

A Design and Construction of Experimental Teaching Platform on Quality and Competence Training Targeted at Students of Liberal Arts

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Abstract

Aiming at addressing the pervasive problems of university experimental teaching on students of liberal arts in our country, the paper points out the necessity of the construction of experimental teaching platform on qualification and competence education targeted at students of liberal arts. Combining the features of being interdisciplinary, comprehensive and innovative in specialties of tourism management, E-business and Business English, a Blackboard based platform system thus designed and introduced to try to present solutions to the key problems concerning experimental teaching functions and interdisciplinary cooperation etc.

Keywords: challenge specialties of liberal arts, interdisciplinary, experimental teaching platform

1. Introduction

The Outline of National Economy and Social Development in the 12th Five Year Plan has clearly suggested that the culture industry would be promoted into a pillar industry of the entire national economy in the next 5 years. In the recent years, the culture industry of our country has gradually developed and prospered from scratch. While the culture industry is expanding its influence and scales, the problems of talent scarcity, especially of the senior management personnel become more and more obvious. Under the circumstance where the rapidly developing culture industry calls for the supply of its human resource, Chinese government has posed the task that colleges and universities need to cultivate a large number of practical personnel with strong comprehensive quality and integrated skills, and are proficient in the market operations so as to face the growing demand management talents of liberal arts from the society.

From the view of the curriculum system for the students of liberal arts, the discipline of comprehensive humanities lays much emphasis on social practice, thus the needs to cultivate the personnel who are highly skilled for communication and innovation are stronger than ever before. Yet the educational reform in terms of experiments and practices has not been progressed at the same pace especially for the students majoring in liberal arts. Many problems still exist, such as the instructor's absolute dominance in the class, students' lack of deep understanding of the teaching materials and their poor implementing abilities etc. As the supplement and extension of classroom education, experimental teaching is an indispensable part in university education and it also provides a practical field for university students before their stepping into the society. By the experimental teaching it not only helps the students to understand the basic knowledge in their teaching materials and reference but to improve their abilities in applying knowledge to practical use. In the process of experimental teaching, how to develop students' innovative thinking, how to instruct the students to solve the actual problems by means of curriculum design and then enhance their ability to analyze and solve the problems are the subjects which the scholars from home and abroad have been researching. In order to deepen the students' understanding of their professional knowledge, enable them to innovate and apply their knowledge flexibly, develop their skills for analysis and solution of problems, this paper points out the necessities of designing and constructing of an experimental teaching platform on qualification and competence education targeted at students of liberal arts, and proposes a design of the experimental teaching platform on the basis of Blackboard so as to solve the bottleneck problems in the experimental teaching courses and the interdisciplinary cooperation.

2. The Present Situations of Experimental Teaching System for Students of Liberate Arts Home and Abroad

The first class universities throughout the world share a common value on the great importance to experimental teaching and the training of students' innovative skills and spirit. Stanford University works for the aim of talents training for "a practical use" and "a combination of intension and extension" with its emphasis on the training mode which combines practical production, course program, and academic research and thus an effective,

complementary and comprehensive system has been formed on base of it (Gao, & Cai, 2009). The University of Cambridge has always encouraged “the spirit of questioning” and advocated students’ own research. The Massachusetts Institute of Technology regards its mission of education as “creating, transmitting, and storing knowledge, and facing the great challenge of human’s society with the knowledge gained.” They hold onto the integrity of “the rigorous academic training with the exciting discovery” and on base of which an innovative and practical educational system was thus established involving students’ experimental education, scientific research, academic seminars and after -class scientific activities (Liu, 2009). Every year Tokyo University amends its practical education contents and publishes books on experiment projects. To encourage their students’ motivation, spirit of discovering and sense of innovation, Tokyo University, Waseda University and Nagoya University have been offering some optional experiments for its top students and the students who may have interests in them, so as to develop their innovative ability. In addition, the universities in Japan place much emphasis on the students’ feedback of experimental education. Every student has an electronic card by which they can see the estimation of their experimental task at any time, including the previous reports, grades, and the attendance of every experiment, and in the meantime, their instructors can also inquire the reports of the students’ experiments on the computer and submit their evaluation for students’ performance (Gao, 2006).

In China, with the implementation of the Education Department’s evaluation on the quality of undergraduate teaching, the educational reform of Chinese colleges and universities has been deepened as well. Especially since the launching program of establishing the senior experimental education demonstration center, the experimental education has received the attention from all Chinese colleges and universities. The conditions and management of the lab have improved greatly, and many domestic universities have reached a common agreement on improving the students’ sense of innovation and innovation capability by reinforcing the practical education and deepening the reform in experimental education. Among them Tsinghua University takes the view of emphasizing the practical education as an important way of improving students’ comprehensive quality and innovation capability and Southeast University aims at establishing an open and innovative experimental teaching system offering a student tailored learning program with a focus on improving their self- learning abilities. Following its belief of building an excellent university of engineering, Nanjing Industrial University founded a four- dimensional experimental education platform improving the usage of experimental education resources and accelerating the fusion of interdisciplinary fields. And Southeast University has come up with the educational mode of computer TA, implementing the ideal of an open, self -directed and hierarchical research mode (Sun, Bai, & Gao, 2009). In terms of the liberal arts’ experiment centre’s construction, South China University of Technology carries out the experimental education course system on base of a functional module with its specialties in interdisciplinary courses and fields. It has been built on several modules including basic courses, professional skills training courses, minor professional skill training, art education, social practice, interdisciplinary courses and innovation capability training etc. Through the integration of different functional modules, students of liberal art are offered a common platform to access to a comprehensive structure of knowledge and practical capability training (Peng, 2011). As the only national level experimental education demonstration centre in Beijing, the Comprehensive Experimental Education Centre on Applied Arts of Beijing Union University realizes its teaching ideals of training students with comprehensive knowledge of arts and science by introducing five experimental methods at three different levels---observation and experience, situational simulation, real case study, professional integration and independent research and development (Han, Zhu, & Yang, 2011). And following the rules of providing a modern, sustainable and innovative atmosphere, the Experimental Education Centre of Liberal Art of Lanzhou University has been built to attach great importance to the development of students’ comprehensive quality and professional skills (Wang, 2009). In 2005, the Tourism Experimental Education Centre of Shenzhen Tourism College of Jinan University was founded. For decades it has been sticking to its specialties: multi linguistic lecturing including the use of Chinese, English and the computer language, the innovative introduction of the ‘third semester’, and the experimental education idea of balancing the construction of three capabilities ---learning capability, practical capability, and innovative capability. Through years’ of efforts, with the up- to- date equipments and multi channeled online resources, an open, modern and effective science lab with a good operational system and a high level of experimental training team has already been built (Zhao, Zhang, & Zhang, 2011).

Thus in sum up, the current situation of the experimental education system home and abroad calls that colleges and universities should “fully develop the essential spirit of the science with its social and humanity value so as to deepen our thoughts of humanity and ethics on science and technology” (Liu, 2003). The merits of practicalness, comprehensiveness, and creativity of experimental education make it an indispensable supplement to theoretical education in the respect of developing the students’ comprehensive quality. Only with much of the efforts can the ultimate goal of experimental teaching of higher education be fulfilled of building a multiply

experimental education mode and appraisal system to help develop students' capability in self teaching, cooperative studying and studying for research.

3. A Case Study: the Current Situation of the Experimental Education in Shenzhen Tourism College of Jinan University

In this research, Shenzhen Tourism College of Jinan University is taken as an example here. It tries to show how by designing and constructing an experimental education platform the needs of training students of liberal art with comprehensive qualities are satisfied. For majors like Tourism Management, Business English and Electronic Commerce with features being interdisciplinary, comprehensive and innovative, attention should be paid to the training of students' practical and innovative capability. However, the present educational system shows with aims of high quality personnel oriented education, the experimental education of these majors could not catch up with the needs of the developing training requirements and results in a gap of all-round training. The reasons are manifested as the following three points:

- The experimental education has not been given enough attention in the current teaching program for liberal art students. Experimental education is a significant stage of students' learning knowledge and developing practical skills. It helps students grasp the basic principles, methods, operation and skills of the experiments so as to further develop the capabilities in independent measuring, observation, data processing, result analysis and report writing. Yet the experimental education could not be found anywhere in the actual teaching programs of many courses, it is even harder to talk about the carrying out of the experimental practice.
- The majority of the students in liberal arts have not realized the importance of the integrity and cohesion of the experimental education in their training. The contents of experimental education range from simplicity to complexity and unitariness to comprehensiveness which shows an elaborate structured and step by step comprehensive process. And every step and structure lays down the foundation for a further development which works together and inseparably in the whole process of talent training program. Any single or isolated part of the experimental education would inevitably bring negative reactions in students.
- Some students look down on the experimental education and do not have a clear learning purpose. They regard the experimental education as an unimportant course attached to the theoretical study and put more emphasis on theories and lectures instead of practice and experiments. Whether the experiment education exists or not does not make a difference in their education. And this is due to the fact that the experimental education does not function as a complete system in the teaching program with clear teaching purposes.

With all the reasons being discussed, the deep root of the problems lies in the fact that we lack a positive atmosphere in which we can promote the development of experimental education and we need to remove the barriers of lacking the hardware facilities that impedes the development and improvement of the experimental education level. And in this aspect, viewing the present situations of the training programs in liberal arts we propose an appropriate amount of practice and experiments in the training curriculum of practical and innovative personnel. As a step by step process in an orderly way it must be built on a high qualified experimental education platform targeted at serving all students. Meanwhile, the shaping of the good environment for experimental education should be constructed in the view of system project which emphasizes its core essence on the wholeness and integrity of different parts in the system as well as cooperation, coordination, stratification and dynamics. In order to develop the student's practical, innovative, and cooperative capabilities, we should build an experimental environment meeting the demands of all the students with considerations for individualized requests.

The discipline system of Shenzhen Tourism College consists of tourism management, E-commerce and business English. Most of the students show great interests in acquiring managerial knowledge, particularly professional related. And their future occupational field covers different industries and domains. Therefore, with different working models in consideration, the experimental teaching system designed for students with different majors in liberal arts provides them with an open, dynamic, free portfolio experimental education platform, combined effectively with the management and computer technique so as to realize the philosophy of building an interdisciplinary, comprehensive and innovative college. (The frame and structure of the experimental education platform is shown in Figure 1.

On the experimental education platform, the extensive horizontal structure enables students with the possibilities to share and explore between different discipline oriented modules and the layered structure enables them to gain different experience on different aspects of university life ranging from campus cultural activities to open experiment projects. With it, each experimental environment can be combined with another on to form an open and interactive platform to reach the ultimate teaching goals. In addition, we also take advantages of establishing internship bases outside the college, proving chances for our students to take their internship in different contracted companies, such as those of well known scenic spots, hotels, travel agencies, landscape design institutes, and golf courses in Shenzhen to improve their practical capabilities to supply the society with professional personnel with both good practical skills and qualifications to meet the demands of different industries. And the experimental education center of Shenzhen Tourism College has no doubt acted as a pillar role in the experimental education and internship of the students major in tourism management, E-commerce and business English. With the platform, it greatly improves the quality and effectiveness of the comprehensive education.

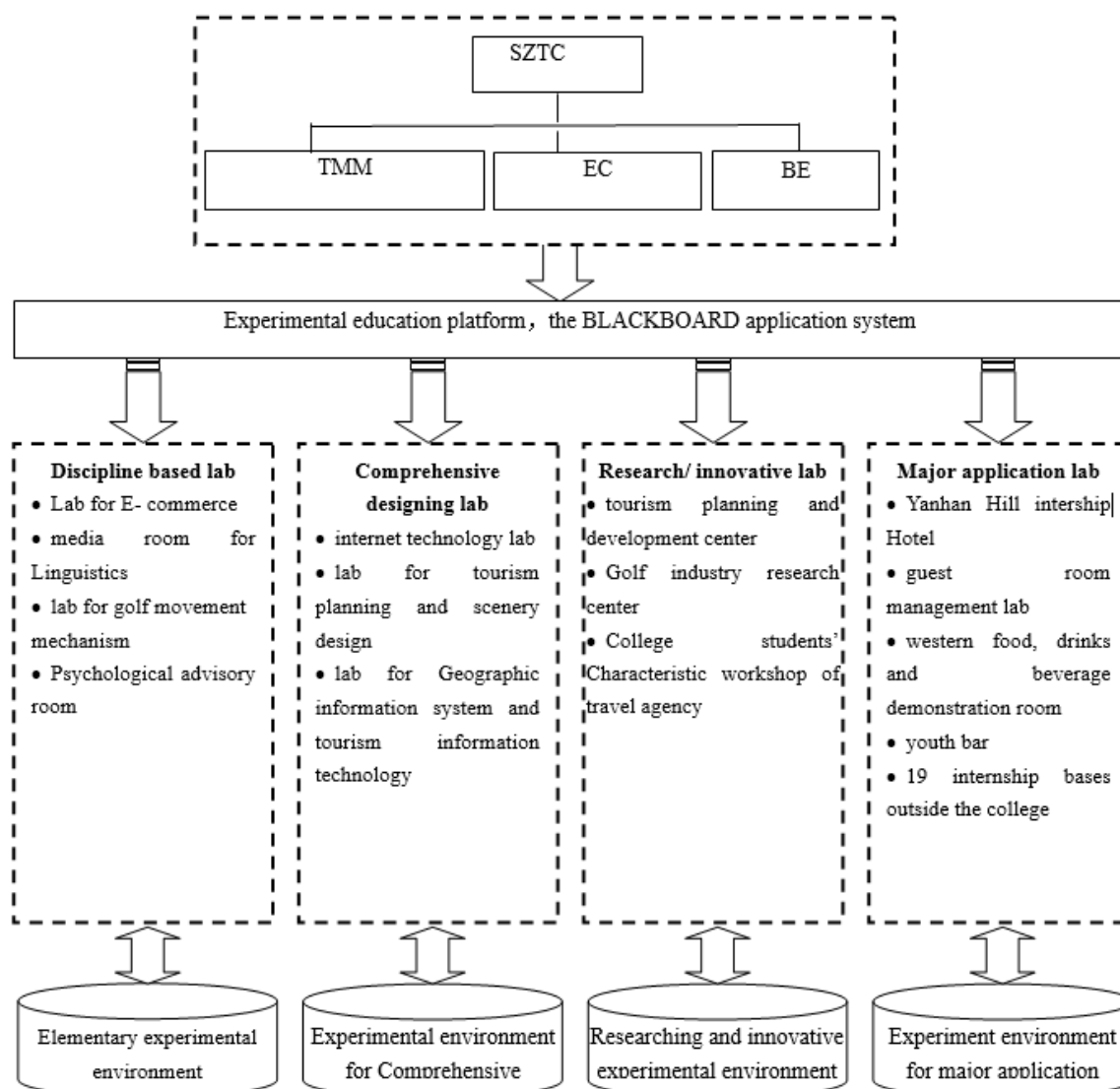


Figure 1. The Tourism Experimental Education Center System Education System

4. The Design and Realization of the Experimental Education Platform

4.1 The application integration system based on the Blackboard

As one of the biggest online education platforms in the world, the Black board provides teachers and students

with great online education environment. Taking courses as the core element, it includes 4 independent functional modules, namely (1) The management of curriculum content resources-making it convenient for teachers to put on, manage and organize the curriculum resources; (2) Communicative function-providing subscribers with asynchronous (e.g. discussion boards) and synchronous communicative tools(e.g. simulated classrooms) to further improve students' learning effectiveness; (3) Evaluation management function-creating quiz database and statistical data report of students' performance, and grading students' homework, quizzes, and tests; (4) System management function-for registering and logging out large number of student's information, keeping tracks of the students' learning progress and grades, and generating statistical reports. In addition, as an online education platform based on the constructivism Blackboard can also provide many other functions as resources sharing and learning coordination. Instructors and teachers can divide their students into different groups by means of the "grouping tool" on Blackboard where each of the groups will have their own file exchange board, discussion board, simulating classroom and e-mail tools by which they can send each other emails and leaving notes. Besides these tools, Blackboard can provide various evaluation tools such as test library, digital transceiver box, vocabulary manager etc.

Thus based on the design of Blackboard platform efforts and attempts have been paid to the exploration of the experimental education practice. In the beginning we first classify the experiments in terms of their property into three categories--- one for testing and verifying, one for researching and designing and another for innovating efforts, and all of them are arranged in a gradual process throughout the experimental education stage. Among the three categories of the experiments, the training of normalization and rationality of the operation, students' experimental ideas and thoughts and their interdisciplinary and comprehensive experimental capabilities are the respective focus in each of the categories. Different from the traditional education system, the experimental education on the simulated platform breaks the old pattern of time and place in the teaching process and offers the experimental education modules in accordance with different types of experiments to help students acquire knowledge in different perspectives.

Our second step involves constructing the cooperative and innovative system based on Internet and in consideration of the disciplinary features of the majors in tourism management, E-commerce and business English to enable our students' to communicate and cooperate with each other to learn from other's fields and broadens one's views. By the foundation of the Blackboard platform, the intersection of different disciplinary courses are thus introduced and promoted, and as a consequence of these efforts, the college has witnesses a steady increase in the student's enthusiasm in participation of all kinds of extracurricular technological innovation activities organized by Jinan University. Students who subscribe on the platform can have access to other disciplinary courses and resources transferring beyond the traditional regular classes confined to one's major and grades. Students can choose any courses that may not be listed in their major requirements but may meet their needs, and their experiments can be arranged in a smaller unit of student groups, in which way it helps avoid the conflict of course schedule and solve the problem of long physical distance generated by the cyber space. And in the meantime, it greatly improves the communication between students and teachers, and overcomes the drawbacks of the traditional experimental education. The traditional experiment class education is shown in the Figure 2.

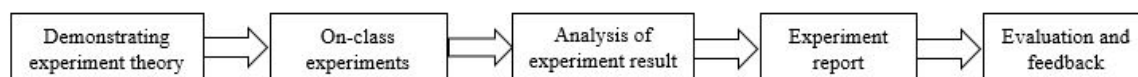


Figure 2. Flow Chart of the Traditional Experiment Class

While in reality, due to the limit of the experiment class hours, the instructors could not possibly help every student with their own questions arising from their operational process, and the communication between students and their instructors is often confined to the operation problems in experiments. Yet in the real process of experimental education, students could possibly generate new ideas or even form a clear and innovative thought after the experiments. Without a modified platform these ideas and thoughts can be easily given up because it failed to provide a sustainable follow up for their future research. Once the experiments are done there are no ways to further improve the results. And at the same time, this problem often leads to the inconformity and fragmentation of the communication between teachers and students. In order to solve these prevalent problems, we thus build our platform with the following designs on base of Blackboard experimental construction:

- Courses information. It includes overview of the course, teaching target, contents, experimental materials, introduction of the experiment centre, curriculum evolution, introduction of experimental education environment, online education access etc.. All the information is presented in the form of

texts or pictures to enable students to get familiar with the facilities and resources quickly.

- Experiment resource. It includes teaching syllabus, teaching courseware, post lesson resource, teaching videos, experiment operation disciplines, rules for laboratory use, experimental requirements, report models, download of experimental software, and preview work and evaluation. These contents are provided in various forms, like texts, pictures, videos, animations, PPT, binary files etc. and they mainly offer the substantial experiment related materials.
- Experimental results assessing. It includes assessment on experiment operations, experiment reports and exams to get the evaluation results of the experiment.
- Achievement exhibition. The research programs of education reform participated by the instructors or students are exhibited to set the examples for the future researchers.
- Teacher-student interaction system. This system introduces virtual discussion groups and simulated classes to encourage interactive communications between teachers, teachers to students, students to students without the boundaries of time and space to enable a further discussion after the experiment class.
- The foundation and management of student experiment groups. This grants students in different laboratories access to communication and to proceed to their experiments in the same simulated class. It also provides an efficient way to manage different student groups by dividing the innovative students by their programs and interest in different experiments.
- Evaluation system. A test and examination library and online evaluation system are also designed to the platform to make it convenient for students to evaluate their own performance and for instructors to follow up students' work.

With these built-in designs, the Blackboard based experimental education platform, to a great degree, overcomes the shortcomings of disjunction of the traditional platform. It connects the in class experimental education with after class experimental education and keeps the continuity of the communication of trans-disciplinary students and the openness of the teaching system. With it, innovative experiments have found good supports and the quality of experiments has been greatly improved. The process of the new experimental education platform is shown in Figure 3:

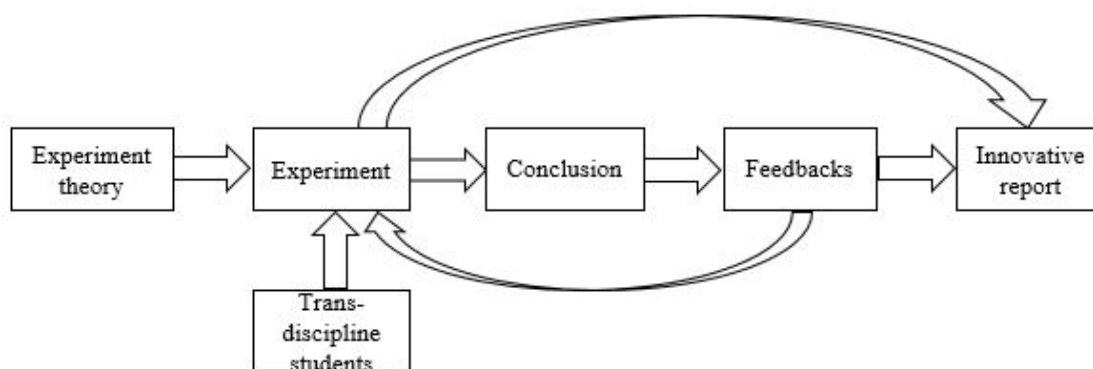


Figure 3. Flow Chart of the Blackboard Based Experimental Education Platform

4.2 An exemplary experimental education system fit for students of liberal arts, Economics and Management in self studying

A research of cognitive psychology shows that an obvious characteristics of human's brain is that it can not only help people memorize the learned knowledge, but pick up the new knowledge through the interaction with outer environment and adapt themselves to the changed environment as well. Accordingly, we should not simply "give" knowledge but more importantly inspire students' interests and train their self-study and self-adaptive capabilities. The traditional exam oriented system and discipline system failed to provide students with a benign experimental environment and encourage them to make the best use of it. And in order to build a good environment, the first step is to found a self-motivated study system based on the management of the experimental programs.

Guided by the experimental programs, the construction of the system is built on a ground which experimental programs are systematically designed and the experiments can be carried out step by step and stage by stage according to their different types. It can also pack the experiment with the lecturing courses so as to blur the difference between experiments and lecturing courses with more emphasis on their interactions and connections. Meanwhile, the experiment tasks are organized in the unit of groups and the experimental program management mechanism are introduced to control, supervise and evaluate the whole experimental process. With this model, a stably operating environment which helps cultivate practical and innovative personnel thus can be founded step by step and finally be put to use for the students' to explore new ways to improve their self-studying capability.

Let's take the course of Tourism Electronic Commerce in Shenzhen Tourism College as an example. As it is a typical trans-disciplinary course for the students in liberal arts and Economics and Management, its contents mainly deals with the application of electronic commerce in the tourism industry and includes chapters like electronic tourism, electronic catering, electronic airlines, electronic travel agency, tourism electronic operation mode etc. with large amounts of the corresponding experiment programs. With the traditional single teaching method in lecturing classes these experiments could not be done one by one within the limited lecturing hours. But with the help of our platform, all the experiments can be categorized into the three experiment types of testing and verifying ones, research ones and initiative ones. For example, the use of travel agency management software can be classified to the first category, the comparison of three air ticket booking system and processes and the function of frequent flyer being in the second category, and the applied models of GDS (The global distribution system) in different tourism industries can be grouped to the third category. With the division of these experiments the students are thus instructed to choose 2 experiments from each of the three categories and then required to design another comprehensive innovative experiment. We used the group management function of the Blackboard to give assignments, and used the tracking function of the Blackboard to see how they have been dealing with their experiments. In this way it helps develop the students' self-motivation and was greatly welcomed. With the help of this platform, a great many high qualified experiments were designed and done by the students. Moreover, many students claim that through the simulated class they have learned to solve problems in a panoramic view and get a clearer vision of the knowledge spreading out the chapters. After 3 runs of experiments in three classes, the results turned out to be exceptionally good, and the teaching tasks are reported to be accomplished smoothly.

5. Conclusion

To sum up, the authors in this paper have tried to design and construct an open, dynamic, and compositional experimental education platform to provide a benign experimental environment to students who major in liberal arts, Economics or Management. Based on this platform, teachers and instructors can provide students step by step with correlated experiments. It not only serves the function of demonstrating to the students the experiment process and teaching them how to do it but more importantly, the platform also help arouse students' interest in self studying and thus solve the problem of soft environment for students of liberal arts in experimental education so as to improve the students' creative capability as well as the quality of experimental education. In a word, to improve the students' comprehensive quality, colleges and universities should first recognize the importance of the experimental education from an objective view. Secondly, experimental education stages should be planned and designed in a professional view. Thirdly, the interaction and feedback system of experimental education should be founded from the angle of teaching management and the practical courses should be continuously improved for the benefit of personnel development from the angle of personnel cultivation. Finally, students' innovative thinking capacity should be trained in accordance with developing the students' all round capabilities. The science education theorist J.D Bernard once stated that what university students need most is to explore and discover knowledge by their own efforts and co-operations with others students instead of merely accumulating information. And this probably is the ultimate goal for university's talent training education.

Suggested future works include developing a software package to facilitate the WOZIP data input and conversion processes, exploring the use of WOZIP in the other forms of labour-intensive manufacturing (e.g. flow-line production and work-cell assembly), and attaching a costing framework to determine the specific cost of each resource or to help minimise the aggregate cost of production.

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