

# Study on the Way of System-Transformation Colleges Forming School-Running Characteristics

Zheng Xu

Discipline and Degree Office, Dalian Jiaotong University, Dalian, P.R. China, 116028  
(E-mail:gjs@djtu.edu.cn)

**Abstract** This paper utilizes creative thinking methods to propose the “system-transformation colleges” to form discipline characteristics with industrial characteristics, as well as forming school-running characteristics with discipline characteristics. The author thinks that college characteristics are the crystallization of wisdom that the college people have constantly explored and refined. In this paper the way of “system-transformation colleges” forming characteristics is established, and the following conclusions are drawn: “system-transformation colleges” has a big variety, a large quantity and a fast development; the way of development with characteristics is the objective requirement of social and economic development, and also the strategic choice for the survival and development of “system-transformation colleges”, as well as the inevitable result of school-running diversification of higher education.

**Key words** System-transformation colleges; School-running; Characteristics; Way, Study

## 1 Introduction

Through the higher education management system reforms in 1998 and 2000, Chinese government adjusted the management system of 252 general institutions of higher education in total, including 173 undergraduate ones among which 9 ones were merged and 4 normal colleges were made out of the original range of colleges with industrial characteristics; and among the other 160 undergraduate ones, 33 ones were transferred to the management of Ministry of Education and 127 ones were transferred to the local management<sup>[1]</sup>. Nowadays, China’s social and economic development is showing a diversified trend. Chinese “system-transformation colleges” has a big variety, a large quantity and a fast development; the way of development with characteristics is the objective requirement of social and economic development on “system-transformation colleges”, and also the strategic choice for the survival and development of “system-transformation colleges”, as well as the inevitable result of school-running diversification of higher education.

Upon historical deposit, “system-transformation colleges” formed their characteristics in the discipline construction. The discipline construction faces and serves the industrial demands, and the scientific research mainly aims at the generic and critical industrial technologies, and provides strong support for the industrial scientific and technological development; through the transformation of high-tech achievements and technical consultancy, directly serve the industrial construction and development, and serve the regional society and economy based upon the industrial strength; and most of the graduates enter to the industrial enterprises and many have become the industrial leading personnel and talents. With the reform and development of education system, many former industrial colleges have been transferred to the local management, and the school management system, service origination, capital source and school-running environment have changed greatly. In such a situation, how the “system-transformation colleges” strongly strengthen the discipline construction, fully exert their advantages and characteristics and constantly improve the school-running power and level, these are new opportunities and challenges the “system-transformation colleges” are facing. This paper finds a foothold at the “system-transformation colleges”, explores that such colleges take advantage of industrial characteristics, adjust the pattern of disciplines, establish advantageous characteristic disciplines, solve significant problems in local social and economic development and in the industry, form school-running characteristics with discipline characteristics, and realize the constant improvement of ability and level of talents cultivation, scientific research and serving the society.

## 2 Overview of Study

“System-transformation colleges” refer to those colleges which were previously under the management of Chinese central ministries and commissions, and were transferred to the local management or the system that “central-local joint construction, and local management dominating” after the management system reform such as “joint construction, adjustment, cooperation and merge”<sup>[2]</sup>.

“System-transformation colleges” are unique to China which carried out higher education system reform, and other countries have no such a system. Therefore, although the foreign scholars are very interest in it and hold that this is an important action taken in Chinese higher education system reform, they haven’t carried out any deep theoretical research or formed any research achievements.

Domestic study on “system-transformation colleges” is generally divided into two classifications. One classification is the study on the system-transformation colleges under central ministries and commissions, and the other classification is the study on the local system-transformation colleges.

### **2.1 Study on system-transformation colleges under central ministries and commissions**

This paper is a part of research findings of the key subject (B2-52) of 2009 in the Education Scientific Planning of Liaoning Province, that is, Study on the Way of Local System-transformation Colleges Forming School-running Characteristics with Discipline Characteristics.

There are few papers about special study on the system-transformation colleges transferred from central ministries and commissions to the system of “local management” or “central-local joint construction, and local management dominating”. In 2003, the paper with the title of “Exploration and Practice in Education and Teaching of System-transformation Colleges” (Chinese Geological Education, 2003.4) expounds the practice and experience summary about the development way of system-transformation colleges. In 2006, Study on Development Strategies of System-transformation Colleges written by Chen Wenbo systemically and all round researches the present situation and development strategies of system-transformation colleges. In 2007, through theoretical analysis, empirical study and practice summary, the subject Study on How the System-transformation Colleges Establish the Mechanism Actively Serving Local Economic Construction (Project No.: K000001520) systemically summarizes the problems to be studied and solved in the process that the system-transformation colleges establish the mechanism actively serving local economic construction, and definitely proposes the new thoughts that Jiangsu University of Science and Technology accelerates construction and development after system transformation.

### **2.2 Study on local system-transformation colleges**

Most of the “system-transformation” colleges are local ones, and the domestic studies on system-transformation colleges just started with local colleges. In 21<sup>st</sup> century, “local colleges” entered to the visual field of scholars and experts independently and became the focus of studies gradually. Subsequently the individualized studies were initiated. The main visual angles and contents of studies are as follows: (1) Studies on the location advantages of local colleges; (2) Concepts and positioning of local colleges; (3) Studies on characteristics, particularity and region of local colleges; (4) Studies on development strategies of local colleges; (5) Macro studies on the thoughts of discipline construction of local colleges; (6) Talents cultivation of local colleges; (7) Talents team construction of local colleges; (8) Studies on the technological development of local colleges; (9) Development of industry-university-research (IUR) of local colleges; (10) Base construction of local colleges; (11) Way of development with characteristics of local colleges.

## **3 Development Strategies for Characteristic School-Running of System-Transformation Colleges**

College characteristics are the crystallization of wisdom that the college people have constantly explored and refined. Characteristic is not only a means by which the college avoids survival crisis, but also the reflection of value rationality which is of greatest importance for college development. Burton R. Clark said that: When general depression happens, those colleges without characteristics have no special rights on resources except their fixed positions in the appropriation budget. A college which may be substituted mutually with any other college may be cut off or auctioned in the case of bankruptcy by those officers responsible for reducing budget. Perhaps all the public authorities are likely think highly of those colleges running with characteristics, rather than those always satisfied with current situation. There are many reasons on which the timid public colleges avoid being ordinary but endeavor to show their uniqueness in specific quality and service and relationship with external support groups<sup>[3]</sup>. College characteristics are the relatively permanent and stable special or obvious development mode formed in long term development, and the unique and obvious features universally recognized by the society. It is the indispensable life force for the survival and development of a college, and also the strength of a college. For the “system-transformation colleges”, characteristic development is the requisite strategic choice for the survival of severe competition.

In the early 1980s, Prof Heinz Wehrich from University of San Francisco put forward SWOT analysis method, in which “S” means strength; “W” means weakness; “O” means opportunity; and “T” means threat. As a whole, SWOT may be divided into two parts. One part is SW which is mainly applicable to the analysis of internal conditions; and the other part is OT which is mainly applicable to the analysis of external conditions. With the development of higher education and the constant progress of the society, especially the change of subordinate relationship of “system-transformation colleges”, how the “system-transformation colleges” overcome their weakness and exert their strength to win in the competition and find a way suitable for their development, this is the key of success.

### **3.1 SW analysis**

#### **3.1.1 S analysis**

During the growth and development together with China’s relevant industries and in the long process of cultivating industrial talents and carrying out industrial research, “system-transformation colleges” have formed obvious school-running characteristics and unique discipline strength and established relatively concentrated discipline system with industrial characteristics; they are the main bases cultivating high-level industrial talents, and most graduates have been the industrial management backbone and technical backbone, and also the senior industrial professional talents; teachers have solid industrial background and feelings, and they well understand the industrial production practice and accumulate rich research experience and strong technical skills in solving problems; their scientific research mainly focuses on and serves the industrial development. They are the important bases for the innovation and transfer of industrial generic technology and the transformation of technological achievements, which play an important role in promoting the industrial technological progress and industrial structure optimization and updating.

#### **3.1.2 W analysis**

In the “system-transformation colleges”, the discipline distribution is relative concentrated; the basic theory disciplines are weak; the special disciplines lack the support of adjacent disciplines; and the interdisciplinary integration is insufficient; and the former competent department of industry gives less and less guide and support in the talents cultivation, technological innovation and funds input to the “system-transformation colleges”, and the channel and mechanism for the communications between the college and the former competent department of industry are weakened.

### **3.2 OT analysis**

#### **3.2.1 O analysis**

China’s industrialization construction is in a critical period of rapid development. Large scale industrialization construction needs the breakthroughs of a series of critical industrial techniques, which needs the technical and HR support by the “system-transformation colleges” with obvious industrial characteristics and strength in characteristic disciplines; In “985 Program” Phase II, the Ministry of Education increased some agriculture and forestry colleges, and then increased some geology, mines and petroleum colleges in Phase III. The state paid much attention to the industrial colleges, and the Ministry of Education, National Development and Reform Commission, Ministry of Finance, Personnel Department, Ministry of Science and Technology and the State-owned Assets Supervision and Administration Commission jointly issued the “Opinions on Further Strengthening the Cultivation of Short Talents in National Key Fields”<sup>[4]</sup> and required to give priority to support the cultivation of short talents for the key fields of public welfare, basic research and frontline technology, and the newly rising industries as well, such as agriculture, forestry, water conservancy, meteorology, geology, mines, petroleum and nature gas, nuclear industry, software, microelectronics, cartoon and animation, modern service industry and so on. The state proposed establishing the technical innovation system, but presently most domestic enterprises are weak in technical innovation. In the meantime, the former industrial research institutes were changed to enterprises, which weakened their capacity in industrial research. However, “system-transformation colleges” are the important carrier and platform of industrial originality innovation, technical transfer and achievements transformation, which play an irreplaceable role in the construction of industrial innovation ability and industrial structure optimization and updating. Therefore, the construction of national innovation system provides a valuable opportunity for the “system-transformation colleges”.

#### **3.2.2 T analysis**

In most “system-transformation colleges”, disciplines are less, and the disciplines in science, arts and management are weak, which are disadvantageous to form new disciplines or cultivate students’ integrated quality; and also influences student source, teaching staff introduction, research project and

special construction project. Because of the industrial background and characteristics, the combination degree of discipline and scientific research of “system-transformation colleges” with the local economy and social development is lower, and they are less involved in the local economy and social development<sup>[5]</sup>.

Compared with the top colleges, the “system-transformation colleges” are different in development foundation, resources condition and problems they face in the reform and development. Therefore, they differ greatly in the education type, level, scale and emphasis. This requires the “system-transformation colleges” adapting to the needs with their characteristics and finding a new starting point for their development and improvement.

#### 4 “System-Transformation Colleges” Form Discipline Characteristics with Industrial Characteristics, as well as School-Running Characteristics with Discipline Characteristics

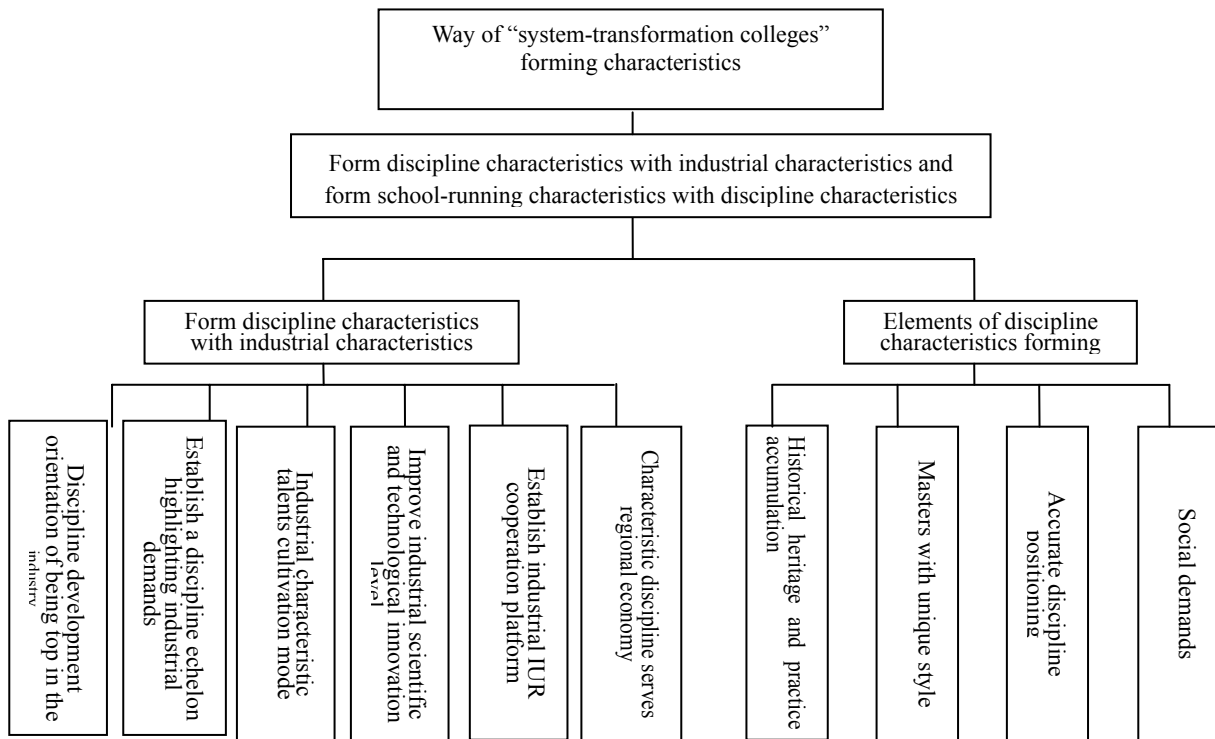


Figure 1 Way of System-Transformation Colleges Forming Characteristics

Form discipline characteristics with industrial characteristics and form school-running characteristics with discipline characteristics, which is an effective way of characteristic school-running of “system-transformation colleges”. The college actually is an academic organization based upon disciplines, and the competition among colleges actually is the competition among disciplines. As the specific undertaker of talents cultivation, scientific research and social service, the discipline supports the college, and its level has great influence on the quality and benefit of school running and decides its service ability and level.

The advantageous discipline of a college is just the characteristic of this college. The college develops some key disciplines according to its unique strength and enables them to be the advantageous disciplines, and takes the lead to make obvious achievements for the social development in the field of its advantageous disciplines. This should be an important point for the college to form school-running characteristics.

##### 4.1 Factors of forming discipline characteristics

###### 4.1.1 Historical heritage and practice accumulation form the characteristic discipline

The discipline characteristics are formed based upon its historical culture, academic tradition and

school conditions. Through the long-term development, a discipline accumulates high academic research and research achievements, forms the system rules, thoughts, operation mode and behaving habits, and finally forms the composite force to build the academic peak of certain discipline and form the discipline characteristics.

#### 4.1.2 Masters with unique style forms the characteristic discipline

Masters in the college will have important influence on the formation of school-running characteristics. The former president of Tsinghua University, Mei Yiqi, once said: College is the name of masters instead of buildings. The college is an academic organization constructed based upon disciplines, and all its academy activities are carried out by humans. The academic achievement of top figures is an important and obvious mark to evaluate its discipline level. The excellent academic achievement of academic masters in the discipline-oriented research can enable this discipline to be eminent and irreplaceable, thus the discipline characteristics are formed.

#### 4.1.3 Accurate discipline positioning promotes the formation of characteristic discipline

Positioning is to position the object. In general circumstances, each organization knows its object, but doesn't know where the object is. So does the discipline. Each discipline knows that it should develop, but the keys are how to develop, which discipline should develop, which level it should develop at and which level it should develop to. Accurate scientific positioning determines the disciplines under key development and the keys of discipline development, as well as the disciplines matching and supporting them. It fixes the mode, method and degree of resources allocation, promote the advantageous development of disciplines and facilitate the formation of discipline characteristics.

#### 4.1.4 The social demands promotes the formation of characteristic discipline

The social demands supplies unexhausted power for the discipline development. A large amount of research subjects, production needs or HR demands boost the long-term development of discipline and the formation of characteristic discipline when it meets the national, regional and social needs. For example, the science & technology, industry or field under the national key support and development always can drive the rapid development of relevant disciplines, and even promote the appearance of a new discipline. While undertaking the national, local and social urgent research projects and solving actual problems, the college constantly finishes the accumulation of high-level research achievements and enable a discipline to reach a high level of development, and form the unique strengthen and characteristics.

### **4.2 System-transformation colleges form discipline characteristics with industrial characteristics**

In the discipline construction, the system-transformation colleges should follow the discipline development rules and fix the main objectives, implementation plans, steps and measures in a long term according to the social economic development, industrial construction demands, as well as its present conditions, strength and characteristics.

#### 4.2.1 Discipline development orientation of being top in the industry

In the discipline pattern, shoulder the task of serving industries, maintain and develop the strength of those irreplaceable disciplines facing industrial demands. Constantly strengthen the construction of existing disciplines conforming to industrial demands, fully exert the strength and characteristics of industry-oriented disciplines, endeavor to strengthen and extend them, and ensure that their integrated power and competitive power are leading in the industry, and even at home and abroad; according to industrial construction and social economic and technological development, constantly adjust the discipline system, actively explore and promote the appearance of new disciplines guiding industrial development, promote the crossing, penetration and integration of relevant disciplines based upon existing characteristic discipline orientation, and generate new characteristic discipline orientation; according to industrial construction and social economic and technological development, establish new discipline orientation, always grasp the change of talents demands in industrial construction and social economic and technological development and the frontline information in scientific field, improve the forward-looking of discipline arrangement, forecast to establish new discipline orientation, and further improve its ability of serving the industry, national economic construction and social development; according to the diversified talents cultivation demands, actively strengthen the construction of fundamental disciplines and disciplines in humanism, society and management, and form the symbiotic ecology of disciplines so as to cultivate high-level competent industrial leading talents.

#### 4.2.2 Establish a discipline echelon highlighting industrial demands

With regard to the teaching staff construction in the "system-transformation colleges", guide by industrial demands, actively focus on orientation of characteristic disciplines, and establish a innovative

team led by famous teachers; strengthen the education of industrial background and training of industrial experiences for the teachers, especially cultivate young teachers' understanding of industry, and encourage teachers to practice in the production frontline so as to further improve their practice ability and research ability.

#### 4.2.3 Explore diversified talents cultivation modes with industrial characteristics

The talents cultivation of “system-transformation colleges” should focus on the cultivation of industrial elite, emphasize the harmonious development of students' knowledge, ability and quality, and devote to cultivating innovative talents for revitalizing national industries. For the professional industrial knowledge is the application of general theoretical knowledge in industrial production and scientific research, the cultivation mode should not only enable the students to learn basic theoretical knowledge, but also understand the application objective and prospect, and also enable them to understand the nature and connotation of knowledge in the practice. Therefore, intensify the IUR cooperation education so as to enable the students to practice in production frontline and better understand the social or industrial demands. At the same time, invite some professionals to give lectures to broaden students' vision and cultivate their abilities of analyzing and solving problems. Combine the teaching with research, encourage students to carry out innovative activities according to the industrial practice and cultivate the industrial practice innovative ability. In the meantime, combine science with humanism and attach importance to both the students' scientific quality and humanistic quality, so as to cultivate the high-quality industrial elite.

#### 4.2.4 Focus on industrial construction demands, and improve scientific and technological innovation level

Scientific research is the foundation for the college to cultivate talents and serve colleges. “System-transformation colleges” should further improve the scientific and technological innovation level. Focusing on the urgent industrial demands, carry out the research of generic and critical technologies, and provide strong intellectual support for the industrial construction and development. Focusing on the industrial scientific and technological demands, strongly strengthen the construction of industrial platform, combine the fundamental research with the generic technological research, combine the professional technological research with the pilot project, and combine the pilot project with achievements promotion. Aim at the frontline of industrial technological development, be the center of industrial fundamental research and generic technological research and development and the large pilot base, and be an important carrier and platform of industrial originality innovation, technical innovation, product development and achievements transformation.

#### 4.2.5 Establish the platform for IUR cooperation in the industrial field

IUR cooperation is an inevitable way for “system-transformation colleges” to better serve the society, and also an important aspect in the discipline construction. The industry transferred schools shall form the IUR alliance with the industry for strength complementation, profit and risk share and common development. Endeavor to establish the IUR cooperation with industry as subject, the market as guide, the project as carrier and the asset as tie, and characteristic of being long-term, intensive and market-oriented. Start with solving the major difficult problems in technical innovation, and provide technical and HR resources for industrial construction and development. Endeavor to form the multi-orientation, multi-level and multi-field cooperation pattern so as to enable the schools to gain support from the industry and society while serving the industrial development.

#### 4.2.6 Serve the regional economy with industrial characteristic discipline

With the change of subordinate relationship, on one hand, the “system-transformation colleges” need the policy support and financial input of local government; on the other hand, the local economic construction and social development need the HR and technical support of colleges. Compared with some famous colleges, the “system-transformation colleges” still have a big gap in terms of research strength, staff level and social influence. For this reason, to carry out social service, the “system-transformation colleges” must fully exert the industrial strength, strengthen the characteristics of industry-oriented discipline, integrate in the local economic social development and boost the regional social development.

## 5 Conclusion

Compared with the top colleges, the “system-transformation colleges” are different in development basis, resources condition and problems they face in the reform and development. Therefore, they differ greatly in the education type, level, scale and emphasis. This requires the “system-transformation

colleges” adapting to the needs with their characteristics and finding a new starting point for their development and improvement. The college characteristics are the crystallization of wisdom that the college people have constantly explored and refined. Characteristic is not only a means by which the college avoids survival crisis, but also the reflection of value rationality which is of greatest importance for college development. The college is an organization establishing system according to disciplines, and a discipline characteristic is the core of college running. The “system-transformation colleges” form discipline characteristics with industrial characteristics and form school-running characteristics with discipline characteristics, and realize the constant improvement of ability and level of talents cultivation, scientific research and serving the society. The way of development with characteristics is the requisite strategic choice for the survival and development of “system-transformation colleges” in severe competition.

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