

The Research on Innovation System for College Talent Cultivation*

RECHERCHE SUR LE SYSTÈME D'INNOVATION POUR LA FORMATION DES TALENT DANS LES UNIVERSITÉS¹

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Abstract: This paper analyzes the status of talent cultivation model in college and the society demands of the quality of talent in our country. Based on it, new ideas and directions of college talent cultivation are proposed. By establishing a talent cultivation innovation system which meets the needs of the society development, we can get the order between the methods and directions of talent cultivation by identifying the importance of them. This study helps to reform the concept of college education, to improve the level and quality of teaching.

Key words: College; Talent cultivation; Innovation system

Resumé: Cet article analyse le statut du modèle de la formation des talents dans les universités et les exigences sur la qualité des talents de la société dans notre pays. Sur cette base, de nouvelles idées et approches de la formation des talents dans les universités sont proposées. En établissant un système d'innovation pour la formation des talents qui répond aux besoins du développement de la société, nous pouvons obtenir un ordre des méthodes et des directions de la formation des talents en identifiant leur importance. Cette étude contribue à la réforme de la notion de l'enseignement universitaire, à fin d'améliorer le niveau et la qualité de l'enseignement.

Mots-clés: université; formation des talents; système d'innovation

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1. ANALYSIS FOR THE CURRENT SITUATION OF COLLEGE TALENT CULTIVATION MODEL

With the deepening of economic globalization, human resources have become the most important strategic resources. On the other hand, the college talent cultivation must adapt itself to the development of new road to industrialization and industrial restructuring. This puts forward new requirement to the college talent cultivation of China, bringing opportunities as well as challenges. Therefore, the current urgent need of education are analyzing the college talent cultivation model, clearing the existing problems, and innovating the cultivation model to meet the industrial structure adjustment and social development needs. Although through many years reform and development, the college talent cultivation has developed, there are still many defects due to the impact of the traditional education , which mainly reflects in the following:

(1) Talent cultivation model orientation. The question is the first related to the talent cultivation model. There are no certain rules to follow about. Reform can only find in practice to establish the model of running which adapts to the society need. Due to the gap of between colleges is very big, leading to the result that many colleges can not find the right talent cultivation model, there are deficiencies in the quality of the students cultivation.

(2) The quality of talent cultivation. The quality of talent cultivation is the core of college education, as well as, the base for the college sustainable development. Now several years of continuous enrollment expansion, it produced a greater negative impact on quality of talent cultivation. College enrollment expansion has a great bad impact on the quality of talent cultivation in recent years. Firstly, College enrollment expansion will inevitably lead to a decline in the quality of the student. Then it will accelerate the process of popularization of college education in fact. The expansion population of college students will inevitably lead to the diversification of education , which will Increase the difficulty of improving the quality. On the other hand, the education resources are serious shortage. So much so that the improvement of the quality of education is facing a dilemma.

(3) Talent cultivation structure. For a long time, our talent cultivation model is exam-oriented, the characteristics of it are teaching for examination and studying for examination, which is lack of students' specialty and potential development and cultivation of students' innovative and practical ability. The subjects of professional are too stiff. The problem is no Compatibility with each other enough, emphasis on academic-based and professional talents is too much, that is resulting in strong professional knowledge the students have but their practice is poor. With the upgrading of industrial structure the society need, a large number of complex model talents are needed, however our talent can not adapt to it.

2. THE REQUIREMENTS OF THE TALENT QUALITY IN THE CURRENT SOCIETY

Party Congress report refers that we must persist in information to drive industrialization, industrialization to promote information technology, including a high technological content, good economic returns, low resources consumption, little environmental pollution. Industrial restructuring caused by changes in the labor market, puts forward new requirements college talent cultivation: Firstly, further enhancing the awareness of ideological education, updating educational ideas that broadens the educational ideas and improves innovation. We must reform the examination system, establish innovative mechanisms and incentives. It is getting the optimization of teaching methods, and cultivating the creative thinking, paying attention to the cultivation of moral qualities, and establishing a high degree of social responsibility.

In order to adapt to the development of world, senior business talent must possess some scientific basis with the depth and breadth of knowledge, and also have some knowledge of the professional hands-on ability to solve practical problems, and have the ability to adjust to the economic environment, social

environment, public policy, interpersonal relationships, ethics and natural environment. Specific is including.

① Generalists who have reasonable knowledge structure.

Sound operation and sustainable development are primary requirements of society. It's a prominent feature in modern society that has a high degree of labor division. Social division of labor at every step brings even higher on the integration requirements. So the multi-functional generalists needed realize communication with different division of labor and different subject.

② Innovative talents who have creative ability

Creative talent refers that the talent has a creative spirit and creative with entrepreneurial spirit and dauntless pioneering spirit, has a strong thirst for knowledge and insatiable desire to create never-ending, has a strong sense of competition and a strong creative talents, but at the same time has personality with the quality and high emotion. Innovation is the driving force behind social development.

③ Strong personality and good manner

A strong personality and good manner can promote mental health of individuals, on the other hand it has its own special role, Firstly, it regulates the relationship between regulation and better integration in society; secondly, it helps to maintain and enhance the reputation of individuals and enterprise; Third, it promotes the development of industry which people are engaged in; Forth, it helps to improve the moral level of society as a whole.

It can be seen that our talent cultivation by the existing college cultivation model can not meet society needs, it requires college talent cultivation system to innovate, and then improve continuously to improve the quality of talents to meet the demand of The Times

2. THE TALENT CULTIVATION INNOVATION SYSTEM OF UNIVERSITIES

In the era of knowledge economy, this innovation meets the needs of higher education adapting itself to the economic globalization and modernization. It is also an adaptive transformation for the needs of their development. That means that the human creative achievements should be constantly applied to the education activity. The talent cultivation innovation system in universities is the comprehensive and thorough innovation in which we should explore the concept, system, activities, contents and method of education constantly. With the arrival of knowledge-based economy, huge and pressing demands for the whole education are proposed by human beings, deepening the reform and innovation of education is the historic mission of modern Chinese education and the urgent task of today's education practice.

3.1 Explore new talents cultivation model

3.1.1 The professional course offered must be the course mixture of liberal arts, natural and engineering sciences

The talents who have complex, innovative, skilled and international are much needed in nowadays. So cross-lessons between liberal arts, natural and engineering should be setting up. We also need encourage students to select courses which cross major, cross department and even cross-university, Then the current professional system may be reformed, the mutual penetration and cross-disciplinary can be achieved, the integration of humanities education and science education may come true. University education should provide the talents not only with professional knowledge, professional skills, but also with humanism and scientific literacy. Only in that way will the talents be the ones who have a solid theoretical foundation, a broad range of knowledge, a strong comprehensive ability and a better integrated humanistic quality.

3.1.2 Adjust the structure of academic subject and establish professional system which has its own characteristics and advantage

We should not only maintain original basic disciplines as before, but also initiatively meet the strategic adjustment of the economic structure, the needs of job market and enhance the international competitiveness. In addition, the higher disciplines and talent cultivation structure which adapt to local economic and social development must be formed up.

3.1.3 Strengthen teaching practice and focus on the cultivation of talents' ability

At present, college professional curriculum, teaching contents and teaching methods all focus on enhancing the ability of using knowledge to solve and analyze problems. As the students master basic theory and a more adequate system of specialize knowledge, we need take scientific research cultivation and practice seriously. With the teaching ideas of thick foundation, broad caliber, superb skill and emphasis on practice and innovation, we must enhance flexibility of course and realize the open-flexible teaching plan.

3.2 The establishment of high school talent cultivating innovation system

If the talent cultivation wants to fully exert innovation function. There are some necessary factors which can improve the efficiency and quality of the Social service and guiding. These factors consist of constructing the corresponding integrated systems of matter and energy. That system is called the talent cultivation innovation system. The whole system can be divided into several levels including the level of concept and theory, the level of matter and technology, the level of organization and system, the level of teachers and administrators. Essentially, talent cultivation innovation system is a reform of profound education and an evolution of the internal structure of the education system. So the system must obey the basic principles of system evolution. From different perspectives, performances of talent cultivation innovation system includes different aspects. The innovation of educational content which contains the methods and means of education, the innovation of evaluation system and methods in teaching. The innovation of education organization mainly embodies in teachers' quality and requirements and teaching management system innovation. The last one is the innovation of education technology.

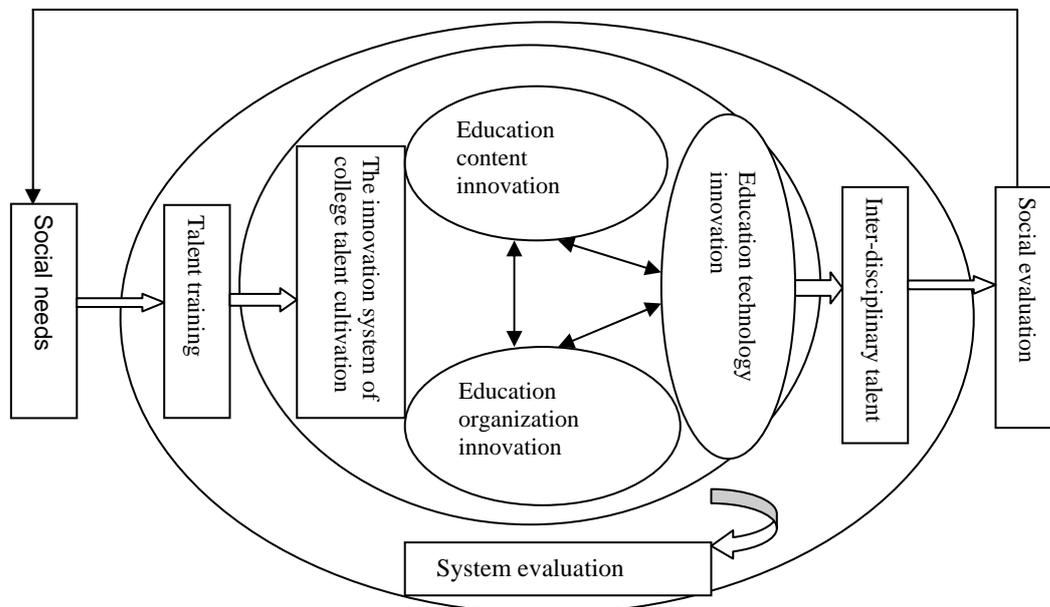


Figure 1: the innovation system of college talent cultivation

So we can draw the conclusion that: high college talent cultivation innovation system (Figure 1) includes the innovation of educational content, the innovation of educational organization, and the innovation of educational technology. The three subsystems which are interrelated, influenced, interacted and coordinated by each other may constitute a unified large system with the whole community system.

(1) Education organization innovation. Organization is fundamental guarantee to achieve a goal, and education innovation system aims at providing different high-level talents, offering various education cultivation and spreading knowledge or other services for society and the development of economy.

(2) Education content innovation. It mainly refers to the update and development for the education content selection and identification. According to the requirement of times development, we should build and offer a new courses, new profession, new curriculum and add new knowledge. It also includes exploration and development for the structure and combination proportions of education teaching content in different stages. Besides, the exploration and development for science, practical abilities, utility and acceptability of education teaching content surely are involved.

(3) Education technology innovation. It mainly refers to the innovation of adopting new technology and new communication technology, including the innovation of application of modern technology in the process of education development.

Mechanism of the running system. Due to the adjustment of industrial structure and the development of new road to industrialization, society needs more compound talents than simple professional talents, that is, the requirement for talents have changed. So the college should explore new talents cultivation model and build up talent cultivation innovation system to respond the change of social demands. College talent cultivation innovation system includes the innovation of educational content, the innovation of educational organization, and the innovation of educational technology. The three subsystems are interrelated, influenced, interacted and coordinated by each other. On the one hand, the system itself needs a performance appraisal to improve the cultivation system constantly; On the other hand, society will eventually appraise the value of talents who are trained in the new cultivation innovation system, then there will be some new requirements for talent, so another cultivation innovation system should be built to meet new requirements, In this repeated cycles, the talents cultivation system will be optimized continuously, besides , the needs of society for talents can also be satisfied.

4. EVALUATIONS OF TALENT CULTIVATION INNOVATION SYSTEM

These evaluations are management activities in which we can measure and evaluate all the subsystem of talents cultivation innovation system by using a series of advanced scientific means and methods. The most important thing is evaluation of talents who are trained by this system. The essence of talent management is a continuous development and a process where we can use talents reasonably. Only when have adequate information of someone can we give him the best position, Evaluation is a basic work of management, a precondition to selecting and making full use of talents, a way to helping and cultivation talents. During the period of industrial restructuring, it is of great significance to explore evaluation methods for higher school talent cultivating innovation system actively.

4.1 Establishment of evaluation index system

(1) Index design (figure 2). Select and bring in some representative projects which can reflect the common features of cultivation objectives. Those actions must be combined with human resources development theory.

(2) System construction. The evaluation index system is a group of independent but interrelated organic combination of indexes which can express the requirements of evaluation; we can say that it is a system. This paper regards the evaluation of students as a problem which decided by multi criteria. The decision-making has but one target—determining the personnel cultivation results. Resulting in a more

realistic reflection, the evaluation results cannot be responded by a simple index and scores, but combinatorial optimized, logical analyzed and synthetically judged by corresponding scores and indexes which have more attributes.

This paper uses AHP—Analytic Hierarchy Process, to evaluate the system design: According to the organic link and quantitative relationship among the indicators , Systematically combinatorial optimization, logic analysis and the comprehensive judgment will come true , then a distinct index system structure finally will be formed by layers of decomposition.

In this paper, the evaluation index system is divided into three levels.

The first layer is the target layer A - University System of Innovation Cultivation evaluation results; the second layer B is a layer of criteria, including education organizations innovations (B1), the content of education innovation (B2), educational technology innovation (B3); the third layer index layer C is a hierarchical structure model analysis system. From high to low in the model, this layer can be divided into the target level A, the criterion level B and the index level C, while W means the corresponding weights of index elements on last layer.

Weights determination. Weight is that people, according to the role and the importance of the evaluation index system, make a difference among these indicators to quantify qualitative estimate by rationing.

4.2 The specific process of AHP in evaluating talents cultivation innovation system.

Firstly, we ought to invite some education experts to give the scores of every subsystem, calculate the weight of each subsystem(X) and the weight of each index (w).

Secondly, Record and evaluate the daily management of college, there nearly three parts comprising the records and evaluations, and the first is teachers' attendance, papers and wage system; the second is students' achievement, graduation situation and employment situation; the last one is to evaluate and record practical laboratory equipment to and the use of online education. Ultimately, according to data and the specific situation, experts give the scores named M.

Thirdly, Calculate the scores of each index and layer, using the weights and specific scores. Finally, conclude the total score of the talent cultivation innovation system. Then we can evaluate the result by rating scale---- the qualified score is 60—70, the good score is 76—85, the outstanding score is 85 or more.

The specific formula are;

The score of class C is $\alpha = \omega \bullet M$;

$$\text{The score of class B is: } \sum_{i=1}^9 \alpha_{1i} = \beta_1 \quad ; \quad \sum_{l=1}^4 \alpha_{2l} = \beta_2 \quad ; \quad \sum_{k=1}^3 \alpha_{3k} = \beta_3$$

The score of class A is : $\beta \bullet \chi = \varepsilon$

$$\text{The total score is : } \sum_{m=1}^3 \beta_m \bullet \chi_m = \delta$$

5 . CASE ANALYSES

The paper appraises application of the talents cultivation innovation system in Liaoning shihua University by the means of Analytic Hierarchy Process (AHP)(table 1):

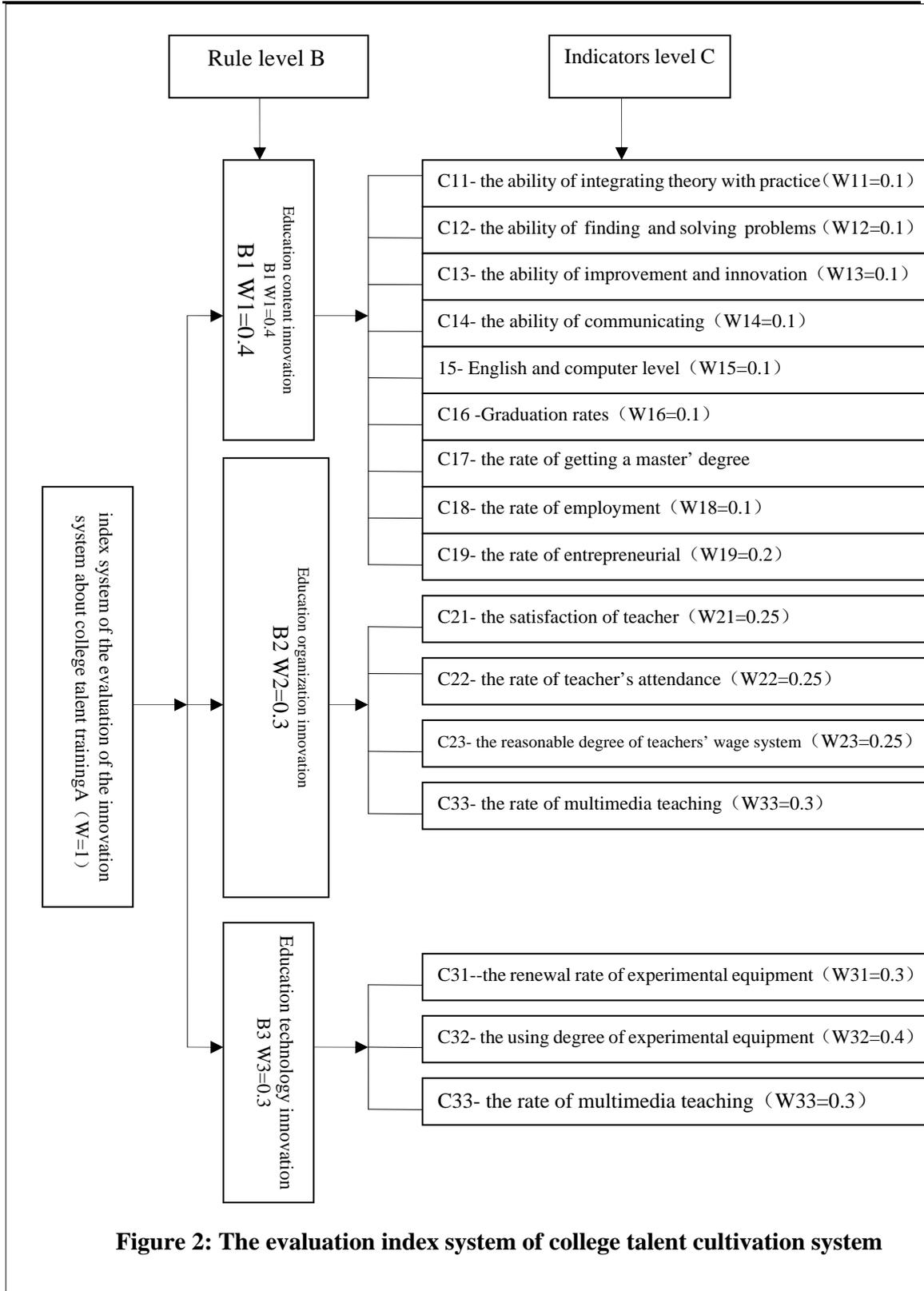


Figure 2: The evaluation index system of college talent cultivation system

Table1: Evaluation form of talent cultivation system of Liaoning shihua University

Index set		the weight of class C	the weight of class B	Evaluation score	The score of class C	The score of class B	The score of class A	The total score
Education content innovation	C11- the ability of integrating theory with practice	W11 =0.1	$\chi_1 = 0.4$	M11 =80	8	$\beta_1 = 78$	$\varepsilon_1 = 31.2$	$\delta = 78$
	C12- the ability of finding and solving problems	W12 =0.1		M12 =70	7			
	C13- the ability of improvement and innovation	W13 =0.1		M13 =80	8			
	C14- the ability of communicating	W14 =0.1		M14 =80	8			
	C15- English and computer level	W15 =0.1		M15 =80	8			
	C16- Graduation rates	W16 =0.1		M16 =80	8			
	C17- the rate of getting a master' degree	W17 =0.1		M17 =60	7			
	C18- the rate of employment	W18 =0.1		M18 =80	8			
	C19- the rate of entrepreneurial	W19 =0.2		M19 =60	12			
Education organization innovation	C21- the satisfaction of teacher	W21 =0.25	$\chi_2 = 0.3$	M21 =80	20	$\beta_2 = 80$	$\varepsilon_2 = 24$	$\delta = 78$
	C22- the rate of teacher's attendance	W22 =0.25		M22 =80	20			
	C23- the reasonable degree of teachers' wage system	W23 =0.25		M23 =80	20			
	C24- the strict degree of teachers' professional titles promotion	W24 =0.25		M24 =80	20			
Education technology innovation	C31- the renewal rate of experimental equipment	W31 =0.3	$\chi_3 = 0.3$	M31 =80	24	$\beta_3 = 76$	$\varepsilon_3 = 22.8$	$\delta = 78$
	C32- the using degree of experimental equipment	W32 =0.4		M32 =70	28			
	C33- the rate of multimedia teaching	W33 =0.3		M33 =80	24			

Obviously, this college's score is 78 points. According to the rating standard, it is good. Generally speaking, the results are pretty good; each subsystem's score is nearly 80 points, indicating high quality of this college; there are some results we cannot ignore: the good organization innovation reveals the success of teachers' management and the high quality of teachers; In addition, with regard to education contents innovation, we can see that practice skills of students are pretty good and the employment rate is high. However the proportions of students entering schools for master degree may be a little low, there are few students who carve out for a career. That implies the studying and innovative ability of students should be improved badly.

This innovative system can be used to evaluate the advantages and disadvantages of talents cultivation among colleges, similarity may be found in the comparison, but when we research the subsystems of these colleges, there would be some larger different, for example, the differences are apparent between academic college and utility-type college. So when using this model to evaluate the talents cultivation system among colleges, we should pay attention to not overall results, but the results of subsystems. Only in this way can we achieve the purpose of comparison

6. CONCLUSION

With the modulation of industrial structure and development of the new way to industrialization, a topic about China's education has arisen, that is, to foster a lot of comprehensive and compound talents who adapt themselves to the development of the era. This article analyzed the problems in China's talents cultivation system and explored the social needs, then constructed a revolutionary system for higher education. On these bases, we developed an evaluation system and method. Every college should innovates talents cultivation model according its own situation, and sets up a proper evaluating method, the new method and system must be improved constantly; finally a perfect education system may be formed. More and more talents who are trained in this system can meet the needs of development of the society .Only in this way can we achieve the goal of this innovative talents cultivation system and promote the development of the social economy.

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