

**Reference on the Undergraduate Curriculum Reform in American Research Universities
----Taking Curriculum Reform at Harvard University as an Example**

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Abstract

Based on the United States' social demand for the talents and public dissatisfaction with the quality of the undergraduate curriculum in research universities, USA plan to carry on a reform in the undergraduate curriculum after World War II. Among these universities, Harvard University is the first one to carry on the reform of undergraduate curriculum and to set up a set of elective courses, which brings reform undergraduate education curriculum to a climax. The undergraduate curriculum reform is mainly focusing on the elective system, general education courses, core courses, third courses, etc. Through the research on the reform of undergraduate curriculum in the United States universities, combined with the current situation of high level universities in China, it has an great referential significance to solve the problems about the setting of undergraduate curriculum and lay a great foundation for achieving the goal of construction of the excellent disciplines and universities.

Keywords: Undergraduate Curriculum, Course Reform, Harvard University, Elective System, General Education

1-Introduction

After the World War II, one of the most influential measures is the reform of undergraduate courses in the process of reform in American research universities. The course is well- known as the heart of the education career, and its contents and forms have always changed with the time going by, which to some extent meet the requirements of cultivation of undergraduate talents and improvement of education quality for social development and scientific research. Now, the undergraduate curriculum reform plays a significant role in the ranks of the world famous universities in the curriculum development of higher education in the USA. This paper, taking the undergraduate course reform in Harvard University as an example, analyzes and concludes the undergraduate curriculum reform in American research universities to lay the foundation for the undergraduate curriculum reform in Chinese research universities.

2-Background

After the World War II, American educational career is always affected by the war. However, it still kept the trend of going on and developing a trend in the whole part. In the aspect of higher education, the American research universities gain great support and help from the federal government and all walks of the life in society, which in turn promote the development of the economy, military competition, knowledge innovation and technology development. Overall the curriculum reform in American research universities after World War II, it mainly based on the following social elements: the war funding support on scientific research from the federal government in the WWII; "talent deficit" problem and urgent need for the participation of the talents; the advanced facilities and resources for scientific research; and federal government policy support and legal protection for its reform development. Furthermore, a series of problems emerged in the undergraduate education and the social discontent with the talents cultivation also further promote the reform of undergraduate courses in the undergraduate education.

In April 1998, Carnegie Teaching and Promotion Research University Undergraduate Course Education Committee in American research universities conducted a comprehensive investigation and statistical analysis, aiming at solving a series of problems in the undergraduate education, proposed a research report named "Radical Change in the Reform of University Undergraduate Course Education: the Blueprint of American Research Universities." The core idea of the report mainly concentrated on the following aspects: regarding basic knowledge as the core to set core courses; learn to take study as the main task; learning a new form to open seminar; pay more attention to the cultivation and improvement of the student's various abilities and the application of information technology in teaching.

3-Review of the measures in Harvard University undergraduate course reform

After the World War II, Harvard University has been committed to improving the teaching quality and focused on the reform of the curriculum system. These actions caused full attention in the world. Moreover, many other universities used Harvard reform experience for reference later. On the one hand, the impetus to further reform stems from the urgent request of people to improve the quality of undergraduate education; On the other hand, it is the result under the mutual influence of utilitarianism and value fusion which has penetrated into the reform of higher education in the USA after the war.

3.1-Postwar undergraduate course reform at Harvard University

3.1.1-Implementation of elective system

Elliott, taking office as a presidency in Harvard University (1869-1909), carried out an elective system and other reform measures, which eventually make Harvard University rank into the modern research universities. In his view, the rigidity curriculum in Harvard University cannot meet the needs of the process of urbanization and industrial civilization (Arthur Levine, 1978). Although the conservative party sticks to maintain required course, Elliott still set the elective course system following the social Darwinism. Moreover, Harvard University began to break the original fixed class system and sort the course into different numbers to make all students choose their course freely.

In 1872, Harvard University started to cancel all required course for the senior. From 1879 to 1884, Harvard University canceled all required course respectively for the sophomore and the junior. In 1885, Harvard University canceled the compulsory courses in a further step for the freshman. For the elective course system, it has injected strong vitality into the development of Harvard University, promoted its rapid

development, and won a widespread reputation for Harvard University. In 1886, Harvard University became one of the world famous universities. Ten years later, Harvard University required for all first-year students, there are only two English classes and a modern foreign language class. In 1897, there is only one compulsory course rhetoric at Harvard University. At the beginning of the 20th century, the survey showed that Harvard University was the wealthiest university, provided the most courses, and had the largest and the most respected faculty in the United States. Moreover, the high quality of teaching cultivated a batch of outstanding students with high productivity. Through the setting of elective system, students have more right to choose their courses following their interests. At the same time, it also dispelled the burden of teachers and students who were forced to learn the courses that they are not interested in. The implementation of the elective system had achieved an obvious effect at Harvard University. From 1870 to 1871, there are 32 professors, and it had to set 73 courses for 643 college students. At the beginning of the 20th century, the elective curriculum system had to lay a very stable base in Harvard University. From 1910 to 1911, 169 professors at Harvard University had to set 401 courses for 2217 students (E. L. Boyer, 1987). The free elective system in the era of Elliott not only promoted the rapid development of the university but also won great honor for Harvard University. Under the influence of the undergraduate course reform in Harvard University, Cornell University, Columbia University, Stanford University and other famous universities began to try setting the elective system in different courses.

3.1.2- General education curriculum

General education is an essential part of higher education in the United States, and it is also an essential aspect of undergraduate course education reform in Harvard University, whose concept is famous and known by the public for Harvard University curriculum reform in 1945. In the late 70 s, according to the concept of liberal education to the ministry of education outline liberal education. An important feature of the outline of the curriculum set is to give priority to the introduction, not the deep understanding and elaboration of specialized knowledge. After the 90s century, the development of modern science and technology has put forward to the higher requirements for improving people's comprehensive ability, and a large amount of natural science, interdisciplinary content began to come into the curriculum of general education (Clark Kerr, 1982). The setting of the general education curriculum is designed to solve the university learning and realistic problems in society undergraduates. Through the implementation of the curriculum, it can help students to broaden their knowledge and to understand the change of international political, economic, cultural and other matters. Moreover, it is a good chance for students to actively respond to the changes and meet the needs of the society. Therefore, the general education cannot only help students to keep up with the times and the pace of change but also let the students understand the various conflicts and differences in values. The goal of the general education goal mainly involves eight aspects: aesthetic and interpretative understanding, culture and faith, empirical reasoning, ethical reasoning, life science, natural science and the world of United States. In addition to the general education curriculum, it can also actively carry out various activities as a supplement and extension of general education courses, and further, improve the relationship between teachers and students in Harvard University. Although there are many obstacles in the development of the general education in the United States, even sometimes it seems to content with the professional courses, it found that the two kinds of curriculum system are not contradictory, and they can compensate for their advantages and disadvantages

form each other. In 2008, the freshmen can choose seven related general education courses. In 2009, general education curriculum systems fully set up and create a new situation at Harvard University.

3.1.3-Core curriculum

For the concept of the core curriculum, Harvard University course website has a descriptive definition: the core courses are to seek integral methods in the field of undergraduate education. It is aimed at introducing new knowledge and exploration methods, showing what type of knowledge and value exists in these areas, and analyzing how different methods they are used (Press Frederick Rudolph, 1962). The United States began to reform university curriculum and brought out a new evolution. For the setting of the core curriculum, Harvard University did not use a credit system but use the "all courses" or "half courses" to calculate the credits for students. Although there existed some controversies on core courses and general courses, it still cannot deny that the core education courses are the controversial continuation of general education. However, the core courses emphasis more on the students thinking ability and professional knowledge training. In 1998, under the influence of Boyer Report published by the United States Carnegie Council for the Promotion of Teaching, Harvard University paid more attention to the students' integrity and all-round development of education and, to cultivate exploratory, innovative and research spirit of the undergraduate students. Seen from the Table I and Table II as follows:

Table I Boyer Report Integrate Core Curriculum System

Integration of core curriculum	Specific content	Courses instance
Language: the key links	Understand the power of language and skillfully grasp more than one to practice	Cornell University: gestures and communication
Art: the scale of the aesthetic education	In the modern life, art has become a necessary part of people and a measurement to reflect the degree of social civilization	Northeastern University: the art and society
Tradition: the living history	To strengthen the traditional learning of history and the meaning of heritage and surreal, and no history, no civilization	Harvard University: historical research (A/B)

Organization: social network	Public institutions of the social network is inseparable from the public institutions in people's life	Chicago University: The politics of the president of the United States
Nature: the ecology of the earth	The lack of introduction to nature, the universe of the core curriculum is incomplete in curriculum	Harvard University: the earth and life history
Work: value of the major	Help students to think about the production and consumption of universal experience, and make them think about their work correct	Connecticut University: work and culture
Identity: the significance of searching	The ultimate goal of general learning is to know yourself and cultivate the ability to make correct judgment	Princeton University: psychology and religion

Table II Catalog of Core Course between 1994 -1995 in Harvard University

Curriculum areas	Number of courses	Proportion
Foreign Culture	27	17.60%
Historical Research	29 (A:11 , B:18)	19.00%
Culture and Art	48 (A:17 , B:17 , C:14)	31.40%
Morality	12	7.80%
Science	26 (A:14 , B:12)	17.00%
Social Analysis	11	7.25%
Total	153	100%

3.1.4-The third course

In 1959, the American scholar Watt named the compulsory course as "the first course," the elective course as "the second class," and extracurricular activities as "the third class" in his book the third course. He thought that the extracurricular activities initially were informal sports teams, secret societies, and illegal social gatherings, then gradually became a part of the school curriculum structure, and developed into an important career. Now, there are 1296 undergraduate students unions or clubs in Harvard University, of which the number of 110 clubs is more than 150, 83 community members are no less than 10 people, and there are totally 6715 undergraduates in Harvard University in the 2006-2007 year, with an average of five undergraduates in a community. Furthermore, the dormitory building of Harvard University has become a center of the undergraduate extracurricular activities and social activities, one important part in all kinds of

student associations, and there are all various academic and professional classes, art, and performance, etc. The extracurricular activities fully respect and develop the students' personality, and pay attention to exert students' initiative, make students participate in the management. At the same time, the staff who always deal with universities' student affairs professionally. Therefore, to some extent, it also makes Harvard University students' management institutionalized and standardized. Through the third course learning, it also reflects its flexibility and full of autonomy. To some certain extent, it can become a necessary part as a supplement to classroom teaching.

3.2-Undergraduate course reform at Harvard University in the 21st century

Seen from the experience of Harvard University reform, we can sum up the law of curriculum reform as "Do little changes in a few years and a big reform in these decades. In October of 2002, Kobe, a dean of art and science college at Harvard University, started a new all-around of Harvard University undergraduate education great reform. This reform involved in all aspects of the undergraduate education, but the center of this reform is focused on the core curriculum and advocating perfect broad liberal arts education. However, the core of the reform mainly focused on curriculum reform, and its problems existed in the core curriculum are the key to promote this reform. For example, the standard of the core courses in the undergraduate curriculum reform emphasizes that "the way of thinking or knowledge acquisition method" is not clear.

The reform gives the exact standards on what and how to teach. In the 21st century, the students in Harvard University needs to learn the education science and technology, the elective course in teaching , and the teacher needs to pay more attention to the comprehensive and professional education curriculum for students with more opportunities before the academic exploration of major study and to develop a wide range of talents. On the question of how to teach, it is necessary for teachers and professors to take related measures according to the age of the nurturing talent target to determine. In the 1940 s, the red book at Harvard University put forward to cultivating the citizens in a free society (John S. Broachers, Willis Rudy,1976).In the 21st century, the goal of Harvard University is to develop global civil society, which can make preparation for students to adapt to the changing culture and civilization in a globalized world. Therefore, more attention should paid to the internationalization of education, the cultivation of undergraduate scientific research ability, and the relationship between teachers and students, the undergraduates' campus life, and undergraduate education. Kobe, the dean of the college, also suggests that we should match a non-accommodated academic advisor for every first-year student.

4-Characteristics analysis

After World War II, Harvard University curriculum system has developed and gradually improved to meet the social demand by taking a series of reform measures in the 21st century. Furthermore, its constant innovation and reform on the course system further lay a foundation for the reputation and status of Harvard University in higher education, and promote the rapid development of other colleges and universities in the United States. In recent years, seen from the rankings of the top 100 universities in the United States in TIMES and USNEWS, we fund that United States universities not only occupy large proportion is large, but also rank on the top. Now, the undergraduate curriculum reform at Harvard University has become a referenced template for the eastern and western countries. The basis on the combining with its national conditions, the other countries learn to reform their undergraduate course

system. From the contents of previous curriculum reform in Harvard University, the author summarizes the following characteristics:

4.1-To pay attention to the combination of social demand and curriculum

Every course reform in Harvard University has a strong mass base. From the perspective of the curriculum setting and teaching methods, the reform focuses more on the demand of the internationalization development and the needs of the social employment. From another perspective, it is the progress and development of the society that promotes the improvement of the curriculum system in Harvard University curriculum reform, which can meet the students' interests in learning, make a strong learning atmosphere and fit the needs of the society to cultivate the talents. As we all know, the satisfaction of employers to graduates, a standard in USNEWS University ranking in the United States, is an important index in the undergraduate reform of Harvard University. Seen from this index, Harvard University can be regarded as the world first-class university and get a great achievement in the cultivation of talents in society, which can also verify the close links between curriculum and social needs in the course set in this undergraduate courses reform.

4.2-To focus on the integration of general education and professional knowledge learning

Harvard University gradually achieved the division and integration of general education and professional knowledge in the process of continuous improvement and development (William Clyde Devine, 1965). Although there always exists some controversy, both two kinds of education have become perfect and developed well. For example, in 1975, Conant, the 23rd president in Harvard University, advocates general education to cultivate the all-round development talents. In 1976, Roosevelt, the dean of the liberal arts school at Harvard University, began to establish a set of core curriculum system on the undergraduate reform. After a round of strategic reform in the curriculum set, Harvard University gradually achieves the division and integration between the general and professional courses.

4.3-To focus on the development of students' interests and the training of basic skills

The setting on the elective courses and core courses can meet the needs of the students' diversified interests, and it also concerns the cultivation of basic skills for students to make them adjust the society well. The starting point of the core curriculum is to strengthen the basic knowledge foundation, which pays more attention to the study of A courses. At the same time, the two courses system setting linked closely. The undergraduate curriculum reform at Harvard University also pays attention to the correlation between the two kinds of courses setting and the integration of knowledge (Whitfield, Stephen J, 2010). However, compared with Chinese university curriculum setting, Harvard University students need not select the courses after entering the university. Instead, they can choose their interested courses to improve their academic skills according to their characteristics and specialized area.

4.4-To pay attention to the unity of curriculum goal and appraisal

Although the setting of the course goal is distinct at different times in Harvard University, it still keeps a close connection with curriculum evaluation and a high degree of unity. Eliot, who shoulder the duty as a headmaster in 1869, proposed the principal target of the cultivation talents "character and piety" as the center in the reform, which can eventually cultivate the onlookers and critics in real life. More importantly,

the university emphasizes that the students should take responsibility for the future development of Harvard University, commitment to the teachers and students to achieve the desired goal. On curriculum evaluation, Harvard University has never judged the students' ability only from the grades in the several tests, but from the students' evaluation on the course and teachers' teaching as the dominant evaluation standard, such as the evaluation of teaching skills, knowledge acquisition, and holistic evaluation, etc. Through unifying the curriculum goal and evaluation, we can provide the feedback to the teachers, the improvement of teaching skills and set a more personalized goal to meet the needs of the students' development.

5-Enlightenment

5.1-To inspire students' interest and paying attention to the setting of elective system and management

Compared with the diversity of the elective system in Harvard University, many colleges and universities in China opened elective courses, which did not attract the attention of teachers and students, and the majority courses are compulsory courses. Even in some of the 985 colleges and universities, they did not put the elective system and compulsory courses to the equally important position from the angle of the credit system. Therefore, many students have an indifferent attitude to the elective courses; some teachers also have the one-sided view that students only have to learn the compulsory courses with full credits. On the setting of elective courses and compulsory courses, administrators and scholars did not pay enough attention, so the curriculum management presents a chaotic situation in general. Therefore, in the aspect of curriculum setting, schools should pay more attention to students' all-round development. The development of the students should put in the first place (The Core Curriculum, 2010).

5.2-To meet the need of social development and pay attention to systematics of professional and basic knowledge

In the curriculum setting of university undergraduate course education, there is often too much emphasis on professional knowledge or basic knowledge learning, but ignore the development of other courses. Even in some colleges and universities, the two aspects are completely independent, which result in the lack of systematics between knowledge when teaching books are compiled. At the same time, the curriculum setting should not only meet the needs of students' learning, and scientific research should start from the social demand, in order to strengthen the fitness of subject knowledge and social demand. College courses should follow the basic rule of curriculum design. At the same time, they should adapt to the development of our society. Thirdly, emphasizing the establishment of "third class" and respecting the students' development of individuality.

Harvard University pays more attention to students "third class" - campus activities playing a positive role in students learning knowledge and creative thinking in the curriculum reforms in the 21st century. The extracurricular activities in Harvard University provide the platform for the students to show their excellence according to their characteristics. School leaders and teachers should actively encourage and support the establishment of student associations, which fully respect students' development of personality. Curriculum reform should have a clear guiding ideology and combined with the requirement of international and era development. Presidents of Harvard University have their guiding ideology in the curriculum reform, for example, after the first elective system established by President Eliot, the next director Lowell advocate the elective system completely, to rebuild free education and cultivate the

comprehensive development of talents. Therefore, the curriculum setting in Harvard University is also complemented to the idea of Lowell, which becomes the foundation of later courses in Harvard University. Many curriculum reforms are the result of national policies rather than the broad international vision in modern China. What's more, they lack clear guiding ideology. Therefore, the curriculum construction in the future should have a clear goal and the guiding ideology and pay attention to era development to improve the talent training mechanism (The Committee on Educational Survey of MIT, 1949).

5.3-To establish a system for periodic review of the course, and constantly updating the teaching idea

The main social forms we facing today are the world multi-polarization and economic globalization. Our society is experiencing rapid social transformation. Our curriculum reforms also have to adapt to the requirement of social development to catch up with the pace of science and technology. In the process of general education reform in Harvard University, many curriculum review reports were published which made the course revised and perfect. Therefore, it is important for the university to set up a periodic review system frequently examined the rationality of the course. Teachers also should constantly update the teaching idea according to the request of times development. Only in this way can the school curriculum full of vitality, perfected and innovated, stimulating students' interest and promoting the development of students and the improvement of teaching quality.

6. Conclusion

From the practice of Harvard undergraduate curriculum reform, we can look at the advantages and disadvantages of the teaching contents and curriculum system settings in China. At the same time, we should reflect on a series of problems existing in the undergraduate education in China on the base of unceasingly perfect and attention on undergraduate education reform in the United States. We should seek truth from facts, start from the small things, and put theory into practice. We should not only draw successful lessons from American researching universities but also consider the Chinese system and cultural differences with the United States. From China's actual conditions, we should actively explore innovation regarding teaching and curriculum settings. We also need focus on course management and the construction of the teacher's internationalization level, giving top priority to students' development, thus lay a solid theoretical and practical basis for the discipline construction and the goal of "double top" in our country.

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