Application of HACCP models in quality control measures in higher education: A case study of Xinhua College, Sun Yat-sen University

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ABSTRACT

This is a case study of applying HACCP models in quality control of higher education. To research how those measures work on Xinhua College of Sun Yat-sen University, as well as, its mechanism and related politics was discussed in this article. Meanwhile, by selecting Xinhua College of Sun Yat-Sen University as a study paradigm, it aims to search a way to solve problems and construct a new concept of higher education quality system. Several studies have shown that quality of higher education is a potentially important determinant of college students’ outcomes. Despite the enormous growth in higher education in China, little is known about the quality of these new growing institutes. The main purpose was to understand the HACCP model control of a sample of institute in China and to compare it with the quality levels found in previous studies data. The study assessed the quality of Xinhua College in China which using the HACCP model. That is a case study to describe variety of measures applying at the critical control point and how those practices inflect the college. Therefore practice research methods went through the entire study. A better level of quality of education was found, which did differ from the previous quality levels reported in Xinhua College. The measures of HACCP model were found and analyzed. Critical control point was also found. It is concluded that the application HACCP model in Xinhua College during the past 5 years did positively affect its quality. Several measures to improve higher education quality are suggested.

Keywords: HACCP models, Xinhua College of Sun Yat-Sen University, China.

INTRODUCTION

China's higher education has developed rapidly, up to 2016, the national education planning outline has been achieved in advance: "the gross enrollment rate of higher education will be up to 40% by 2020", while the number of college students has increased greatly and how to ensure the steady improvement of the quality of higher education has become a matter of great concern to the government and the public. According to the national statistics by the end of 2016, there are 2,879 higher education institutes operating in China, having a total of 26.96 million of college students. The main concern of quality assurance instead of the effectiveness of quantity increase is carried out. Establishing a quality assurance system consistent with the current development trend is an important measure to ensure the quality and sustainable improvement of higher education.

According to the explanation of "great dictionary of education", "the quality of education is the education level and its assessment effect that is embedded in the quality of the training object; it also measures the education purpose at various levels and the training objectives of school". The establishment of education quality assurance system refers to the work assembly that establishes the target system for the cultivation of colleges and tests the conformity of the training objects (students). The training target system of college should include talents training, scientific research and innovation, service society and guarantee the embodiment of these goals in the cultivation of objects. At the same time, the organization structure, process rules and resource guarantee system are
established to realize the goal of using system theory. The main body of colleges of higher education quality assurance including social public, government institutions and college management team are in the different responsibility for quality assurance system, but the goal to improve the quality of education to meet the demand of social development is consistent.

HACCP (Hazard analysis and critical control points) is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product (FDA USA). HACCP systems must be based on the seven principles articulated by the NACMCF. The seven principles are: (1) hazard analysis, (2) critical control point identification, (3) establishment of critical limits, (4) monitoring procedures, (5) corrective actions, (6) record keeping, and (7) verification procedures (NACMCF).

In this study, our selected research scope is the quality control system within the university, which does not involve external supervision and government. The HACCP model is used as the research tool to apply HACCP chain break-point analysis and monitoring in trying to solve the problem of education quality control. HACCP has been traditionally applied to quality monitoring of food and drug safety, which has some similarities with education quality control in universities such as the concept of critical control point, though, there are some differences. In this study, we mainly considered the migration of management thinking, broaden the application range of

In this case study the research object is Xinhua College of Sun Yat-sen University. It began with a brief look at the object of study; the Xinhua College of Sun Yat-sen University (the college) was established with the approval of the Chinese ministry of education in 2005. It comprises of various departments such as the arts, science, medicine, engineering, tubes, law, and other subjects comprehensive full-time ordinary institutions of higher education. The college has 22,260 students, 11 secondary colleges, 8 direct affiliated departments, 1,163 teachers and providing 40 major varieties.

According to the aforementioned basic framework, the author believes that to guarantee implementation of quality higher education five different aspects need to be tackled: (1) vision of college, (2) curriculum system, (3) facility and equipment, (4) student enrollment control and (5) team of teacher. We also defined them as critical control points of higher education quality control.

CARRYING OUT EDUCATION QUALITY ASSURANCE WORK WITHIN THE COLLEGE

Carrying out internal quality assurance refers to the college, based on modern education rule and quality management concept, ability to establish the school policies, set up teaching quality supervision agencies, to formulate quality inspection rules and regulations and carry out the daily administration of quality supervision and evaluation.

It is the first responsibility of education quality assurance to organize the education activities in accordance with law. Internal quality control and self-assessment is a major guarantee of the quality of higher education, supplemented by external quality safeguards to form the basic framework and the internal quality of education activities to guarantee the quality of personnel training. The quality assurance of talent training can be divided into three aspects: factor quality assurance, process quality assurance and comprehensive evaluation. Education elements mainly include education purpose, teachers, students, campus culture and other aspects. The process quality includes curriculum construction, teaching design, teaching methods and teacher-student interaction etc. Comprehensive evaluation includes two aspects of students' learning quality and efficiency of school education, such as graduation rate, excellence, employment, education input student-faculty ratios, embrace training costs, time efficiency and comprehensive efficiency, etc.

Because the colleges emphasizes the school-running characteristics, the education quality control should be aimed at the characteristics of its own school and highlight the characteristics of the school in the content of education quality assurance. For example, Xinhua College of Sun Yat-sen University, which fully study the needs of modern society, clearly puts forward the concept of "China needs elite and China also needs specialist". The cultivation of applied talent is based on social practice of innovation orientation, which is different from the research orientation university also different from the trade school which is purely professional. In concrete practice, bold reform of teaching content, teaching methods and teaching design meet the requirements of high-level applied talent training. Secondly, to prepare responsible and experienced professors organize educational inspection to supervise the teaching quality. Thirdly, they build a professional teachers' team of academic freedom and conduct excellent academic attitude, while strengthening the occupational stability of teachers. Finally, the quality target system is oriented with students' success.

CRITICAL CONTROL POINT AFFECTING THE QUALITY OF EDUCATION

Vision of college

The goal of running a school is to do high quality education work, which must be clear in the first place. Only when the direction and goal of the schools are clear, can the correct
guiding ideology be formed. It is important that top-level design for profit or non-profit is clarified. For profit, we think about the balance of interest versus quality, while to being non-profit we think about the balance of feasibility versus quality. The college orientated of application higher education, the goal should be to cultivate has a certain theoretical knowledge and strong practical operation skills, the practical talents with innovative spirit and innovative ability and specialist, causes the student through continuous learning new knowledge, new technology, new methods and creative analysis of the new situation, solve new problems, create new methods. The college has the vision “Study extensively, enquire accurately, reflect carefully, discriminate clearly and practice earnestly”. It is a general idea of the college operation that covers all aspects of critical control point of education quality. The vision of the college could be education content, methods, means, law, nature, characteristics, and professional settings. Further study of the problems of the teaching materials, teaching goal leading to managerial guiding ideology; education teaching goals are not clear and the formation of the teaching method, curriculum setting and planning problems such as improper arrangement and teaching material selection directly affects the education quality of teaching.

The curriculum system and teaching content

Quite a number of institutes have also made education teaching work in the backward education concept, while ignoring the demand for talents under the market economy.” The college applies up-to-date educational theory and techniques to redesign the curriculum. It vigorously promotes quality education, improves the overall quality of students and focus on cultivating the students’ practical ability and innovative spirit. Application of higher education to change the teaching idea uses a multi-way to impart knowledge, especially the theoretical knowledge of education concept, which greatly affects the quality of the trained students in developing technical and practical talent needed.

The college rationalizes the structure of the curriculum to meet the vision of the college. Even with the application, the short history of higher education development in China is not very clear due to lack of concrete research on the curriculum system, which can be mostly used for regular higher education pattern. Therefore, more emphasis on theory teaching and weak practice teaching system could lead to the teaching outline, teaching plan and curriculum with unreasonable phenomenon: too high proportion of theory teaching. The college redesigns curriculum to make a balance of the theoretical knowledge, professional skills and innovation ability, professional quality, and humanities knowledge. The teaching content is updated every year. The relative lag of professional research is minimized to teaching contents of education through selection of new textbooks published within 5 years. In addition, the college edits and publishes its own textbook to fulfill the requirements of curriculum in some cases. Because of the rapid development of society, computer, electrical and mechanical engineering, automobile use and maintenance training, application level develops very fast, and teaching research, writing, at least in 2 to 3 years, may not meet the needs of students employment after the actual work, thereby causing serious influence to the application of education for production, construction, service, management, which is the first line to achieve the goal of training talents.

To reform the curriculum system, curriculum construction and professional construction is observed as the content actively promoting teaching reform and improving the teaching quality of education. Aiming at technical application of talents, we set up our major varieties according to the principle of social demand and the combination of pertinence and adaptability.

According to the principle of focusing on application and practicality, it is necessary to adjust the syllabus, formulate teaching plan, adjust course structure, update teaching contents, and eliminate unnecessary courses and contents. The proportion of theoretical knowledge and practical skill teaching should be 1:1 or closer to 1:1. Theory teaching is in line with the principle of "sufficient, applicable and practical", namely the basic cultural knowledge enough to support the need of learning professional knowledge; basic specialized knowledge is applied to meet the needs of the development of professional learning, and the professional and practical knowledge with the need of production.

On the one hand, theoretical knowledge must earnestly learn and pay attention to imparting knowledge, and on the other hand, focus on the learning and thinking methods and method of analysis, the method to solve the problem and cultivate students’ autonomous learning ability; Practice teaching becomes an important link of the teaching goal to improve the practical teaching of knowledge, technology content, reduce unnecessary validation experiments, increase the internship, and the trainee etc practical teaching, increase the skill training, to cultivate the students’ practical ability, thinking method and innovation spirit. Teachers should adjust the teaching content according to the current situation of scientific and technological development.

In the selection of teaching materials, the first choice suitable for education teaching material is implemented by professional education training target, and the content should be new, which should include the latest content of professional application. Teachers can also make up the new knowledge of textbooks and the application of new technologies.

Teaching infrastructure

Due to historical and realistic reasons, quite a part of
colleges teaching infrastructure has the phenomenon of relatively weak, lack of necessary funds to improve school conditions, school so must strengthen the construction of hardware. Unable to provide to develop the innovative ability of students’ practical skills, teaching hardware support, can't arrange the student in the teaching of practical skills training experiment, practice and scientific research activities following teaching contents, which greatly affects the quality of education. In the college, we have two brand new designed campuses covering a total area of 970850.81 m². The guangzhou campus is located at the intersection of Longdong west road and Guangshan road in Tianhe district, Guangzhou, the campus construction area is 7, 5117 m², which is located in the beautiful scenery of mountains. Dongguan campus is located in the town of Machong of Dongguan city, which is separated from the Huangpu district of Guangzhou, and the campus construction area of 383319.79 m². The college has business, grammar, technology, medicine and art five experimental training platform, contains the "FabLab" creative laboratory, medical care lab and auditory sense lab total 129 laboratories, while the college has with a number of government agencies, institutions, enterprises co-op to set up 228 off-campus practice base, to meet the complex and applied talents training, provide experiment, practice, training base and platform. Each year to increase investment, strengthen the construction of experiment and practice equipment purchase, the college also did heavily invest in high speed internet and library but compared with the time development speed, the college still work hard to meet the needs of the teaching.

The college was strengthened by the construction of teaching infrastructures not only in the campus base but also in social connection. To establish a perfect campus internship base called Student Entrepreneurship Guidance Center, students having more opportunities to practice even in campus must be empowered. Laboratory training venue is a material guarantee of practice teaching, in addition to being equipped with all kinds of training students for science and technology activities; skills training outside the necessary instruments and equipment should also have the requirement of cultivating students’ innovative ability. The college did continually increase the investment, improve the level of advanced instruments and equipment, ensure to keep up with the pace of development, fully meet the requirements of the application of new technology, and increase the number of forms, a complete set of equipment to ensure the full use of students.

To establish an off-campus internship base with related enterprises, scientific research units need to build a solid cooperation relationship, to ensure that students contact frontier science and technology of the opportunity to increase the abundance of the students’ practical activities, and constantly develop their practical ability and innovation ability.

The balance in between quantity and quality of students

This is the most difficult part for an institution as we traditionally concentrate on fair education. It can be said that the opportunity of education could be equal but requires the right person to match with major varieties. Hence, the college focuses on enrollment automatic matching system and switching major system in order to maintain the quality of students. On the other hand, it is great help to find out talent of students, could be the basics of development of personality education in future. By the way, students and college is in same education system interior, therefore, attitude of college towards educational quality affects the enthusiasm of students’ learning. As a non-profit institution, the college has advantages to invest more resources to solve the problem of students who are tired of studying after school, lack of spirit of study, and to improve the teaching level of education.

To build a functional teacher team

In order to build a functional teacher team the teacher should have high academic level of the major professional practical experience and be conversant with the latest development of the discipline. To update the educational concept, the simple knowledge skill teaches education quality education and innovation education transformation. We should constantly update our knowledge, broaden our knowledge, and improve our ability to innovate, actively carry out innovation activities and become more versatile in teaching, research and service. Engaging in activities of education teachers should pay attention to the reform, improve teaching methods, change the traditional teaching mode to make the students as the main body of teaching "teachers are the main body, while students are passive"; teachers’ delivery becomes the guide body. In the teaching activities, teachers should guide and correct the main goals, give full play to the students’ enthusiasm and main role, and teach students according to their different conditions, thereby improving their results.

Teachers should adopt module teaching, heuristic teaching behavior, discussion-based teaching and other advanced teaching methods with the aid of physical objects: the means such as multimedia, enrich the students' perceptual knowledge, strengthen the cultivation of practice ability, combine teaching with production practice, and organize the student to go out to practice, visit learning, skills, innovation, communication and other activities. The college sends young teachers to Salisbury university, Tsinghua University, Taiwan sun Yat-sen University, Zhejiang University, Shantou University and other famous universities at home and abroad to learn communication, accelerate their development as the
backbone of our disciplines and specialties.

At the same time, in order to adapt to complex and applied talents training goals, the school also hired a group of speaking skills and extensive experience off-campus mentor, "double capacity" teachers to strengthen the teachers strength and structure, thus making the practice education a production platform. Since the beginning of Guangdong province in 2012 full implementation of "enhance teacher' ability", the college has had several measures of constructing teachers team, such as "Doctor Salon", a weekly training and one-on-one helping with new and skilled lectures, "experience introduction" to give full guiding to which professors in charge of the building up of subject construction, major setting, curriculum and also training backbone teachers, supervision and inspection of the quality of teaching; this a series of measures which provides the impetus for quality education guarantee system.

Quality improvement of Xinhua College

In recent years, quality of education in the form of some private higher education was developed in various forms and has achieved great progress. It has been observed that higher education form is the main body of the increment of scale and quantity in China. Talent cultivation is nothing without the quality. The college is ranked 29th of application-oriented university in 2017 according to the ranking of zjut.cc. In comparison with the 84th of the same billboard in 2013, it is a great achievement for young college that is of 12 years old. In 2014, the college moved up to 16th place and rose to 68th of billboard at the first year to apply HACCP model. In the following year, the trend was kept clearly forward, ranked 54th in 2015 and then sharply increased to 38th of the standing list (Table 1). (Resource was collected from zjut.cc annual report of Chinese university).

CONCLUSION

In summary of the achievement and guarantee of education quality assurance activities. The platform for the guarantee and evaluation of the ability of education quality system in self-correction of a large data volume can be provided. Because in every link of the quality assurance activities possible biases and errors, if management can get this information in a timely manner and share information is possible to make the whole system in the process of continuous improvement and optimization to achieve stable quality management and monitoring. We should realize that the education administrative departments, social agencies, professional trade organization, information management system of university internal connectivity information sharing and the international higher education quality evaluation system of information network is involved in information resource sharing.

In the near future, the improvement of education quality of education will be an important part of the structural reform of education in China. The key to improving the quality of private higher education is that the state should strengthen macro management and establish the operation mechanism of various forms of institutes.

For institutions, the establishment of the system of HACCP proved strictly qualified. The evaluation of the teaching quality and condition of higher education in various forms should be carried out on a regular basis; a relatively stable and fairly horizontal faculty should also be established, while the teaching should combine knowledge and training ability to ensure the quality of talents. We should also maintain the all-round development of the moral and intellectual of students.

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