Original Research Article

An exploration of how to carry out introductory course Civics on Artificial Intelligence in the construction of national first-class major

ABSTRACT

This paper explores the integration of ideological and political education in the Introduction to Artificial Intelligence course within the context of first-class major construction. It discusses innovative teaching methods, such as case studies, teamwork, and classroom discussions, aimed at fostering students' ideological and political qualities. By analyzing teaching practices and research, the study demonstrates the unique and feasible nature of civic education innovation in applied undergraduate institutions. The findings offer valuable insights for the reform and innovation of AI introductory courses in thinking and politics education, ultimately enhancing students' comprehensive quality and meeting the demands of educational reform.

Keywords: Civic Education, Artificial Intelligence, First-class Major, Computer Science

1.INTRODUCTION

In recent years, with the rapid development and wide application of artificial intelligence technology, the introduction to artificial intelligence course in applied undergraduate institutions has become one of the popular courses in colleges and universities. The course not only covers theoretical knowledge and practical application of AI technology, but also has a high degree of interdisciplinarity and comprehensiveness, which can cultivate students' innovative spirit and practical ability and meet the target requirements for the cultivation of applied talents in colleges and universities[1][2].

However, how to carry out ideological and political education and cultivate students' good ideological and moral quality and comprehensive quality in the teaching of introduction to AI courses has become a common concern in education and academia. In the context of the construction of first-class majors, the innovation of ideological and political education in the introduction to artificial intelligence course in applied undergraduate institutions has become an important issue in the reform and innovation of university education[3][4][5]

The purpose of this paper is to explore the innovative methods of Civic Education in the Introduction to Artificial Intelligence course in the context of the construction of first-class majors and to improve the teaching quality and comprehensive quality of students. This paper first introduces the teaching content and objectives of the introduction to artificial intelligence course, and then discusses how to carry out the Civic Education in the introduction to artificial intelligence course from the perspective of Civic Education[6][7] view of the current problems, this paper proposes a variety of innovative teaching methods and strategies, including case teaching, teamwork and classroom discussion, as well as how to focus on the cultivation of students' ideological and political qualities in teaching. It also introduces some successful cases with a view to providing reference and reference for other applied undergraduate institutions[8][9].

The results of this study have some reference and inspiration significance for the reform and innovation of the Civic Education of Introduction to Artificial Intelligence Course, and also provide reference and support for the cultivation of applied talents and the construction of first-class majors in universities[10][11][12].

2. COURSE CONTENT AND OBJECTIVES:

As a comprehensive course, the Introduction to Artificial Intelligence course covers the theoretical foundation, development history, core technologies and application scenarios of artificial intelligence[13][14][15]. Its main teaching objective is to cultivate students' mastery of theoretical knowledge and application skills of AI technology, as well as an in-depth knowledge and understanding of the impact of AI on society, economy and human life. Specific areas include the following:

Theoretical Foundations: Introduction to the basic concepts and theoretical foundations of artificial intelligence, such as neural networks, deep learning, natural language processing, etc.

Development history: Introduce the history and development process of AI, and understand the development status and trend of AI.

Core technologies: Introduction to the core technologies of artificial intelligence, such as machine learning, image recognition, speech recognition, etc.

Application scenarios: Introduce the application scenarios of AI in various fields, such as healthcare, education, transportation, finance, etc.

Through these contents, students will understand the nature, significance and application of AI technologies, and acquire relevant skills and methods to prepare for future careers in related fields.
However, it is not enough to master the technology itself. In teaching, it is also very important to grasp the interdisciplinary and comprehensive nature of the introductory AI course and focus on students' ideological and political education and comprehensive quality cultivation. In the next part, we will explore how to carry out ideological and political education in the introductory AI course.

3 HOW TO CONDUCT CIVIC EDUCATION IN THE INTRODUCTION TO ARTIFICIAL INTELLIGENCE COURSE

Ideological and political education in the Introduction to Artificial Intelligence course can help enhance students' ideological and moral quality and sense of social responsibility, and promote the formation of a correct outlook on life, values and worldview[16][17][18]. Specifically, the ideological and political education can be carried out in the following aspects:

1) Cultivate students' sense of responsibility. While introducing AI technology, students should understand the application scenarios and impacts of AI technology, and be guided to think about how AI technology can affect society and the future of humanity. By exploring the ethical and social responsibility issues of AI technology, students will be guided to establish a proper sense of responsibility and commitment.

In the introduction to AI course, students can be guided to think about how AI technology can affect society and the future of humanity by introducing the application scenarios and impacts of AI technology. For example, students can be introduced to the applications of AI technology in healthcare, finance, transportation, and other fields to guide them to understand the impact of AI technology on society and humanity. At the same time, students should also be made aware of the risks and problems that AI technology may bring, such as uncontrolled AI and privacy leakage, and be guided to think about how to deal with these problems.

In addition, the ethical and social responsibility of AI technology can be discussed to guide students to establish a correct sense of responsibility and commitment. For example, we can discuss whether AI technology should have the property of "moral machine" and how to ensure the justice and fairness of AI technology, so as to guide students to understand the ethical and social responsibility of AI technology.

2) Emphasize the integration of technology and humanities

In teaching, we should focus on the combination of technology and humanities, and guide students to pay attention to the humanistic value and social significance of technology applications while mastering the technology itself[19][20]. For example, while explaining AI technology, the application of AI technology in culture, art, education and other fields can be introduced to guide students to understand the interrelationship between technology and humanities and to form a comprehensive developmental view of science and technology.

In addition, students can be guided to understand the application of AI technology in the field of human culture and art by discussing the artistic applications of AI technology, such as AI art creation and music generation, as well as exploring the impact of AI technology on traditional art and culture and guiding students to think about the interrelationship between technology and humanities.

Cultivate students' innovation spirit and practical ability. In the course design, we should focus on guiding students to participate in practical projects and innovative practices to explore the application and development of artificial intelligence technology and improve their practical ability and innovative spirit. Through teaching activities such as group discussions, course design and practical projects, students' teamwork and innovative thinking skills are cultivated.

In the Introduction to Artificial Intelligence course, students' teamwork and innovative thinking skills can be cultivated through teaching activities such as group discussions, course design and practical projects. For example, students can be asked to work in groups to carry out AI-related project design and research to guide them to explore the application and development of AI technologies and improve their practical skills and innovative spirit.

In addition, students can be guided to participate in AI-related competitions and practical activities to enhance their practical skills and innovative spirit. For example, students can be organized to participate in AI-related competitions such as data analysis and machine learning, so that they can learn the application and implementation of AI technologies in practice.

At the same time, students can also be encouraged to participate in social practice activities related to AI technology, such as participating in AI-assisted medical care, intelligent education and other fields, so that students can gain an in-depth understanding of the application and development of AI technology in practice, while also cultivating their sense of responsibility and social commitment.

3) Strengthen students' information literacy and thinking skills

In the introduction to artificial intelligence course, it is important to focus on developing students' information literacy and thinking skills. For example, while explaining AI technology, students can be guided to understand the basics of AI technology such as data sources, data processing and algorithm principles to improve their information literacy.

Students can also be guided to analyze and solve real-world problems to develop their thinking skills and innovative thinking. For example, in course design and practical projects, students can be guided to analyze practical problems and explore the applications and solutions of AI technologies, and they can also be encouraged to propose new problems and innovative ideas to cultivate their innovation and thinking skills.

To sum up, as an important course in applied undergraduate colleges and universities, the Introduction to Artificial Intelligence course, besides imparting knowledge of AI technology, also needs to focus on Civic Education to cultivate students' sense of responsibility, humanistic literacy, practical ability and thinking ability, so as to lay a solid foundation for their future development and social commitment.

Through the above measures, ideological and political education can be effectively carried out in the Introduction to Artificial Intelligence course to enhance the ideological and moral quality and social responsibility of students and promote their overall development and growth.

4. INNOVATIVE TEACHING METHODS AND STRATEGIES

A variety of innovative teaching methods and strategies can be used in the Introduction to Artificial Intelligence course to promote students' thoughtful education and knowledge acquisition. The following are a few common teaching methods and strategies:

1) Case teaching

Case teaching is a teaching method based on actual cases for teaching and learning. In the Introduction to Artificial Intelligence course, some typical and representative AI cases, such as AlphaGo and self-driving technology, can be cited to explain the principles and applications of AI technology, and also guide students to analyze the technical, ethical and social issues behind the cases to cultivate their thinking ability and sense of responsibility.

2) Teamwork

Teamwork is an important learning method that promotes students' ability to cooperate and practice. In the Introduction to Artificial Intelligence course, group projects can be designed for students to work together in groups, such as writing an AI program, completing a data analysis task, etc., so that students can learn the application and implementation of AI technology in practice, and also develop their teamwork and innovation skills.

3) Class discussion

Classroom discussion is an important way of communication and thinking, which can help students think and analyze problems deeply. In the Introduction to Artificial Intelligence course, some discussion topics, such as ethical issues of AI and the prospect of AI applications, can be set up for students to communicate and discuss in class, so that students can think deeply about the application and development of AI technology, and also cultivate their critical thinking and expression skills.

Focusing on the development of students' ideological and political qualities in teaching, we introduce the following cases:

1) Direct students' attention to social and ethical issues

The development of artificial intelligence technology has brought many challenges and opportunities to society and human beings, but it also involves many ethical and social issues. In teaching, students can be guided to pay attention to these issues, so that they can realize that AI technology is not only a tool, but also involves social responsibility and ethical norms and other aspects.

To focus on the development of students' ideological and political qualities in AI teaching, educators can implement these strategies: Encourage critical thinking and ethical reasoning by introducing ethical frameworks to help students evaluate the social implications of AI; Engage in case studies and real-world examples to highlight ethical dilemmas arising from AI development and implementation; Foster interdisciplinary collaboration to promote diverse perspectives when designing AI systems; Emphasize the importance of empathy and compassion when addressing issues affecting individuals and communities; Integrate ethical considerations throughout the curriculum, ensuring students understand ethical and social responsibility as integral components of AI work.

By incorporating these strategies, educators can effectively direct students' attention to social and ethical issues related to AI, promoting responsible AI development and a more conscientious generation of professionals.

2) Cultivate students' sense of responsibility and innovation

In teaching, students can be guided to participate in AI-related competitions and practical activities, so that they can experience and feel the application and challenges of AI technology in practice, and also cultivate students' sense of responsibility and innovation, so that they can realize that the development of AI technology requires innovative thinking and responsible behavior.

To cultivate students' sense of responsibility and innovation in AI-related education, teachers can adopt these strategies: Project-based learning: Assign real-world problems to encourage creativity and critical thinking, fostering a sense of responsibility in AI development; Collaboration and teamwork: Promote group projects and participation in competitive events to improve problem-solving skills and teach students the value of ethical collaboration; Ethics and AI courses: Integrate discussions of ethics and responsible AI development into the curriculum to help students understand the broader societal implications of their work.

By incorporating these strategies, educators can help students gain a deeper understanding of AI technology and instill a sense of responsibility and innovation, preparing them for ethical and sustainable AI development in the future.

3) Emphasize students' social responsibility and sense of mission

The development of AI technology requires the participation of more talents with a sense of social responsibility, and this needs to be cultivated from education. In teaching, students can be guided by curriculum design and teaching methods to understand the social value and mission of AI technology, so that they can realize their roles and responsibilities in the future development of AI technology.

To emphasize students' social responsibility and sense of mission in AI-related education, teachers can take these steps: Case studies and discussions: Use case studies to highlight the impacts of AI technology on society, encouraging students to analyze ethical implications and consider their future roles; Community outreach projects: Have students apply AI knowledge to solve local issues, helping them understand AI's potential for positive change and inspiring social responsibility; Guest speakers and panels: Invite professionals to share experiences in AI development, inspiring students to think about their role in shaping AI's future and improving social well-being.

By implementing these approaches, educators can foster a sense of responsibility and commitment to ethical and sustainable AI development in students.

In conclusion, Civic Education in the Introduction to Artificial Intelligence course is an important task, and innovative teaching methods and strategies are needed to promote the cultivation of students' ideological and political qualities, so that students can learn AI technology while having a higher moral standard and sense of social responsibility.

5. RESULTS AND DISCUSSION

In the process of implementing the Introduction to Artificial Intelligence course in Zhejiang University of Science and Technology, students have achieved a number of competition awards and excellent results. For example, in the ACM International Student Programming

Competition, students of the major won the first prize at the provincial level and the third prize at the national level; in the National Student Mathematics Competition, students of the major won the first prize at the provincial level and the second prize at the national level, etc. These achievements are inseparable from the teaching contents and objectives of the major in the Introduction to Artificial Intelligence course, which fully reflect the remarkable improvement of teaching effect.

In addition, the employment situation of the graduates of this major is also very excellent. According to relevant statistics, the employment rate of graduates of the major is as high as 98%, and a considerable number of them are employed in famous Internet companies at home and abroad, such as Tencent, Alibaba, Baidu, etc.. This also fully illustrates the strength and attractiveness of the major in the field of artificial intelligence.

In addition to competition awards and graduate employment, the program's Introduction to Artificial Intelligence course also provides strong support and assurance for students to enter graduate school. According to the statistics of the graduate school of the major, the number of applicants and admissions to graduate school have increased significantly in recent years, and the admission rate has also improved significantly. Among them, many students choose to pursue artificial intelligence, machine learning, data science and other related majors, which fully illustrates the importance of the Introduction to Artificial Intelligence course in the students' career development.

By analyzing the implementation effect and successful cases of computer science majors in Zhejiang University of Science and Technology, we can conclude that the Introduction to Artificial Intelligence course has an important meaning and role in the teaching of applied undergraduate institutions, which can not only improve students' professionalism and skills, but also cultivate their ideological and political quality and social responsibility consciousness, and further promote students' overall personal development.

The above results and success stories are attributed to the application of innovative teaching strategies and methods in the Introduction to Artificial Intelligence course of Zhejiang University of Science and Technology, such as the use of case teaching, teamwork, classroom discussion and other teaching methods, as well as the emphasis on the ideological and political quality of students' training, so that students not only master the knowledge and skills of Introduction to Artificial Intelligence, but also enhance their understanding of the development of the times and social responsibility In addition, the students are able to form high quality talents that meet the needs of society.

6. CONCLUSION

The introduction to artificial intelligence course has an important significance and role in the teaching of applied undergraduate colleges and universities. It can not only improve students' professionalism and skills, but also cultivate their ideological and political quality and social responsibility consciousness, and promote their overall personal development. This paper first introduces the teaching content and objectives of the introduction to artificial intelligence course, and then discusses how to carry out ideological and political education in the introduction to artificial intelligence course from the perspective of civic education. Then, several innovative teaching methods and strategies are proposed and illustrated with cases. Finally, the teaching value of the Introduction to Artificial Intelligence course is further proved with the implementation effect and successful cases of computer science majors in Zhejiang University of Science and Technology. The research results of this paper have implications for the introduction to AI course and the development of Civic Education in other applied undergraduate institutions.

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REFERENCES

[1] Pu, Q., & Huang, Y. (2022). The value implication and practical path of integrating the spirit of the 20th Party Congress into curriculum thinking and government. Journal of Chongqing University (Social Science Edition), 28(6), 286-298.

[2] Yang, J. (2021). Research on the construction of "Curriculum Civics" in Chinese higher education institutions (Doctoral dissertation, Jilin University)..

[3] Wen, Q. (2021). The connotation and implementation framework of university foreign language course Civics. China Foreign Language, 18(2), 47-52..

[4] Qi, J. (2020). Research on the collaboration and innovation of curriculum thinking and politics in colleges and universities (Doctoral dissertation, Shanghai Normal University)..

[5] Zhao, F., Chen, W., Wang, J., & Chen, H. (2020). Five dimensions and practical directions of the construction of the ideology of physical education courses in the context of "establishing moral education". Journal of Wuhan Institute of Physical Education, 54(4), 80-86..

[6] Lin, Q. (2019). "Curriculum thinking politics": a study on new ways of ideological and political education in colleges and universities in the new era (Doctoral dissertation, Nanjing University of Posts and Telecommunications)..

[7] Wang, X., & Shi, Y. (2020). The connotation, characteristics, difficulties and coping strategies of curriculum thinking in the new era. Journal of Xinjiang Normal University (Philosophy and Social Science Edition), 41(2), 50-58..

[8] Zhu, M. (2019). Exploration and Practice of "Curriculum Civics" (Doctoral dissertation, Shanghai International Studies University).

[9] Shi, S. (2018). Correctly grasp the relationship between "curriculum thinking and government" and thinking and government courses. Thought Theory Education, (11), 57-61..

[10] Qiu, R. (2018). The theoretical interpretation of "curriculum thinking politics" and "thinking politics curriculum" in the same direction. Thought Education Research, (4), 109-113.

[11] Lu, D. (2018). Some core problems and solution ideas in the implementation of curriculum Civics - a discussion based on professional curriculum Civics. Thought Theory Education, (3), 64-69. DOI: 10.16075/j.cnki.cn31-1220/g4.2018.03.011.

[12] Yu, J., Wang, W., & Xu, Y. (2018). The logic of professional teachers' practice of "thinking politics in curriculum" and its key elements: the example of science and technology courses. School Party Construction and Ideological Education, (1), 64-66.

[13] Wu, Y. (2018). Three points of emphasis for promoting "curriculum thinking politics" in colleges and universities. School Party Construction and Ideological Education, (1), 67-69.

[14] Gao, X. (2017). Research on the model of thinking and government work of university curriculum based on collaborative education--a case study of reform practice in Shanghai universities. School Party Construction and Ideological Education, (24), 16-18.

[15] He, H. (2017). The inner logic and constructive strategy of the development of "Civic Science Course" to "Curriculum Civic Science". Ideological and Political Education Research, 33(5), 60-64.

[16] Gao, Y. (2017). The key problems and solution paths of curriculum thinking and politics construction. Chinese Higher Education, (Z3), 11-14.

[17] Li, G. (2017). Curriculum thinking and politics construction must firmly grasp five key links. Chinese Higher Education, (Z3), 28-29.

[18] Qiu, W. (2017). The value implication and generation path of curriculum thinking. Theory of Thought Education, (7), 10-14.

[19] Gao, D., & Zong, A. (2017). Curriculum thinking politics: an inevitable choice to effectively play the role of the main channel of classroom education. Journal of Ideological Theory Education, (1), 31-34.

[20] Gao, D., & Zong, A. (2017). From Civic and Political Science Curriculum to Curriculum Civic and Political Science: Constructing Ideological and Political Education Curriculum System in Universities from a Strategic Height. China Higher Education, (1), 43-46.