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Analysis on Factors Influencing Sustainable Development of Self-study Examination of Agricultural Science Disciplines

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Abstract Based on existing problems in the course of development of self-study examination of agricultural science disciplines, this paper analyzes logical conditions for its sustainable development. Major logical conditions include requirement for free and comprehensive development of individuals; requirement for social institutional evolution and change; requirement for fairness and justice of education and development; as well as requirement for better-established organization system and higher social reputation. Finally, it presents basic measures for sustainable development of self-study examination of agricultural science disciplines, including carrying on reasonable core elements of self-study examination system, adjusting structure of discipline, improving social assistance system, and expanding service space.

Key words Self-study examination, Agricultural science disciplines, Sustainable development

1 Existing problems in self-study examination of agricultural science disciplines

Self-study higher education examination is the innovation of China's education system. With advantages of open educational forms, variety of learning types, flexible learning process, economic learning cost, and just examination and evaluation, self-study examination has built positive image among the public. Since the 1980s, over 50 million persons have taken self-study examination, and over 9 million persons have obtained college diploma or above. In 2000, the number of candidates that took self-study examination reached the peak (14 million), and it dropped to 9.5 million in 2006. Now, people worry about examinations set for agricultural science disciplines. Such disciplines as plant protection and edible fungus cultivation are cancelled, and high-efficient agricultural and agricultural extension disciplines are incorporated into agronomy discipline. Nearly no person enters for examination of horticulture and forestry disciplines. Reasons are as follows: first, enrollment expansion, school running through Sino-foreign cooperation and private capital investment in education promote diversified supply of education. Second, blind market awareness during social transformation expedites the emergence of people's short-term action for individual development. However, self-study examination fails to change accordingly, so its development gets into a difficult position.

From Fig. 1, it can be seen that number of candidates in the self-study examination of agricultural science discipline rises year by year, but it drops year by year from 2003. For now, serious bipolar problem occurs in China's higher education self-study examination of agricultural science discipline. One pole is

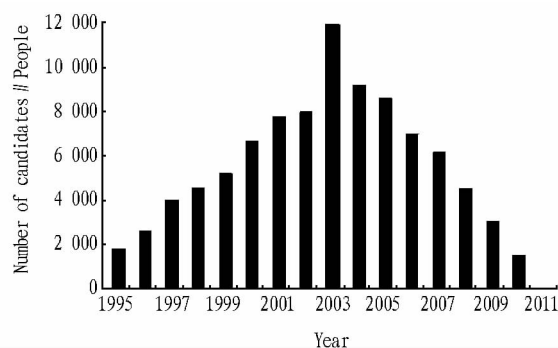


Fig. 1 Number of candidates in the self-study examination of agricultural science discipline in Hubei Province from 1995 to 2010

less new candidates and sudden drop of persons who enter for examination, and some disciplines even get cancelled. The other pole is rapid rising of various training (such as special course for gardening, animal and plant quarantine, etc.) for self-study examination established in reliance on colleges and universities. Academic circle and education circle have been discussing "whether self-study examination has completed its mission and will step down from historic stage along with reform of higher education system" [1]. Here, in my opinion, the difficulty of self-study examination is the result of reform of education system, not negation of self-study examination, and it only indicates that traditional operation model of self-study examination is not suitable for modern requirement or it ignores major aspects of self-study examination system. Therefore, analyzing core factors for sustainable development of self-study examination and making clear basic measures for maintaining sustainable development of self-study examination will play a significant role in promoting self-study examination and building the learning-oriented society.

2 Logical conditions for sustainable development of self-study examination of agricultural science disciplines

2.1 Requirement for free and comprehensive development of individuals

Historical materialists believe that ultimate goal of development of human society is free and comprehensive development of individuals. In other words, it is the integration of conformance to laws and consistence with purposes. According to Maslow's hierarchy of needs, realizing the life value is the highest-level need^[2]. Therefore, learning from books and practice is an essential requirement for realizing the above process, while open, diversified and flexible self-study examination is endowed with many advantages. China is a large agricultural country and has a large population. Currently, Chinese population has exceeded 1.3 billion, accounting for nearly 1/4 of the total population in the world, and equivalent to total population of developed countries. Now, rural population is about 768.51 million, taking up 59.47% of total population of China^[3]. According to statistics, average years of education received by rural population is only 7.6, which is equivalent to the level of junior two; among 500 million rural labor forces, about 88.00% ones have educational level up to junior middle school; those migrant workers who have received training of professional skills are less than 15.00%. From the project of popularization of nine-year compulsory education, the school attendance rate for rural 7 to 15 years old children is only 94.40%. The school attendance rate of nearly 1/2 province is only 90.00% to 95.00%. In Yunnan, Tibet and Qinghai, it is even lower than 90.00%. Dropout rate is high in some primary and junior middle schools, some even up to 10.00%. This means there will be one million new illiterate people annually and create a new generation of poverty-stricken population^[4]. Among these people, some want to improve themselves through participating in social activities or having further study. Some hope to get another opportunity to study, finally to fully realize life value. These create opportunity for development of self-study examination. The self-study examination can be called "a school without walls". It provides a platform for the common people. Besides, the self-study examination system is helpful to building learning-oriented society.

2.2 Requirement for social institutional evolution and change

New institutionalism advocates believe that people's learning process determines institutional evolution in time dimension related to economic and social change. In other words, speed of economic and social change depends on learning efficiency, while direction of economic and social change is decided by prospected return of different kinds of knowledge. Intellectual pattern of competitors determines knowledge of expectation. Intellectual pattern is knowledge framework, and its formation process is learning. Certainly, intellectual pattern can be rebuilt constantly by people with new experience. In the tide of globalization, China is faced with social transformation, recombination of various elements, and fierce competition, dynamic regulation of leaning (or specifically intellectual pattern) is inevitable requirement. However, reg-

ulation of intellectual pattern needs a learning platform, and self-study examination just has function of such platform. Take Xiangyang County of Xiangfan City in Hubei Province as an example, 450 persons passed self-study examination of agricultural science discipline in 2000. With improved comprehensive quality, some of them were selected to leaders of villages, towns or counties, and some become professional experts and leaders. Thus, on the basis of school education, self-study examination system is a helpful link.

2.3 Requirement for fairness and justice of education and development

In most countries, development right is a basic right granted to citizen, while most countries adopt the principle of "paying by persons receiving education" for higher education. This is because the return rate of higher education investment is high. If we take this return as total welfare and make the personal education expenditure lower than education cost, then the return will be divided into personal welfare and social welfare^[5]. At the present stage, higher education resources are limited and it fails to effectively solve structural conflict of human resources, then self-study examination system becomes an effective method. On one hand, education expenditure is basically consistent with education service. For example, each course takes 30 yuan and generally there are at most 15 courses for agricultural science discipline, so study costs are not high for completion of a discipline. Schools also can reduce their costs for education services through just assisting students in self-study. In addition, since self-study examination has many disciplines for students, it enhances adaptability and improves learning efficiency. In the quality aspect, self-study examination features self-study, social assistance and national examination. It emphasizes "separation of examination and education" principle. With students distributed in a scatter way, self-study examination is an effective quality assurance model and reflects authority and justice of national education examination.

2.4 Requirement for better-established organization system and higher social reputation

If the above is connotation is self-study examination system, organization system will be its extension, and social reputation is externalization of comprehensive assessment for self-study examination system. With several decades of development, self-study examination of agricultural science discipline has formed following features. First, it covers many disciplines, such as farming, cultivation, and agricultural management, etc. Second, examination management and certificate management are relatively standard. Four times of examination are organized annually. The whole country has the same time of examination, and examination paper has strict management system from issuing, printing and distribution. Third, social assistance system has preliminarily formed with colleges and universities as major subjects and wide participation of other authorized education institutions. Fourth, state, province, city (prefecture), and county (district) management system is well coordinated and highly efficient, and is the basis and organizational guarantee for sustainable development of self-study examination. As test of social reputation of self-study examination, on one hand, diploma

obtained from self-study examination has the highest acceptance among open type education (other than regular higher education). Over 20 countries (including the United States and the UK) recognize diploma obtained from self-study examination. According to survey, many students go abroad to take advanced studies through self-study examination. For instance, now three students from Huazhong Agricultural University go abroad to continue their study through self-study examination. On the other hand, in recent years, various self-study assistance class and special class have tremendous development. For example, the *Plan for Full Time Assistance Class* issued by Hubei Education Examinations Authority in 2006 includes plant science and technology, landscape, and animal and plant quarantine, etc.

3 Basic measures for sustainable development of self-study examination of agricultural science disciplines

3.1 Carry on reasonable core elements of self-study examination system to seek development through innovation

The above logical conditions for development of self-study examination have manifested several aspects of reasonable core elements of self-study examination system. This system is historic results of China's distinct system. It belongs to imposed institutional change, and mostly the induced institutional change in the course of its perfection. If specific historic conditions and environment have changed, the self-study examination system should have institutional change under the joint imposed and induced actions. During this course, we should respect spiral growth path or law of things^[6]. Therefore, self-study assistance class and special class are helpful to development of self-study examination. They will play a significant role in accumulating culture and spirit of sustainable development of self-study examination.

3.2 Regulate structure of discipline to implement modular management of disciplines With growing of conflict between structure of human resources and demand of social and economic development, original disciplinary structure and course setting are not suitable for new requirement any longer. It is required to regulate or renew structure of discipline, gradually turn talent cultivation model that takes regular higher education as standard to value cultivation of vocational qualification. Specifically, the disciplinary structure should be coordinated with social and economic development level, industrial structure, and situations of human resource supply. Disciplines should have dynamic management. Some disciplines should be perspective and adjustable properly in accordance with demands. Course setting should satisfy demands of different levels of students, take full consideration of communication between different education types and relevant disciplines, and really incorporate self-study examination into assessment of national education system. It is proposed to establish "bank of academic credit" and implement modular management, including discipline category, course combination and connection mechanism^[7]. Besides, it is required to combine education for aca-

demic qualifications and education for vocational qualification, and build "overpass" of multiple subjects in national education system, to satisfy social demand to the maximum extent.

3.3 Improve social assistance system to gradually establish open education network Social assistance is an important part of self-study examination, and also effective way for students to acquire knowledge and improve self-study examination quality. For many years, social assistance for self-study examination is weak, especially remote mountainous areas. This becomes bottleneck on sustainable development of self-study examination. Recently, self-study assistance class and special class are helpful attempts for solving the problem. Nevertheless, for numerous examination candidates, the existing assistance is far from enough. Assistance practice of colleges and universities shows that they are rich in intellectual resources, which are also willing to flow into assistance for self-study examination. Quality of such intellectual resource will be trusted by the society. It can be inferred that the essence of social assistance is the allocation of intellectual resources that suit self-study examination. Therefore, social assistance for self-study examination should take colleges and universities as subjects and take community as center. It is required to build open education network and social assistance model with wide participation of various schools, social organizations and individual citizens. Then, social assistance may have complete and substantial content, and can guarantee coordination and advance of "self-study, social assistance and national examination", and promote sustainable development of self-study examination.

3.4 Expand service space to cultivate talents for new socialist countryside construction Public and service features of education have been widely accepted, but service quality should be integration of adaptability, diversity and development. *Decisions on Deepening Educational Reform and Pushing forward Quality-oriented Education* clearly state that it is required to improve self-study examination system, establish socialized and open education network, and provide broad ways for satisfying demands of multiple level and multiple type education, to gradually perfect whole-life learning system. This is the powerful policy basis for expanding service space of self-study examination. About 75% population of China live in rural areas, so rural economic development is a fundamental issue concerning China's economic development. According to statistics^[8], among rural labor forces, 20.00% have received short-term training, 3.40% have received elementary vocational education or training, only 0.13% have received secondary vocational education, and up to 76.40% have never received any technical training. In China, there are only 0.88 million persons engaged in agricultural sci-tech popularization. Among these, 60.00% have the educational level lower than junior middle school. Besides, every one million labor force shares 16 technicians. At present, Chinese government puts forward "building new socialist countryside". In this course, farmers are major parts and knowledge of farmers is the key to realizing agricultural modernization. Improving farmers' cultural knowledge and skills is not only the goal of agricultural modernization, but also the

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The Rural Development Foundation (RDF), founded in 1996, is an Indian nonprofit organization with the mission of providing quality education for underprivileged rural children. RDF founded and continues to operate five schools and one junior college in Andhra Pradesh State, taking a unique holistic approach to education through innovative programs and methodology. Rather than using the conventional method of rote memorization, RDF focuses on cultivating critical thinking skills and encouraging students to understand and apply concepts. RDF does this through special programs such as Social Awareness, Youth Empowerment, Student Leadership, and Sports. RDF strives to develop students who will become empowered leaders of their communities, thus working towards the vision of a transformed and prosperous rural India.