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Research on the Innovation of Network Ideological and Political Education in Colleges and Universities in the Era of Big Data

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Abstracts: The arrival of the big data era is profoundly changing people's social structure and working methods, and the field of education is naturally not spared. Driven by a large amount of information and technology, the pace of educational change is becoming more and more rapid, and networking and intelligence have become the keywords of the new generation of education, especially in the aspect of network ideological and political education in colleges and universities, this change is more important. This paper will explore these new trends and challenges in depth, analyze their impact and significance on network ideological and political education in colleges and universities, and combine them with specific teaching cases to put forward corresponding solution strategies and directions, aiming to further promote the modernization of the cause of ideological and political education in China's colleges and universities.

Keywords: big data; college education; ideological and political; educational innovation

Introduction

Network ideological and political education in colleges and universities has an irreplaceable role in shaping the core values of students and improving the quality of thinking, and the era of big data has opened up a new horizon for the personalized and interactive teaching of ideological and political education, and it has become an important force to promote the innovation of ideological and political education in colleges and universities. However, the challenges accompanying it are equally serious, how to protect students' data privacy and information security, and how to avoid the ideological bias that may be triggered by the data bias, these are the problems that must be faced by the network of ideological and political education in colleges and universities in the era of big data.

1. The application of big data technology in network ideological and political education in colleges and universities

1.1 The value of data mining in the analysis of students' ideological dynamics

Data mining in network ideological and political education in colleges and universities through the in-depth analysis of students' online behavior, interaction patterns, learning habits, and other multi-dimensional data, to help educators more accurately capture the students' ideological tendencies and values, to achieve personalized adjustment of educational content and methods. Data mining can reveal multiple dimensions such as students' interests, ways of thinking about problems, and status and roles in social networks, enabling educators to better understand students' ideological needs (Liu, 2022). For example, by analyzing students' speeches and interactions on social media, it is possible to keep abreast of their views and attitudes on topics such as current events, history, and culture, so that they can be guided and corrected in teaching. Data mining techniques can also be used to

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identify possible radical or extreme tendencies in students' thinking. Some subtle and unnoticeable emotions and opinions may be exposed in in-depth data analysis, enabling educators to take more targeted interventions. Data mining's ability to provide quantitative and actionable information also enables ideological and political education to assess its effectiveness more scientifically and to understand through comparative analysis which educational methods are effective and which need to be improved.

1.2 The Potential of Personalized Recommendation Systems in Improving Educational Effectiveness

The personalized recommendation system based on big data technology can make intelligent recommendations based on students' behaviors, interests, and learning history, thus significantly improving the relevance and effectiveness of education. The diversified and individualized characteristics of the college student population are becoming more and more prominent, and their ideological needs, cognitive styles, and learning processes are all different. Personalized recommendation systems can analyze students' online behaviors, such as browsing records, search histories, and interactive data, to provide them with learning resources and content that match their ideological and cognitive characteristics and interests. For example, for students who care about social issues or international affairs, the system can recommend articles, videos, or discussions related to these topics, thus prompting them to think and study more deeply. Traditional online ideological and political education content is often fixed and uniform, making it difficult to meet the needs of all students, whereas, through personalized recommendation, students can get resources matching their cognitive level and interests, which will undoubtedly greatly improve the initiative and depth of their learning (Wang & Qin, 2023). In addition, this recommendation system can also provide educators with valuable feedback to help them understand the real needs and learning status of students, and if most of the students show strong interest in a certain topic, then educators can target to strengthen the teaching content and methods in this area.

1.3 The role of big data visualization in strengthening the interactivity of education

In the field of network ideological and political education in colleges and universities, big data visualization transforms complex data information into a form that is easy to understand and assimilate through graphical means, a feature that provides strong support for strengthening the interactivity of education. Big data visualization can intuitively display students' learning behaviors and ideological dynamics, and through the visualization of students' online interactions, discussion contents, learning paths, and other data, educators can capture students' learning interests, doubts, challenges, etc., to carry out more targeted guidance and interaction. Second, big data visualization tools provide a common "language" and interaction platform for educators and students. In the traditional education model, many students may feel confused and unfamiliar with the abstract ideological and political theories, while big data visualization can combine these theories with students' real data to make it more graphic and concrete, which not only helps students better understand and absorb the knowledge, but also inspires them to participate in the discussion, ask questions, and explore the interest of the students (Zhang & Li & Li, 2023). Big data visualization also provides educators with more scientific teaching feedback, they can visualize data to understand the effect of teaching strategies, which content is welcomed by students, and which content may need to be adjusted or strengthened, and this immediate and intuitive feedback mechanism makes the education process more flexible and effective.

2. The innovation strategy of online ideological and political education in colleges and universities

2.1Online education platform and resource construction

Online education platforms and resource construction is a key links in educational innovation,

which not only involves the development and integration of teaching content but also includes how to provide a more interactive and personalized learning experience. In the face of this challenge, educators should make teaching content more vivid and engaging through multimedia and interactive design, and make use of intelligent recommendation systems to provide students with personalized learning resources and guidance based on their learning process and interests. It is also necessary to strengthen the integration with social media and utilize social networks to promote interaction and communication among students, thus improving the engagement and effectiveness of learning. For example, a university has opened an online course on "Modern Socialist Theory and Practice", which not only integrates rich teaching resources such as text, pictures, and videos but also develops an intelligent discussion forum, where students can select topics for discussion according to their interests. By analyzing students' online learning behaviors, the platform can also push relevant reading materials and post-course exercises, making the learning process more personalized and flexible. In addition, the course also sets up a "virtual community of practice", in which students can simulate and solve some real-world problems, greatly enhancing the interactivity and practicality of the course.

2.2 Data-driven personalized learning and assessment

The data-driven learning strategy collects and analyzes students' online learning behaviors, test scores, interactions, etc., and develops personalized learning paths for each student, and the system can push relevant learning resources and tasks to students' weak points, to improve the learning effect. In terms of assessment, in addition to regular test and assignment scores, data-driven assessment can also examine students' performance in online discussions, project cooperation, simulation practice, etc. This comprehensive assessment is not only more objective and comprehensive, but also encourages students' active participation and exploration, and cultivates their critical thinking and innovation skills. Take the online course "Socialist Core Values" of a university as an example, to increase students' interest and participation, the course has designed a series of simulated social practice tasks, such as "organizing community volunteer activities", "designing public service advertisements", etc., and students are encouraged to participate in online discussions, project cooperation, public service advertisements, and other aspects. To increase students' interest and participation, the course has designed a series of simulated social practice tasks, such as "organizing community volunteer activities", "designing public service advertisements" and so on, in which students need to submit their proposals on the platform, and evaluate and discuss them with each other. To ensure the fairness and effectiveness of the assessment, the course adopts a data-driven assessment strategy, the system will automatically record the number of submissions, revisions, discussions, and other data of each student, combined with the peer assessment scores and the teacher's rating, to generate a composite score for each student, this assessment not only examines the mastery of the knowledge of the students but also fully embodies the practical ability and spirit of cooperation.

2.3 The Application of social media and interactive platforms in civic education

In the current digital educational environment, social media and interactive platforms have injected new vitality into network ideological and political education in colleges and universities. Social media, such as microblogging, WeChat, and Jitterbug, provide a channel for educators to communicate directly with students. By posting selected articles, videos, charts, and other content, educators can guide students to pay attention to and think about current social hotspots and political issues, and the commenting and sharing functions on these platforms can also encourage students to express their views, and engage in discussions and exchanges with their classmates (Rong &Yang & Gao, 2022). Interactive platforms such as online Q&A, forums, real-time chat rooms, etc., provide a space for students to focus on discussion and learning, where students can ask

questions, share information, organize group discussions, etc., to form an autonomous, open, and diversified learning community. Taking the online course "Modern Socialist Theory" of a university as an example, the university has set up an official public number on WeChat, which publishes weekly news, cases, and interviews related to the course content, guiding students to pay attention to and think about it, and also has an interactive session of "Question of the Day", encouraging students to ask questions. The public number also has a "question of the day" interactive link, encouraging students to answer questions, participate in polls and make comments.

2.4 Interdisciplinary Cooperation for Civic and Political Education Innovation

Interdisciplinary cooperation is an important innovative method that injects new vitality and content into traditional Civic and Political Education. By combining with other disciplines, Civic and Political Education can explain and convey the core concepts and values in a more in-depth and vivid way, and to enhance its practical significance and the student's sense of identity. First of all, interdisciplinary cooperation can broaden the knowledge field of Civic-Political education, combine with the theories and practices of other disciplines to form a richer and more complete education system, which can not only improve the comprehensive quality of students but also help them better understand and apply the knowledge of Civic-Political education. Interdisciplinary cooperation can also bring new teaching methods and technologies to Civic and Political Education, combining art, music, film and television, and other disciplines to carry out multimedia and creative teaching activities, making Civic and Political Education more vivid and attractive (Chen & Chen , 2022). Taking the course "Modern Socialist Core Values" of a university as an example, the course cooperates with the film production program of the university, and students are required to choose the themes in the core values and create a short film by combining them with their own life experience and social observation. In this process, students not only need to deeply understand and embody the connotation of core values but also need to learn and apply the relevant knowledge and technology of movie production.

3. Challenges and Countermeasures of Network Ideological and Political Education in Colleges and Universities

3.1 Data Privacy and Information Security Issues

Online ideological and political education in colleges and universities has gradually adopted many advanced online education technologies, which provide convenience for teaching and learning, but along with it comes the serious challenge of data privacy and information security, where students' online behaviors, discussion records, and personal information may inadvertently be leaked or inappropriately used (Feng, 2022). With the application of big data, artificial intelligence, and other technologies in ideological and political education, massive amounts of student data are continuously collected and analyzed, which not only involves students' learning habits and grades, but also may involve their social interactions and other sensitive information, and once these data are inappropriately collected, used, or leaked, students' privacy and information security may be violated. Second, many colleges and universities may lack sufficient technology and experience to ensure the security of their online platforms. Hacking, malware, and internal leakage may lead to data loss or leakage, and when this happens, it may not only harm students but also lead to damage to the school's reputation and exposure to legal liabilities. In the face of these challenges, schools should establish strict data collection and use policies to ensure that only necessary data are collected and students' explicit consent is obtained, and technical means such as encryption, firewalls, and anti-virus software should be used to protect the data from being leaked or tampered with (Jia, 2022).

3.2 Ideological bias that may be triggered by data bias

Data bias stems from imbalances and biases in the process of data collection and analysis, such as a data model based on a specific group that may not apply to another group, or overemphasis on a particular point of view in the study of certain issues, resulting in other points of view being ignored. When such biased data is used to develop educational content and methods, it can lead to ideological biases in the education students receive. Over-reliance on data-driven educational methods may also lead to ignoring individual differences and the real needs of students, and over-standardized content ignores the diversity and uniqueness of students, leading to their blind acceptance or rejection of certain perspectives and ideas (Li & Pang, 2022). Educators should be aware that data itself is not neutral but is influenced by a variety of factors, and when using data to develop educational content and methods, they should maintain critical thinking and ensure the diversity and completeness of data sources, and colleges and universities should also conduct regular reviews of the data collection and analysis process to identify and correct potential biases.

4. Summarization

To summarize, network ideological and political education in colleges and universities has stood at a new historical intersection, facing both opportunities and challenges, and with the power of science and technology, the road of innovation is constantly broadening, but it should always be alert to the problems that may arise. People in the pursuit of educational efficiency and convenience at the same time, should always be people-oriented, focusing on the overall development of students, true and fair educational atmosphere, diversified means of teaching and learning, as well as sound regulatory protection will become the key to future development. Only through joint efforts can we promote network ideological and political education in colleges and universities toward a more mature, rational, and humanized future.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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