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Research on the Applied University Talents Training Mode based on the Integration of Science and Education

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Abstract

Colleges and universities are the main front of talent training and gathering, and also an important part of the national strategic scientific and technological force, which undertakes the dual mission of scientific and technological innovation and talent training. The rapid development of science and technology has posed a severe challenge to the talent training of colleges and universities. Colleges and universities must fully realize the important role of scientific research in supporting talent training and promoting quality improvement, establish the idea of integrating science and education in cultivating talents, strengthen policy guidance, increase financial input, strive to effectively transform the rich scientific research resources and results of colleges and universities into high-quality teaching resources, promote the cultivation of students' innovative spirit and practical ability, and strive to cultivate innovative talents.

Keywords

Scientific Research; Integration of Science and Education; Training of Innovative Talents.

1. Introduction

In recent years, higher education has made great progress in our country. The innovative ability of colleges and universities has been rapidly improved and major achievements have been emerging. Colleges and universities are an important part of the national strategic scientific and technological force, and application-oriented colleges and universities are important export places of high-quality innovative talents. Facing the construction of the world's scientific and technological power, it is crucial to form sufficient supply and system construction of high-quality innovative talents such as strategic scientists, first-class leading scientific and technological talents and innovation teams, young scientific and technological talents and outstanding engineers, which puts forward new demands on the management system, operation mechanism and education mode of higher education. The supply of high-quality innovative talents cannot be separated from the strong support of the integration system of science and education in colleges and universities. The collaborative innovation of science and education is also an important feature of the construction of colleges and universities in the new era.

The integration of science and education refers to the combination of scientific research and teaching, giving full play to the educational function of scientific research, so that teaching and scientific research promote each other, and strive to serve for the cultivation of talents in schools. The integration of science and education organically unifies the generation, dissemination, inheritance and innovation of knowledge, which reflects the basic characteristics of high-level universities. The internal integration of teaching and scientific research in various forms and rich contents has made them an inseparable organic unity in essence. Scientific research in colleges and universities can promote the improvement of the quality of talent training and is conducive to the cultivation of innovative talents. However, how

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scientific research supports and promotes talent training in colleges and universities has become an important practical problem facing colleges and universities at present.

2. Significance of Integration of Science and Education

2.1. Scientific Research Supports and Promotes the Improvement of the Quality of University Personnel Training

Colleges and universities should not only seize the opportunities brought by the development of science and technology, to meet the challenges posed by the development of science and technology, but also promote the development of science and technology through their own scientific research activities. Talent training is the core function and fundamental task of colleges and universities. To comprehensively improve the quality of higher education, we must first improve the quality of talent training and focus on cultivating innovative talents. Scientific research plays an increasingly important role in the cultivation of innovative talents. On the one hand, scientific research in colleges and universities undertakes the important functions of knowledge innovation and technological innovation, and directly serves the economic and social development, which is also the basic function of all scientific research institutions. On the other hand, different from scientific research institutes, enterprises and companies, scientific research in universities also plays an important role in cultivating talents.

2.2. Scientific Research in Colleges and Universities Promotes the Improvement of Teachers' Academic Level and Teaching Level

The development of scientific research activities in colleges and universities can not only improve the research ability and academic level of teachers, but also play a positive role in promoting the improvement of teachers' teaching ability and teaching level. Carrying out high-level scientific research is conducive to the change of teachers' teaching concepts, the renewal of teaching content and the reform of teaching methods, and students can directly benefit from it. Therefore, it is the basic responsibility of college teachers to attach equal importance to teaching and research and realize the combination of teaching and research. It is also the inevitable requirement of training innovative talents.

2.3. Scientific Research in Colleges and Universities Promotes the Cultivation of Innovative Spirit and Practical Ability of College Students

College students' early participation in scientific research is an important way to cultivate new innovative talents. College students' participation in scientific research projects under the guidance of teachers can integrate what they have learned and improve their ability to analyze and solve problems, which plays a significant role in cultivating college students' innovative spirit and practical ability. The development of scientific research can optimize the educational atmosphere of universities, improve the thinking ability of college students, and promote the combination of logical thinking ability and image thinking ability of college students. Innovation cannot be realized by a way of thinking. The development of modern science and technology requires the perfect combination of logical thinking and image thinking to achieve innovation.

3. Problems of Integration of Science and Education in Colleges and Universities

3.1. Imbalance Between Scientific Research and Teaching

The imbalance between scientific research and teaching is the primary problem that universities face in the integration of science and education. The main reasons are shown in two aspects: first, some teachers pay too much attention to teaching and put the focus of their work on teaching, thus neglecting scientific research. Secondly, some policies of the school are

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biased towards scientific research, which leads to the putting of the cart before the horse in teaching and research. Some teachers are unable to deal with the complementary relationship between scientific research and teaching, which brings great negative effect to teaching and seriously reduces the teaching efficiency.

3.2. Separation of Scientific Research and Teaching

Under the influence of traditional educational concepts, college teachers focus on teaching and pay insufficient attention to teaching and research. As a result, teachers and students limit their educational activities to textbooks and classroom teaching. Teachers have heavy teaching tasks and little time for scientific research, and students cannot participate in teachers' scientific research activities, which seriously hinders the development of the integration of science and education. In the fundamental neglect of scientific research and the cultivation of students' innovative ability, teaching and research are seriously separated. Students' interest in inquiry-based learning cannot be well cultivated, and teachers' scientific research and teaching ability cannot be improved.

3.3. Disconnection Between Teaching, Research and Talent Training

Many application-oriented colleges and universities emphasize academic research, ignore the cultivation of students' practical ability and innovative ability, ignore the goal of talent cultivation, and pay too much attention to their own scientific research work and the transformation of their achievements. As a result, the achievements of scientific research are difficult to be successfully promoted to the actual education project, resulting in the disconnection between teaching, research and talent training, and the failure of scientific research to serve the role of teaching and education. Ultimately, the quality of talent training will decline.

3.4. The Teacher Evaluation Mechanism of the Integration of Science and Education is not Perfect

At present, colleges and universities have not formed a relatively perfect teacher evaluation mechanism and measures related to the integration of science and education. Many application-oriented colleges and universities still lay emphasis on scientific research and encourage teachers to carry out scientific research. Moreover, teachers' assessment and professional title promotion have low requirements on teaching and research ability, technological innovation and guiding students' enterprise practice or competition. Teachers' assessment on teaching workload, theoretical research projects and the number of papers has led to difficulties in achieving the integration of science and education. It has caused the decline of the quality of college personnel training.

4. Effective Ways to Promote the Integration of Science and Education in Application-oriented Colleges and Universities

In order to cope with the above challenges, universities must reform and explore, promote the integration of science and education and promote the integration of teaching and research, which are important theoretical and practical problems that our applied universities must solve at present. For example, scientific research and education for teachers should be effectively combined to build a diversified talent training system. From undergraduate to doctoral stage, diversified training paths can be provided for students to choose independently, talent training programs and curriculum systems should be optimized, and rich scientific research resources should be transformed into high-quality teaching resources to cultivate students' innovative spirit and practical ability. In view of the problems existing in the integration of science and education in colleges and universities, combined with the orientation of innovative talents

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training in application-oriented colleges and universities, constructive suggestions are put forward from multiple aspects.

4.1. Enhance the Awareness of the Integration of Science and Education Among Teachers in Application-oriented Colleges and Universities

In view of the imbalance between scientific research and teaching in the personnel training of application-oriented colleges and universities, colleges and universities can strengthen publicity, unify ideas and raise awareness. It not only makes more teachers realize the basic status of teaching in undergraduate education, but also makes them clearly realize that teaching is the basis of scientific research, which can promote the development and progress of scientific research, so as to improve the cognitive level of teachers. At the same time, teachers' responsibilities and obligations in the integration of science and education should be clearly pointed out in specific policies or systems. In addition to doing a good job in scientific research, it is also necessary to create a good teaching environment for teachers through teaching incentive measures, so that teachers have more enthusiasm to devote themselves to talent training. Only in this way can teachers truly realize the positive feedback effect of scientific research on teaching, better cultivate students' scientific literacy and innovation ability in the teaching process, improve the quality of talent training, and cultivate high-quality applied talents with solid basic knowledge, strong practical ability and innovation ability for the society.

4.2. Cultivate Students' Interest in Scientific Research in Teaching Activities

In the daily teaching activities of colleges and universities, teachers should not only have the consciousness of transforming their own research results or research methods into teaching contents to teach students, but also have the consciousness of discussing and sharing the process of scientific research with students, so as to arouse students' stronger interest in scientific research and promote their enthusiasm in scientific research and practical operation. Teachers should also encourage students to participate in various scientific research or competitions, such as electronic design contests, mathematical contests in modeling, Challenge Cup science and technology contests, and college students' innovation and entrepreneurship programs. Only by constantly cultivating students' interest in scientific research in daily teaching activities can we further enlarge the breadth and depth of the integration of science and education and talent cultivation, promote the organic unity and integration of teaching and scientific research, and finally achieve the goal of better education.

4.3. Optimize the Talent Training Program of Application-oriented Universities

In the talent training program of application-oriented colleges and universities, it should be clearly pointed out that theoretical teaching should be combined with scientific research, that is, to strengthen the connection between theory and practice, enhance students' ability to use theoretical knowledge to solve practical problems, and cultivate students' innovative spirit. Applied colleges and universities face the problem of disconnection between theoretical knowledge and practice, so it is imperative to strengthen the integration of science and education. It is an effective way to strengthen the practice of the integration of science and education by optimizing the talent training program of application-oriented colleges and universities, establishing a platform for the integration of science and education, and promoting the full coverage of the platform for the integration of science and education for different majors.

Expand the new teaching channels for researchers, including the innovation of the channels for researchers to participate in teaching and the innovation of the teaching mode of science and education integration. We should actively expand various channels for university researchers to participate in teaching and break through the barriers of resource pooling and sharing in different channels. In terms of teaching model innovation, excellent teachers should be encouraged to play a better role in educating people, and participate in the education of

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undergraduates and postgraduates with more research questions, research paradigms and research tools.

4.4. Promote the Transformation of High-quality Scientific Research Resources into High-quality Teaching Resources

In recent years, we should try to promote the transformation of high-quality scientific research resources into teaching resources in view of the universal phenomenon of attaching more importance to scientific research and teaching than to theory and practice. For example, teachers' achievements in the teaching process should be treated equally as scientific research achievements. Greater consideration should be given to teaching needs in school budgets and supporting projects that promote teaching reform through research. We will effectively transform scientific research resources of colleges and universities into high-quality teaching resources, realize the integration of science and education, and promote the quality of talent training in colleges and universities. Scientific research promotes the reform of teaching. Relying on the advantages of scientific research, new thinking, new methods, new means, new technology and new materials of scientific research are applied to teaching, which runs through the process of talent training, including setting up new courses, updating teaching content and enriching teaching methods. The university's scientific research projects, research funds, research achievements into the process of talent training. For example, it can be transformed into new courses, new textbook contents, new teaching experiments, and support the construction of advantageous specialties or open new specialties. Obviously, this transformation, like the transformation of scientific research results into productive forces, is not a natural process. More importantly, college teachers need to change their ideas, invest their energy and take the initiative to explore innovation.

4.5. Improve the Evaluation Mechanism and Relevant Measures for Teachers in Application-oriented Colleges and Universities

In view of the actual situation that universities attach more importance to scientific research than to teaching, application-oriented universities should reform the teacher incentive mechanism and evaluation mechanism in time. First of all, colleges and universities should formulate specific teaching assessment standards for teachers, evaluate teachers strictly in accordance with the established standards, and put teachers' teaching evaluation in the first place of teacher performance assessment and evaluation. Secondly, the professional title evaluation of teachers in application-oriented universities should not only take the number of articles published by teachers and the number of awards as the main basis for evaluation, but also take the quality of classroom teaching as an important reference index. Finally, the applicability and innovation of teachers' scientific research projects, and the ability and contribution of teachers to transform scientific research results into teaching content should also be included in teacher evaluation.

Departments of application-oriented universities need to further communicate, coordinate and integrate with each other. For example, relevant departments such as scientific research management department, teaching management department and financial department should coordinate and communicate with each other, so as to promote schools to fully open and share scientific research laboratories, scientific research instruments and scientific research environment to students and provide students with good practice and scientific research innovation platform. At the same time, the financial department should also introduce relevant policies to provide necessary financial support for the integration of science and education and create the basic conditions for the integration of science and education in colleges and universities. Financial support can arouse teachers' attention to the integration of science and education, create a good scientific research environment and practice platform for students,

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promote the smooth implementation and healthy development of the integration of science and education in schools, and provide the society with innovative and practical talents.

To build a mechanism for the integration of science and education that is conducive to improving the quality of talent training, we must deepen reform and systematically promote the integration of science and education. We will coordinate the management of teaching and research, and formulate policies and measures conducive to the mutual improvement of teaching and research. We should adhere to the principle of attaching equal importance to teaching and research, improve the teacher performance evaluation system, and properly handle the relationship between teaching and research in the promotion and appointment of teachers' professional titles. Teachers, who conduct research-based teaching, participate in interdisciplinary teaching and guide university students in scientific research should be recognized and rewarded. Strengthen the construction of scientific research achievements into teaching materials, research frontiers into the classroom, and incorporate them into the index system of teaching materials evaluation and lecture competition. Integrate resources, build a number of science and education sharing platforms, further reform personnel training programs, provide guarantee for undergraduate research, increase the necessary funding for undergraduate research, etc.

5. Conclusion

Scientific research in colleges and universities can promote the improvement of the quality of talent training and is conducive to the cultivation of high-quality talents with innovative ability and practical ability. In this paper, specific suggestions are put forward for the problems such as decoupling of teaching and research and inadequate integration of science and education in applied universities. To carry out integration of science and education will continuously improve the quality of teaching, enhance teachers' ability and cultivate students' innovative ability. Application-oriented colleges and universities should take the lead in updating their ideas and changing their thoughts, take improving the cultivation of students' scientific research and innovation ability as the goal of talent training, combine theory with practice closely, keep exploring, give full play to the educational role of scientific research, advocate the integration of science and education, encourage innovation teams to transform the latest research results into classroom teaching projects, promote teaching by scientific research and promote scientific research by teaching. They complement each other and jointly improve the quality of talent training.

Application-oriented colleges and universities should explore effective ways to build an integrated system of science and education, carry out more new explorations around the integration of science and education, introduce new and better measures, adhere to the road of attaching equal importance to teaching and research, promote the integration of science and education, train outstanding talents to meet the high-end needs of society, and produce high-level scientific research results. In the service of the construction of China's world science and technology power and meet the future changes of the world scientific revolution to play a greater role.

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