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Construction of a new engineering major education system from the perspective of ideological and political courses in the new era

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Abstract: *With the advent of the new era, China's higher education system is facing unprecedented opportunities and challenges, especially in the field of new engineering disciplines. Against this backdrop, new engineering disciplines are not only required to cultivate talents with solid professional skills but also to emphasize the cultivation of moral integrity, innovative spirit, and social responsibility. The integration of ideological and political education concepts into the curriculum has injected new vitality and guidance into the education system of new engineering disciplines. This paper aims to delve into the intrinsic connection and interaction between ideological and political education in the curriculum and the cultivation of talents in new engineering disciplines. It comprehensively examines the current issues in the talent cultivation system of new engineering disciplines and proposes strategies and pathways for constructing a talent cultivation system for new engineering disciplines from the perspective of ideological and political education in the new era. This includes curriculum system design, innovative teaching methods, faculty team building, and improvement of evaluation mechanisms. The goal is to provide solid talent support for the high-quality development of China's higher education and the transformation and upgrading of the economy and society.*

Keywords: *new era; curriculum thinking and politics; new engineering; education system; education reform*

1. Introduction

Under the background of the new era, the rapid progress of science and technology and the fierce international competition make the construction of new engineering majors become the core of national strategic development. The new engineering major aims to cultivate high-quality engineering talents who can adapt to the future scientific and technological revolution and industrial transformation, and the construction of its education system has a decisive impact on China’s position in the global scientific and technological competition. The introduction of the concept of ideological education, for the new engineering professional education has injected a new perspective and ideas, emphasizes the ideological and political education elements and professional education, realize the harmonious unity of knowledge and value lead, aims to develop both solid professional skills, and have a firm ideal faith, noble moral sentiment and social responsibility of new engineering talents.

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2. The connotation and correlation of course ideological and political education and new engineering major education

2.1 Connotation and characteristics of ideological and political courses

In 2014, Shanghai Municipal Education Commission put forward the concept of "curriculum thinking and politics"[1],This concept points out that tall courses in higher education institutions have the function of nurturing students, and all teachers have the responsibility of educating. Ideological and political courses do not transform every course into ideological and political courses, but refers to the teaching and political of professional courses, mining and relying on the elements of the courses, and flexibly cutting into ideological and political materials according to the course content, so that the teaching of professional courses has the same role of ideological and political education as ideological and political courses[1]. Curriculum ideological and politics is an innovative educational concept, whose core is to deeply integrate ideological and political education into various course teaching, and fully explore and utilize the ideological and political education resources contained in various courses. This educational concept emphasizes the mutual promotion of ideological and political education, knowledge imparting and ability cultivation, and aims to make students receive ideological and political education imperceptibly while mastering professional knowledge, and set up the correct world outlook, outlook on life, values, moral outlook and rule of law. Ideological and political course is not simply to embed ideological and political content into professional courses, but needs to systematically design and implement from multiple aspects such as curriculum objective setting, course content selection, teaching method application, teaching evaluation and implementation, so as to ensure the organic integration of ideological and political elements and professional knowledge.

The characteristics of ideological and political education are mainly reflected in the following aspects: first, full participation, all teachers should assume the responsibility of ideological and political education; second, ideological and political education should run through the whole process of students learning; third, ideological and political education should penetrate into all kinds of courses and links. Through these characteristics, the ideological and political education of the course can ensure that students can receive comprehensive ideological and political education while receiving professional knowledge education.

2.2 Connotation and goal of education of new engineering majors

The new engineering major is committed to cultivating engineering and technical talents who can meet the needs of emerging industries and new economic development. These talents not only need to master solid professional knowledge and skills, but also should have an interdisciplinary knowledge structure, innovative thinking ability, practical operation ability, and excellent team spirit and professional quality. The education of the new engineering major emphasizes the all-round development of students, and focuses on cultivating their humanistic spirit, social responsibility and global vision, aiming to enable students to deal with various challenges in the complex and changeable engineering practice environment, and make positive contributions to the promotion of scientific and technological progress and social development.

The goal of new engineering professional education can be summarized in the following aspects: first, cultivating high quality engineering talents with innovative spirit and practical ability; second, cultivating compound talents with interdisciplinary knowledge and skills; third, cultivating engineering talents with social responsibility and professional ethics; fourth, cultivating engineering talents with international vision and competitiveness. These goals together constitute the core requirements of the education of new engineering majors.

2.3 The connection between ideological and political education and the education of new engineering majors

Under the new situation of fierce collision of various social trends and increasingly diversified value orientation of college students, the professional courses of science and engineering in universities play a vital role in cultivating science and engineering talents.[2]There is a close connection and mutual promotion between ideological and political education and the education of new engineering majors. On the one hand, the ideological and political courses inject the value orientation into the education of new engineering majors. By integrating ideological and political elements into the new engineering curriculum, students can be guided to establish correct engineering ethics, innovative values and social

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service consciousness, and ensure that the new engineering talents follow moral norms and social responsibilities in technological innovation and engineering practice. For example, the integration of environmental protection concepts and sustainable development ideas in the engineering design curriculum can enable students to fully consider the environmental impact and resource utilization efficiency when designing products or systems, so as to cultivate their awareness of green engineering. This injection of value orientation will help the new engineering talents to form a correct career outlook and outlook on life, and lay a solid foundation for their future career development.

On the other hand, the education of new engineering majors expands the practical platform of ideological and political courses. The interdisciplinary, practical and innovative characteristics of the new engineering major provide rich and diverse teaching materials and practical scenarios for the ideological and political courses. In the practical teaching process of new engineering, students can cultivate the spirit of unity and cooperation and the quality of hard work through team projects, and cultivate the sense of family and country and the sense of mission responsibility by solving practical engineering problems. The expansion of this practice platform not only enriches the teaching content of ideological and political courses, but also enhances the relativity and effectiveness of its teaching effect.

3. The common problem of the education practice of new engineering majors under the perspective of ideological and political courses in the new era

From the perspective of ideological and political courses in the new era, although the education practice of new engineering majors has made some achievements, it still faces some key problems to be solved urgently. These problems are mainly reflected in the following aspects:

3.1 The lack of clarity of the ideological and political connotation and requirements of the curriculum

Although the ideological and political concept of the course has been widely accepted, its specific connotation and requirements have not been fully defined in the educational practice of new engineering majors. Some teachers understanding of the ideological and political affairs of the curriculum is still on the surface, and they lack of in-depth understanding and practical experience, which leads to the unsatisfactory educational effect. This is mainly reflected in the course goal setting is not clear enough, the course content selection is not accurate enough, the use of teaching methods is not flexible enough, and the implementation of teaching evaluation is not scientific enough. Therefore, it is necessary to further clarify the connotation and requirements of the ideological and political education of the course to ensure its effective implementation in the educational practice of new engineering majors.

3.2 The root cause of the problems in the education practice of new engineering majors

In terms of ability, ideological and political courses have put forward higher requirements for professional teachers, and teachers practical ability needs to be improved. When conducting ideological and political teaching, it is difficult for some professional teachers to grasp the ideological and political touch points of professional courses, and they are easy to "force ideological and political teaching for the sake of ideological and political teaching", and their ability to interpret ideological and political cases of courses needs to be improved[3].

3.3 Practical Issues in the Education of New Engineering Disciplines

At present, there are many problems in the education practice of new engineering majors, such as the imperfect curriculum system, the single teaching method, and the lack of ideological and political ability of the teachers. The root cause of these problems lies in the dependence on the traditional education model and the insufficient adaptability to the educational requirements of the new era. The traditional education mode pays attention to the transmission of knowledge and the training of skills, but ignores the cultivation of students ideological and moral character and comprehensive quality. This education model has been unable to meet the demand of new engineering talents for the new era. At the same time, some teachers do not have a deep enough understanding of the educational requirements of the new era, lack of innovative spirit and practical ability, resulting in poor educational effect. Therefore, it is necessary to analyze these problems deeply, find out their root causes, and make

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targeted improvements.

3.4 Lack of exploration and practice of innovation path

In view of the above problems, we need to actively explore the innovative path of education practice of new engineering majors from the perspective of ideological and political courses in the new era. However, the current exploration and practice in this area is far from enough. Some universities and teachers still follow the traditional teaching methods and evaluation system, and lack of innovative thinking and practical attempts on the education practice of new engineering majors. As a result, the educational practice of new engineering majors can not effectively meet the demand for talents in the new era. Therefore, it is necessary to strengthen the exploration and practice of the innovation path, and promote the innovative development of the education practice of new engineering majors by optimizing the curriculum system, innovating the teaching methods and improving the evaluation mechanism.

4. Take the foundation, build the new engineering high-level undergraduate talent training system

It is an important task of education reform to build a high-level undergraduate talent training system of new engineering. To this end, we need to start from the following aspects to ensure that the education practice of new engineering majors can cultivate people and cultivate high-quality engineering talents. First of all, we should have a deep understanding of the connotation of moral education, regard it as the core of education work, and run through the whole process of talent training. Secondly, we should combine the characteristics and requirements of the new era to constantly update the educational concept and innovate the educational mode to meet the needs of social development. Finally, we should pay attention to cultivating students innovative consciousness and practical ability, so that they can play an important role in the future engineering practice.

4.1 Re-examine and revise the talent training objectives

Based on moral education, we need to re-examine and revise the goal of new engineering undergraduate talent training. This includes cultivating students patriotism, innovation, social responsibility and professional ethics. By clarifying the talent training goal, we can provide clear guidance for the subsequent education practice. When revising the talent training objectives, we should fully consider the demand for new engineering talents in the new era, and attention should be paid to the cultivation of students comprehensive quality and innovation ability, so as to ensure that they can adapt to the challenges of scientific and technological revolution and industrial transformation in the future. At the same time, we should also pay attention to the personalized development of students, and encourage them to find themselves and realize their self-value in their professional study.

4.2 Rebuilding the undergraduate talent training system in the new period

With the revision of the talent training program as the starting point, we need to reconstruct the undergraduate talent training system in the new period. This includes optimizing curriculum setting, improving teaching content, innovating teaching methods and other links. In terms of optimizing the curriculum setting, the interdisciplinary characteristics of the new engineering majors should be fully considered, and a reasonable curriculum structure should be set up to ensure that students can master solid professional knowledge and skills. In terms of improving the teaching content, attention should be paid to the introduction of cutting-edge technology and industrial trends, so that students can keep up with the pace of The Times. In the aspect of innovative teaching methods, diversified teaching methods and methods should be adopted to stimulate students interest and initiative in learning and improve their learning effect. In addition, we should also strengthen the construction of teachers, improve their teaching and scientific research ability, and provide students with higher quality education.

4.3 Strengthen the practice of teaching link, improve the innovation ability

In the educational practice of new engineering majors, we need to pay special attention to the practical teaching links. Through practical operation, cultivate students logical thinking and reflective ability in practical training, and cultivate innovative modern engineering talents with excellent

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engineering ability[4]. Laboratory construction is the foundation of practical teaching, we should increase the investment, improve the experimental facilities and equipment, and provide a good experimental environment for students. Industry-university-research cooperation is an important way of practical teaching. We should strengthen the cooperation with enterprises and scientific research institutions, and jointly carry out scientific research projects and practical activities, so that students can apply what they have learned to practical engineering. Innovation and entrepreneurship practice is the expansion and extension of practical teaching. Students should be encouraged to participate in innovation and entrepreneurship activities and cultivate their entrepreneurial spirit and practical ability. Through these measures, we are able to provide students with rich practical opportunities to help them transform their theoretical knowledge into the ability to solve practical problems.

4.4 Improve the evaluation system and promote all-round development

As a key link of educational practice, the evaluation system plays a vital role in promoting the all-round development of students. In the practice of new engineering major education, we need to improve the evaluation system and pay attention to the evaluation of students comprehensive quality and innovation ability. The evaluation content should cover the students knowledge and skills, ideological and moral character, teamwork, innovation ability and other dimensions. Evaluation methods should be diversified, including but not limited to classroom performance, experimental reports, project results, innovation and entrepreneurship achievements, etc. By improving the evaluation system, we can more comprehensively and objectively evaluate the students performance and development status, and provide solid support for their future growth. At the same time, we should also pay attention to the feedback and application of evaluation results, and guide students to self-reflect and self-improvement through evaluation, so as to promote their continuous progress in the process of learning and growth.

5. Reform of systems and mechanisms, with undergraduate personnel training as the core

In the current society, it is particularly critical to deepen the reform of the system and mechanism around the core of undergraduate talent training, because it is the core of improving the quality of education. Under the background of the new era, the perspective of ideological and politics provides us with a new direction of educational reform. We need to take the reform of "curriculum thinking and politics" as the guide to further improve the education pattern of "three complete education", that is, all-staff education, whole-process education and all-round education. Through such reform, we can better promote the innovative development of the education practice of new engineering majors, so as to cultivate more high-quality talents to meet the needs of the times.

5.1 Restructure the professional talent training program and design the blueprint of "curriculum ideological and politics"

In order to effectively combine ideological and political education with professional course teaching, it is necessary for us to reconstruct the existing professional talent training program, and then design a comprehensive blueprint of "curriculum ideological and political education". This process involves a clear definition of the objectives, contents and methods of curriculum ideological and political affairs, and the development of a series of practical strategies to skillfully integrate ideological and political elements into the teaching of professional courses. When designing this blueprint, we should deeply consider the unique characteristics and actual needs of the new engineering major to ensure that the ideological and political elements can be seamlessly connected and organically integrated with the professional knowledge. In addition, we should also focus on cultivating students engineering ethics, innovative value orientation and social service consciousness, so as to cultivate new engineering talents with profound professional skills and noble moral qualities, so that they can show the excellent quality of both integrity and ability in their future work.

5.2 Improve the ideological and political ability of professional teachers and ensure the implementation of "ideological and political curriculum"

Teachers play a vital role in the implementation of "curriculum thinking and politics". In order to ensure that this educational concept can be effectively implemented, we must pay attention to and strengthen the ability cultivation and promotion of professional teachers in ideological and political

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education. This not only involves organizing teachers to participate in the ideological and political training activities related to the course, but also includes encouraging and guiding teachers to participate in the discussion and communication on ideological and political teaching. Through these systematic training and in-depth learning, teachers can more deeply understand the core concepts and specific requirements of the ideological and political development of the course, so as to master more effective teaching strategies and skills. In addition, it is also crucial to establish the corresponding incentive mechanism, which can stimulate teachers to actively participate in the ideological and political practice of the course, and continuously improve their ideological and political teaching ability and professional quality through continuous practice and exploration.

5.3 Strengthen the construction of the teaching staff and improve the overall quality

Teaching staff is an important guarantee of education practice. In the educational practice of new engineering majors, we need to strengthen the construction of teaching staff and improve the overall quality. This not only includes the introduction of excellent talents, training of young teachers, strengthening exchanges and cooperation among teachers, but also involves the improvement of teachers scientific research ability, teaching methods and educational concepts. Through the introduction of excellent talents, we can enrich the strength of the teaching staff, improve the teaching level, but also can bring new ideas and innovative education mode to the school. Cultivating young teachers can provide them with more opportunities and platforms for development, promote their growth and progress, so that they can adapt to the educational environment more quickly and master advanced teaching technology. By strengthening the communication and cooperation between teachers, teaching resources and experience can be shared, the overall teaching quality can be improved, a good academic atmosphere can be formed, and the cross-integration between disciplines can be promoted. In addition, regular teacher training and academic seminars to encourage teachers to participate in educational exchange programs at home and abroad are also important ways to improve the overall quality of teachers. As for ability training, the authors teaching team has already achieved some research results. Huang Ying et al. constructed a relationship model between practical teaching mode and core competence, and proposed that engineering students should have engineering practical ability and innovation Ability, independent learning ability and other professional core ability[5]. Teachers or educational teams should be organized to study and reflect on the existing literature. Thus strengthen the construction of the teaching staff, improve the overall quality.

5.4 Improve the management mechanism to ensure the smooth progress of educational practice

With the goal of unifying ability cultivation and education connotation as the goal, students adhere to the main body, pay attention to the process of self-perception and self-remodeling, and integrate self-construction ability into the professional core ability, thus forming a management mechanism[6]. Management mechanism plays a vital role in educational practice. Especially in the education process of new engineering majors, we urgently need to build and improve a set of effective management mechanism to ensure that the educational practice can be carried out smoothly and efficiently[7]. This not only involves the establishment of a set of scientific and reasonable teaching management system, but also includes the improvement of the student management system and the strengthening of teaching quality monitoring and other key aspects. By establishing a scientific and reasonable teaching management system, we can standardize the teachers teaching behavior, so as to improve the efficiency and quality of teaching activities. By improving the student management system, we can better manage and serve the students, to ensure that they are fully and fully guaranteed in their study and life. Together, these measures provide a solid foundation for cultivating high-quality engineering and technical talents.

6. Conclusion

From the perspective of ideological and political courses in the new era, constructing the education system of new engineering majors is a systematic project closely linked to the improvement of higher education quality and the national development strategy. Through in-depth analysis of the internal connection between ideological and political education and new engineering education, we deeply realize the necessity and urgency of integrating ideological and political education into new engineering education. In view of the problems existing in the current practice, such as the connotation of course education is not clear, the root of practice is not clear and innovation path of exploration, we must take multidimensional strategy: review talent training target, reconstruct undergraduate personnel

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training system, strengthen the practice teaching and evaluation system, and deepen the reform of system and mechanism. These measures aim to establish an educational system that emphasizes both professional skills and ideological and political education, so as to cultivate new engineering talents with solid skills, firm beliefs, noble moral character, and a sense of social responsibility. In the face of the deepening of education reform and the challenge of scientific and technological development, we should continue to explore and innovate, optimize and improve the new engineering education system. Through systematic thinking course design, innovative teaching methods, strengthening the teaching staff and improving the evaluation mechanism, we are committed to realizing the collaborative education of knowledge transmission and value guidance, and providing solid talent support for the development of scientific and technological capabilities and the transformation of the economy and society, China is striving to achieve the great rejuvenation of the Chinese nation.

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