

Research on the Five-in-One Integrated model for Cultivating Innovative Postgraduates Students in "Serving the Special Needs of the State" Pilot

Universities

Xiaodan Lin

Graduate School of Minjiang University, Fuzhou, Fujian350108, China

xdlin@mju.edu.cn

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Abstract: "Serving National Special Needs Talent Training Project" is a master degree graduates training projects, which in a certain period allow a small number of bachelor level higher education institutions with distinctive characteristics to recruit and train postgraduates for the special needs of the relevant industries in the country. However, there are still many shortcomings in the training of graduate students' innovative talents in the "serving country special needs" pilot universities. Therefore, we construct the "five-in-one" integrated innovation talent training model of graduate students from the aspects of developing graduate evaluation standards, enrollment system, training process, practice platform, degree thesis examination, etc., to comprehensively enhance the innovation ability of graduate students.

At present, China has entered the information age of the rapid development of big data, Internet Plus, and etc., the quality of national innovation has become an important symbol to measure a country's comprehensive national strength and competitiveness. Building an innovative country is the core of China's development strategy and also the key to improving China's comprehensive national strength. To achieve this ambitious goal, education institutions are required to train a large number of innovative talents for social development. As a special talent training policy, "Serving national special needs talent training project" has become an important supplement part to the training of high-level innovative talents in China, and it also fully reflects the changes of graduate education in China which continuously adapting the social need with the development of the time.

Implementation Background of the " Serving National Special Needs Project "

"Serving the national special needs talent training project" - bachelor's degree grant institution to carry out the training of master degree graduate students pilot work is in accordance with the state council degree committee at the 28th meeting of the decision deployed, for institutions of higher learning who do not yet have the right to grant a master's degree, in a certain period of time to recruit and train graduate students with special needs in relevant national industries and to award degrees. The colleges and universities included in the "Serving National Special Needs Talent Training Project" must have a high level of running schools, distinctive characteristics of running schools, and play an irreplaceable role in the training of talents in the relevant industries of the country.

The evaluation and acceptance of the "Serving National Special Needs Talent Training Project" are based on the implementation status, and whether to continually implement the project highly depended on the running school effectiveness and the training quality of special needs talents. This implementation criterion is a significant reform of the degree authorization system, marking the changes from "unit-based" authorization to "project-based" authorization; from a comprehensive authorization that can continuously add subject points to a "permanent" authorization; from "permanent" authorization to "within a certain period ". [1]

Limitations of "Serving the Special Needs of the Country" Pilot University Graduate Students in the Training of Innovative Talents

The Graduate Student Enrollment System is not Conducive to the Selection of Innovative Talents. In recent years, the nation keeps holding a relatively strict attitude on the general college admission policy and enrollment norms. Therefore, "serving to the special needs of the country" pilot colleges and universities would have few opportunities and other supportiveness from the government to reform the admission policy significantly under the current circumstance. Moreover, the graduate student recruitment selection system still follows the beaten track, with basic professional knowledge examination-based, heavy written test, and light interview. Either written test or interview assessment content rarely involves the evaluation of the candidate's innovative thinking, innovation ability, creativity, and other innovative qualities that cannot assess the candidate quality in all scope. In other words, talents trained by "serving country special needs" pilot colleges and universities generally have better test-taking skills and professional knowledge while having a lack of innovation ability and pioneering spirit, that the imperfect enrollment system even restricts the innovative talents' selection and training from the student source stage.

Lack of Innovation Ability Training Link in Graduate Student Training Process. China's examination system always focuses on test-oriented education. Students from youth to age are accustomed to accepting the indoctrination and guidance from their teachers, with a lack of skepticism and proactive critical thinking spirit. In the postgraduate training stage, although the pilot colleges and universities have certain characteristics and could meet the national special field talent training demand, but still have not changed the training mode based on teachers' classroom teaching. The teaching content is outdated without timely teaching material updating. Also, there are few new courses offered in each year and none well-planned links to develop innovation ability. That is, from both curriculum setting and teaching methods aspects, the lack of innovative thinking practice and innovation ability training commonly exists, that resulting in the trained graduates' knowledge structure are single and lack of multi-angle thinking and broad vision.

Lack of Assessment of Innovation Ability in Graduate Evaluation System. In the postgraduate stage, the examination of "serving country special needs" pilot college is also mainly in the form of written examination, which primarily assessing the basic knowledge and professional skills. The evaluation system is lack of innovation ability and creativity assessment. In the process of cultivation, graduate tutors generally follow the same training standards, and rarely carry out personalized training according to the expertise of each graduate student. Even the stage of the degree thesis that best reflects the innovation ability of graduate students, does not fully assess the innovation ability of graduate students. Most of the graduate degree papers are based on the research direction of the tutor, or the results of the paper formed by the research projects made with the tutor. Tutors do not fully consider the graduate students' own research expertise and the research field of interest, which could not be conducive to the cultivation of graduate students' innovation ability and creativity.

Lack of Interest in Innovation Among Graduate Students. Although the graduate enrollment and subjects in China are expanding, compared with other well-known domestic universities, the "serving country special needs" pilot colleges and universities usually do not have a high quality of students enrolled in graduate students, due to poor academic reputation. Therefore, most of the graduate students selected in these universities are from ordinary undergraduate colleges, less from 985,211 and other first-class institutions. The learning desire and enthusiasm of these students on new knowledge and new technology is not enough, because of the strong thinking stereotype which these students have. We do not attach importance to the cultivation of one's own innovative thinking and innovation ability. [2]

"Five-in-One" Integrated Model for Innovative Talent Training

Innovating Educational Concept, Highlights the Innovation Ability Evaluations in the Graduate Evaluation System. "Serving national special needs" pilot colleges and universities need to innovate educational concept; aim to train innovative talents; take the graduate students' innovative spirit stimulation as the value orientation; awaken students' innovative potential; cultivate students' innovative ability; make graduate students change from passive acceptance of knowledge into active exploration knowledge so that graduate education could become the process of students' independent exploration and self-construction. At the same time, the pilot universities of "serving the special needs of the country" should change the single evaluation standard for the quality of postgraduate training and construct a multi-level evaluation system for graduate students, especially the evaluation of graduate students' innovation ability should be highlighted. "Serving country special needs" pilot colleges and universities can add innovative thinking ability, exploration of unknown ability, innovative problem-solving ability and other indicators into the traditional training quality evaluation indicators, and improve the proportion of these indicators in the overall quality evaluation system so that these colleges and universities could attach importance to the cultivation of graduate innovation ability and creativity fundamentally.

Improve the Quality of Enrollment, Recruitment Selection Highlights the Assessment of Graduate Student Innovation Ability. First, we need to reform the graduate student enrollment system and explore the enrollment mechanism which is more conducive to the selection of innovative talents. "Serving to the special needs of the country" pilot colleges and universities themselves are designed to meet the special needs of the relevant industries in the country. Therefore, the graduate student admission mechanism can act as the first mover, and the admission system can be reformed within the scope of the policy. Also, according to the specific needs of special industries for talent, the target of enrollment positioning and personnel training should be determined at the first stage and the suitability between enrollment audience and specific industries need should be addressed focus.

Second, we should improve the quality of graduate students' students and strengthen the assessment of graduate students' innovation ability. Because of the characteristics in the special industry, "Serving to the special needs of the country" pilot colleges and universities play irreplaceable roles in the field of talent training and attract a group of students who interested in specific industry future to apply for the program.

Therefore, in the case of sufficient students, colleges and universities can have the conditions to adhere to the principle of putting quality before quantity and using merit-based admission. In the selection process, "serving country special needs" pilot colleges and universities can increase the weight of the retest in the entire selection process, focusing on candidates' innovation ability and

creativity, pay attention to the candidate's future potential in the field of innovation, and then select the outstanding candidates with innovative thinking and creativity.

Third, we should break the subject barriers and encourage students to apply for interdisciplinary majors. "Serving to the special needs of the country" pilot colleges and universities can attempt to reform appropriately in the graduate recruitment process, using the first-level enrollment disciplines. The enrollment can change from admitting students with the same subject background priority, to give priority to students with different subject backgrounds, encouraging students to apply for the interdisciplinary and multi-major program. The examination content, especially the retest content, can try to break the subject boundaries and highlight the innovation importance. The examination questions can add frontier cross-disciplinary content so that to encourage students to analyze the problem from different perspectives.

Tighten the Training Process, Strengthen the Training of Graduate Students' Innovation Ability. First, we can adopt the "interdisciplinary" training model to enhance the innovation ability of graduate students. "Serving country special needs" pilot colleges and universities in graduate training need to break the barriers between disciplines, encourage the cross-cutting between disciplines, and constantly broaden the training channels, expand research ideas. Graduate tutors with interdisciplinary backgrounds are encouraged to recruit graduate students across the academic spectrum (departments and institutes), and tutors from different faculties (departments and institutions) are encouraged to work together to guide graduate students to undertake scientific research projects, so as to expand the proportion of interdisciplinary courses; change the traditional choice of courses; encourage students to choose courses in different subject areas; break through the limitations of single subject courses. Apart from the compulsory degree course, students should be encouraged to choose other courses as elective courses which set up by other institutions' (departments, institutes) tutors and will be recognized as credits. Through learning different subjects and majors, the "interdisciplinary" training model could not only broaden the interest and research scope of graduate students, but also be conducive to stimulate the innovative thinking of graduate students. [3]

Second, play the role of mentor, explore the "mentor group system" graduate training model. China applies the teacher responsibility system in graduate education, which professional degree graduate education generally adopts the "double tutor system". Some colleges and universities' research graduate education have also adopted the "double tutor system", that is, for each graduate student equipped with an academic tutor and an enterprise tutor (or industry tutor), which can fully display the advantages for talents training under two different educational environment and education resources in the school and industry. Academic tutors are mainly undertaken by teachers with strong scientific research ability, high academic level, and sufficient scientific research funds in universities. They can guide graduate students' course studies and degree papers based on their research fields and provide funding to support graduate students to participate in international conferences and academic exchanges. Enterprise tutors or industry mentors are mainly undertaken by senior executives of enterprises and institutions, senior employees of the industry, who can provide guidelines for students in innovation ability improvement, case analysis, and enterprise practice. In addition, the pilot colleges and universities of "serving country special needs" can also try the "mentor group system" graduate training model, which is relied on the original "double tutor system" and further expand the scope of the composition of tutors. The tutors could be constituted by the university professors, associate professors, young doctors, experts in cross-disciplinary fields, as well as business executives and industry veterans. This model can not only unleash the unique advantages of tutors and experts from different fields, but also allow young doctors to participate in

the development of graduate students. The superiors of the models would result in the emergence of cross-discipline research outcomes and also play an important role in graduate student training.

Third, strengthen international exchanges and focus on the innovative spirit cultivation of graduate students. Under the social background of increasing internationalization, the postgraduate education of the "Serving Countries Special Needs" pilot colleges and universities should actively draw on the advanced experience of the international community. Pilot colleges and universities need to provide graduate students with international academic exchange opportunities to broaden their international horizons and arouse students' innovative thinking and creativity by organizing or participating in international academic conferences or symposiums, as well as overseas study projects. With economic conditions permit, pilot colleges and universities of "serving country special needs" may allow graduate students to take part of the courses abroad, recognize the credits obtained, employ foreign university tutors to join the ranks of domestic tutors, and jointly guide domestic graduate students, which is conducive to the cultivation of graduate students' innovation ability.

Focus on Practical Innovation and Stimulate Graduate Innovation Interest through Innovation Platforms and Innovation Funds. First of all, give full play to the role of innovation platform, and promote cooperation in production, research and development. "Serving country special needs" pilot colleges and universities can create an innovative practice base and innovation platform, emphasize the cultivation of innovative thinking ability, enhance the link between theory and practice, promote the mutual transformation of knowledge and practice, so that graduate students in the process of participation in practice, stimulate creativity[4]. The practice base and innovation platform should strengthen the construction of training conditions such as basic equipment and teaching facilities, provide graduate students with the necessary learning, living conditions and necessary salary treatment, and guarantee the internship conditions for graduate students. At the same time, the practice base and innovation platform should formulate scientific and rigorous practical training programs and process appraisal system, in order to standardize the implementation of the practice training process of graduate students, ensure the quality of postgraduate practice training, and have certain scientific research conditions and scientific research projects to support graduate students in combination with practice to carry out relevant scientific research and project incubation.

Secondly, to provide graduate research and innovation fund, to promote the motivation of graduate innovation research. "Serving to the special needs of the country" pilot universities can increase the investment in graduate research and innovation projects, in addition to government and school-level investment, but also can introduce enterprises, charitable foundation funding. At the same time, it is also possible to implement the Graduate Innovation Program, provide innovation funds for outstanding graduate students, and encourage and support graduate students to carry out their own innovation research[5]. In addition, through the creation of special funds for graduate research projects, awards and other systems to encourage students to explore freely in their own areas of research, scientific research and scientific innovation.

Strengthen the Examination of Degree Papers and Encourage Graduate Students to Carry Out Innovative Research in the Degree Thesis. An important link in the cultivation of graduate student's innovation ability is the writing of the degree thesis, the quality of the degree thesis directly reflects the quality of graduate students' cultivation and innovation ability. Therefore, the pilot universities of "serving the special needs of the country" should improve the examination system of degree papers and strengthen the cultivation and assessment of graduate students' innovation ability. Pay attention to the innovation of degree thesis, from the degree thesis selection,

find information, field research, open the topic, writing, mid-term assessment, send for review, defense link, should have clear requirements for graduate students' innovation ability and carry out different forms of assessment, we should strengthen the innovation ability of graduate students. The examination and examination of the degree thesis can be combined with evaluation and spot checks, which can stimulate the enthusiasm of graduate students on the one hand and the involuntary consciousness of graduate students on the other. The thesis selection of academic graduate students must have theoretical value and research significance, the creation of papers must have a certain depth and difficulty, and can reflect the innovation at the graduate level; ""Serving to the special needs of the country" pilot colleges and universities can innovate the presentation form of the degree thesis, not limited to the traditional form of thesis, engineering design, product research and development software development and development, experimental reports, etc. can be used as a way of presentation of the degree thesis, giving graduate students a greater choice, conducive to the cultivation of graduate students' innovative thinking and creativity[6]. Serving to the special needs of the country" pilot universities can also give high rewards for innovative degree papers, stimulate graduate students in the degree thesis link to carry out innovative research, forming the school as a whole innovation atmosphere.

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- 2 2017 Fujian Province Undergraduate University Education and Teaching Reform Research Project "The Quality Assurance and Monitoring System of Applied Undergraduate Degree Education Quality Assurance"(FBJG20170084)
- 3 2018 Fujian Province Undergraduate University Education and Teaching Reform Research Project "Serving the Special Needs of the Country" pilot university graduate five-in-one innovative talent training model research "(FBJG20180141)

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