and SAP, to train brand consultants who are at the forefront of information technology implementation; with the goal of "production-study cooperation", together with major IT companies to build courses, teaching materials, students Evaluation and post-internship operation system, industry-university cooperation, industry-university interaction, and continuous development of industry-university bundling.

The major reconstructed the industry-university cooperation goal and demand acquisition mechanism for the application-oriented talent training of information management, established the talent capacity training innovation system for the information industry demand, and realized the knowledge structure optimization reform and innovation for the talent-oriented talent training. Improve the integration implementation process of talent cultivation and continuously improve the system capability maturity, and realize the resource sharing, performance evaluation and feedback mechanism of school-enterprise cooperation, thus realizing the innovation of information management talent training mode and clarifying the application talents. Cultivate the ability system, training objectives and talent training mode, and carry out effective practice verification through school-enterprise cooperation, as shown in the following figure.
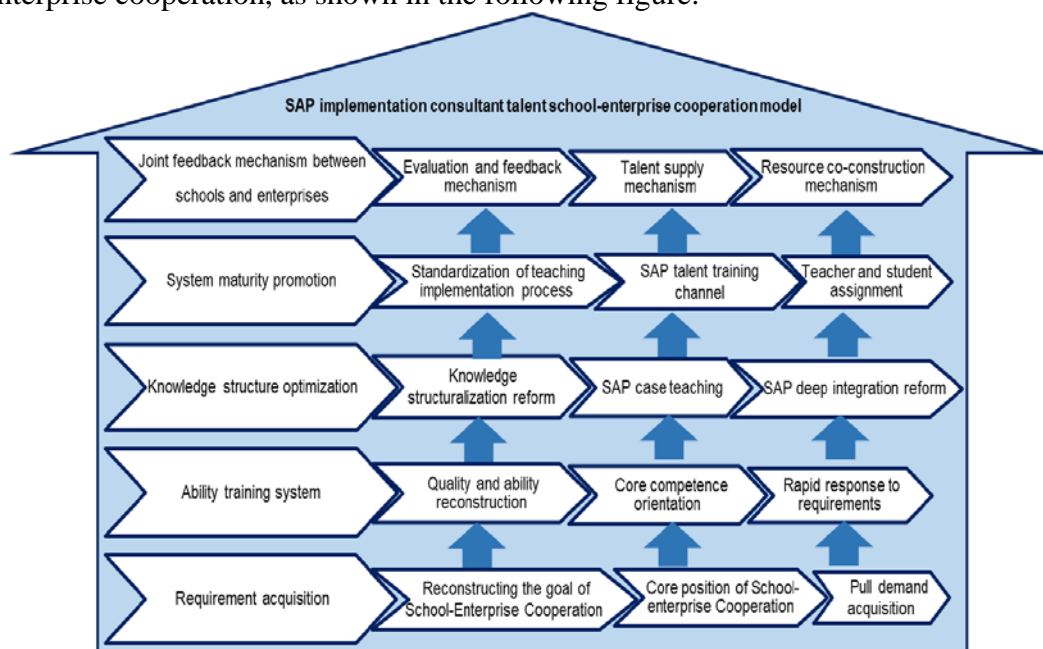

Figure. 5 SAP implementation consultant talent school-enterprise cooperation model

4.2 SAP Talent Development Channel.

SAP Implementation Consultant refers to the SAP Business Solution Software System, which has certain management skills and is familiar with the characteristics of the industry. The SAP Implementation Consultant provides services such as demand analysis, strategic planning, and implementation supervision for users who use SAP business solutions. SAP implementation consultants can be divided into technical consultants and business consultants (consulting consultants/module consultants) according to the work content; technical consultants are divided into ABAP consultants and BASIS consultants; business consultants are divided into SD consultants, MM consultants, and HR according to modules. Consultant, FICO consultant, etc. Therefore, the information management and information system majors are mainly divided into two links in the SAP talent training channel. One is to meet the requirements of business consultants by learning

SAP B-ONE-SAP overview-SAP module application, and the second is through IT foundation. - JAVA-ABAP technology learning, to meet the requirements of technology development consultants, the nodes in each link fully respect the students' willingness, inspire students to actively think about the future career development direction and the promotion path of SAP consultants, specific SAP talents The culture channel is shown in Figure 6 below.
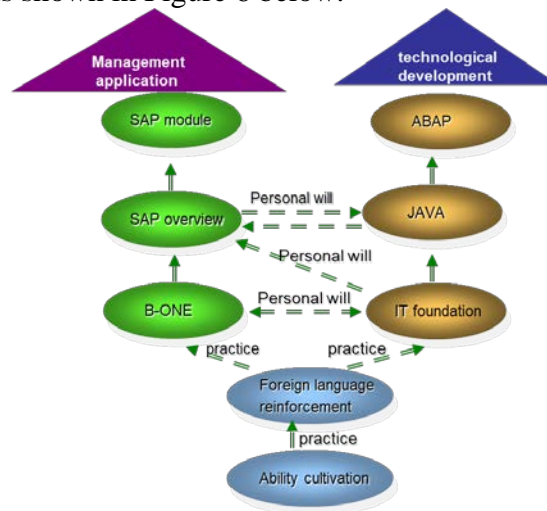

Figure. 6 SAP Talent Development Channel

5. Implementation Of Sap Implementation Consultant Training Model Under OBE-CDIO Mode

5.1 Establish the "IBT" Industry-University Interactive Internal and External Application Ability Training Mechanism.

In the school, the company is based on the enterprise and cooperates with IT companies such as SAP, IBM and HP to establish a laboratory based on application capability training and a laboratory based on the enterprise. Outside the school, with the advantage of Neusoft Group and Dalian Software Park, 64 enterprise training bases were established. IBC (Industry Based Training or Teaching) training, which is based on the customized training of industrial needs, through the curriculum and credits substitution, etc., to open customized courses, using corporate custom talent training, formed a good mechanism for schools and enterprises to jointly cultivate applied talents. ,As shown below.
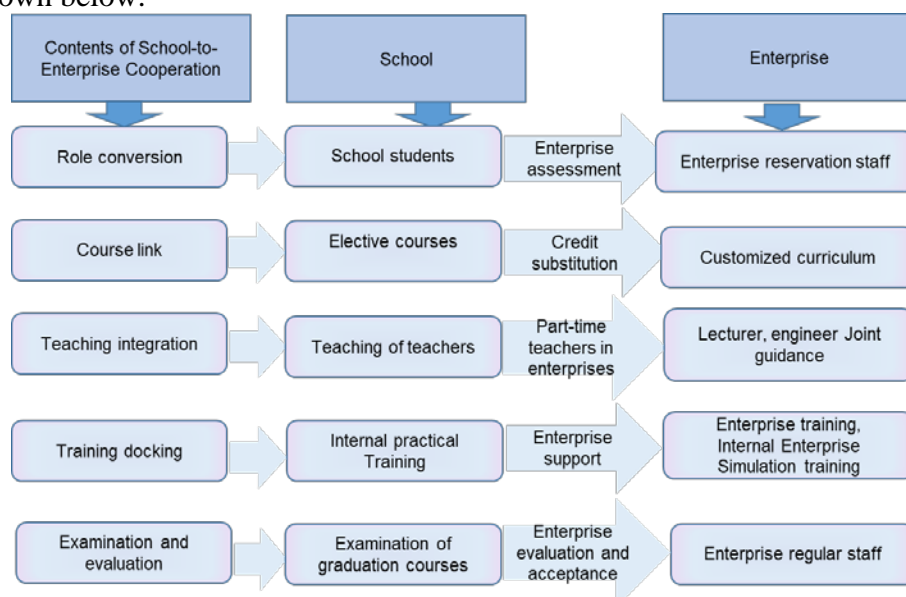

Figure. 7 "IBT" Industry-University Interactive Applied Talents Training

5.2 SAP-based School-Enterprise Cooperation Implementation Effect.

With the implementation of the strategic cooperation plan between Neusoft Group and SAP "Everest", the Department of Information Management launched the landmark "Student Work" project, and carried out student internship work under the guidance of a sound school-enterprise cooperation management system. After three years of theoretical and practical courses, students enter the professional practice base of professional matching to conduct internships, so that they can obtain high-quality employment after graduation. The school-enterprise cooperation enterprise is mainly based on SAP ERP internship position, which reflects the informatization characteristics and SAP characteristics of personnel training in the information management department. According to statistics from the Admissions and Employment Department in May 2018, the high-quality employment enterprises for information management in the past three years all came from the school-enterprise cooperation base of the Information Management Department, and all of them were consultant positions for SAP. The school's strategic decision to combine the training of SAP and the Department of Professional Management, as well as the firm implementation of the strategy by the Department of Letters and Management for many years, has been well reflected and confirmed in the process of student assignments to high-quality employment, 2018 In the year, it has exported 389 internship students to SAP-related business positions, with a total of 64 companies.

In recent years, the professional matching degree of the students of the Department of Information Management has been increasing year by year, and the support of enterprise resources for talent training has been significant. In the Department of Information Management, the number of SAP-related posts in the distribution of major posts in 2015 was 67.2% of the total number of students. In the Department of Information Management, the number of SAP-related posts in the distribution of major posts in 2016 was 81.3% of the total number of students. In 2017 and 2018, it was 93.30% and 99.00% respectively. The SAP ERP related internship position has become the most important part of the internship of the information management department. The number of expatriates has also increased year by year, from 80 to 180, as shown in the table 1 below:

Table 1 Number of Internships and Professional Matches in Recent Three Years

Year	The number of expatriates	Professional matching (SAP related posts account for the total number of students)
2015	80	67.20%
2016	120	81.30%
2017	150	93.30%
2018	180	99.00%

In recent years, the Information Management Department has relied on the SAP platform to deepen the professional characteristics and curriculum system construction. It has achieved certain results and established an education brand for SAP talent training in the Information Management Department. In the future, the Department of Information Management takes T-C as the guiding ideology, deepens the reform of innovation and entrepreneurship education featuring SAP, deepens the connotative construction, and cultivates enterprise information talents that meet the needs of society. China Education News, China Youth Daily, Dalian Daily and many other print media, as well as dozens of online media such as Sina.com, NetEase, Xinhua.com and People.com, have reported the information management applications based on school-enterprise cooperation of Dalian Neusoft Institute of Information. The model of talent training, this research has a wide demonstration role and promotion value for other colleges and universities.

5.3 Teaching Management and Supervision.

Using CDIO methodology, using ABET, PDCA and other quality management concepts and methods, we built and implemented a TOPCARES-ABET-based full-participation, full-process monitoring, and comprehensive evaluation of teaching quality management and assurance systems. For the whole process of talent cultivation, the PDCA method is adopted, aim-oriented, guided by

quality standards, supported by the digital platform, and monitors the implementation process of the main links and main factors affecting the quality of personnel training.

Main process monitoring content:

Course evaluation notice: (1) first-level project evaluation notice, second-level project evaluation notice; (2) course assessment quality inspection notice; (3) graduation design (thesis) quality inspection notice; (4) classroom teaching inspection notice; (5)) mid-term teaching order inspection; (6) teaching document inspection notice; (7) teacher teaching quality evaluation notice

Information collection and feedback:

The external includes information collection and feedback on social industry enterprises, employers, graduates, etc., including internal information collection and feedback for students, teachers, and teaching quality monitoring committees. Through the evaluation of the company's external students, we can see that the students' ability is fully affirmed, as shown in the following table 2:

Table 2 Enterprise Feedback Form

As a Neusoft person, although we have provided opportunities for students in the Department of Information Management, it is their own to really determine their career. What is gratifying is that they are excellent, seize the opportunity, and walk in the implementation team of our company. Forefront. ——Beijing Neusoft Huiju Information Technology Co., Ltd. HR
Your school's students have three major advantages: first, high emotional intelligence, good at communication and expression; second, good hands-on ability, you can already see SAP's SME solutions without going out of school; third is to cherish labor opportunities, work hard, Have an impulse. ——Zhejiang Yihe Power Technology Co., Ltd. Manager
The most urgent thing we are doing now in enterprise informationization projects is talents. Your training model is really a gift in the snow! Students who work here can quickly complete role conversions and have good communication and learning skills. This has been a big improvement over the past six months. ——Human Resources Director of Beijing Aowei Technology Co., Ltd.

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