The Important Value and Path Optimization of Empowering Precise Ideological and Political Education in Universities with Big Data Technology

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Abstract. Higher education ideological and political education is a complex and long-term systematic project that needs to keep pace with the times and apply the latest technological means. The use of big data technology can help achieve the goal of accurate ideological and political education in universities. This study aims to explore how big data technology empowers accurate ideological and political education in universities, analyze limiting factors, and propose scientific optimization paths, providing assistance for the innovative development of accurate ideological and political education in higher education.

Keywords: big data technology; precise ideological and political education in universities; path optimization

1 Introduction

Since the 18th National Congress of the Communist Party of China, Xi Jinping has proposed using information technology such as big data to promote innovation in government management and social governance models, continuously promoting the scientific decision-making of the government, precise social governance, and efficient public services. In the field of ideological and political education, it is even more necessary to grasp the characteristics of teachers' and students' thinking and development needs, and pay attention to combining general requirements with classified guidance to improve the scientific and refined level of work.

In this context, using big data technology to promote precise ideological and political education not only meets the fundamental tasks and requirements of the new era's universities in cultivating morality and educating people, but also opens up new methods and paths for online ideological and political education.

2   The connotation and value of big data technology empowering   precise ideological and political education

Precise ideological and political education refers to the intervention of cutting-edge technologies such as big data and artificial intelligence, guiding precise thinking and concepts, and realizing precise education activities in ideological and political education.The empowerment of big data technology for precise ideological and political education is a necessity for cultivating a "strong country generation" of college students[1]. By empowering precise ideological and political education with big data technology, we can educate and guide young students to integrate their personal growth and life pursuits into the great rejuvenation of the Chinese nation, guide young students to achieve the internal integration of offline and online life, and help accelerate the development of digital China.

Based on cnki and web of science data, the literature from 2013 to 2022 is analyzed. Based on the key words of "personalized learning" and "big data", 969 literatures were found.
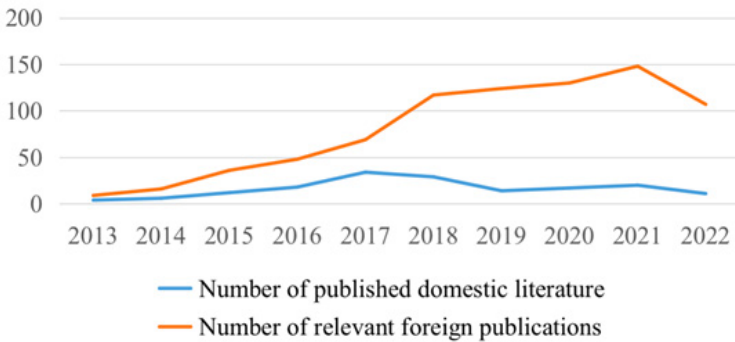

Fig. 1. Number of published literatures at home and abroad

Figure 1 shows that domestic researches on precise education based on big data basically started in 2013 and reached a peak in 2017 and 2018. Since 2019, with the deepening of research on intelligent technology, the research on personalized learning and teaching has formed a new trend. Since 2013, the number of relevant publications in foreign languages has been showing a gradually increasing trend, with obvious linear development characteristics. Through the analysis of the bibliometric method, it's clear that big data is currently a hot topic in the ideological and political research in colleges and universities[2].

Personalized education is based on the overall development goal, guided by the needs of students, and uses big data technology to help stimulate the learning motivation of college students, which is of great significance for the accurate ideological and political development of domestic colleges and universities[3].

3   Application and influence of big data technology in the development of precise ideological and political education

With the popularization of the Internet, big data technology has penetrated into daily life and reshaped people's communication space. According to the 49th Statistical Report on the Development of the Internet in China, by December 2021, 13.3% of Chinese netizens are aged 10-19, 17.3% are aged 20-29, and 99.7% of Chinese netizens use mobile phones to access the Internet[4]. It can be said that young students, as the main body of netizens, are born with the Internet and grow together with mobile apps.

In order to accurately grasp the overall situation of ideological and political course teaching in colleges and universities, we conducted field research on the teachers and students of ideological and political course in 7 representative colleges and universities in W City from April to May 2022 by means of questionnaire survey and random interview. Among them, there are 5 undergraduate colleges and 2 vocational colleges. A total of 496 questionnaires on the effectiveness of ideological and political teaching were distributed in this survey, and 468 were effectively received, with an effective recovery of 94.4%. The following two figures give more details of the questionnaire. Figure 2 shows the main reasons that affect and the effect of ideological and political courses and Figure 3 shows the main reasons for students taking ideological and political courses.
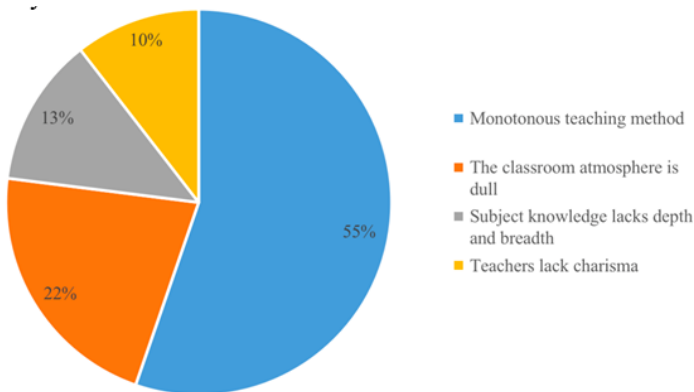

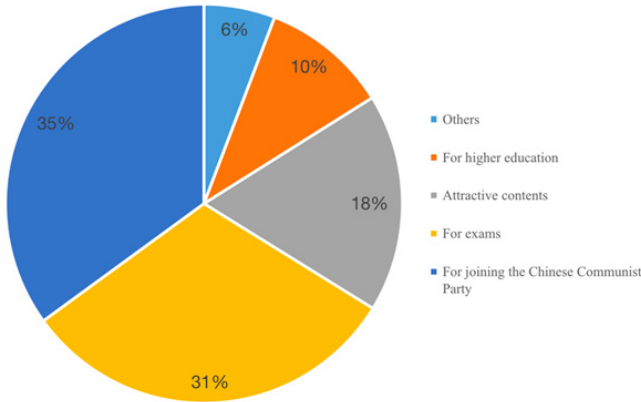**Fig. 2.** The main reasons that affect the effect of ideological and political courses

Fig. 3. The main reason for taking ideological and political courses

According to the survey, when asked about the "most important reason for the lack of attraction of relevant course", the proportion of students who chose "outdated and monotonous teaching methods" was as high as 55.3%. Only 17.7% of the respondents said "the main reason for taking ideological and political courses" chose "attracted by what teachers teach".

Manual analysis in a large number of data is obviously inefficient. In order to effectively solve this problem, cluster analysis and its algorithm in data mining technology have shown its important utility in practice. Cluster analysis algorithms can be broadly divided into five categories according to usage methods[5]:

Partition methods；2) Hierarchical Methods；3) Density based Methods.；4) Grid-based Methods.；5) Model-based methods.

By analyzing the contents of cluster, multiple research hotspots can be explored. First, big data is used to analyze existing education data, and the design method and practice path of big data in student learning, self-adaptive system construction, teaching model and effective evaluation can be mined. The second is the realization of accurate ideological and political education based on big data. The key lies in the accurate delivery of learning resources, which requires accurate analysis, classification, portrait and modeling of user needs to enhance the actual sense of acquisition of learners[6].

4   The Significant Value of Big Data Technology for the Precise Development of Ideological and Political Education

In the era of big data, precise ideological and political education in universities faces new opportunities and challenges. However, in the process of promoting digital empowerment in precise ideological and political education, there are some constraints that need to be scientifically and rationally analyzed in order to leverage the advantages of big data itself and realize the transformation of ideological and political

education in universities. These constraints include cognitive challenges, data and information challenges, technological application challenges, and technological alienation risks[7].

1.Cognitive challenges are mainly due to the limited understanding and lack of digital thinking among ideological and political education workers in universities. They lack the ability to apply big data and accurately match educational supply with the demands of educational objects.

2.Data and information challenges are due to the fact that the digital governance ability of universities still needs to be improved, and there are still many problems to be solved in digital governance of ideological and political education. Some of these problems include inefficient utilization of data resources and a lack of unified data planning.   By 2013, only 173 of the 255 planned data centers were in use. The total number of Chinese data centers of various kinds is 430,000, which can accommodate about 5 million servers. The overall capacity is 1/2 of Japan's and 1/10 of America's, and there is great capacity to expand. But nearly 50 percent of the respondents believe there is "duplication of resources".

3.Technological application challenges are due to the fact that ideological and political education in universities involves massive amounts of unstructured data, which requires professional teams and technical personnel for specialized processing. The development and application of big data technology require a large amount of material and technical resources, which is difficult for individual universities to bear and operate.

Technology alienation risks become a practical constraint for precise ideological and political education in universities. The application of digital technology can easily create an "information cocoon", which is not conducive to the personalized and comprehensive development of students or the shaping of core values[8]. At the same time, it also brings many potential risks such as digital technology alienation and digital ethical problems.

Ideological and political education workers in universities need to strengthen their understanding and recognition of digitization, improve their sensitivity, acceptance, and recognition of digital transformation. Universities also need to enhance their digital governance capabilities, unify data planning, and improve the efficiency of data resource utilization. They should strengthen technology application, establish specialized teams and technical talents, and establish management mechanisms. Finally, universities should also pay attention to the risks brought by the application of digital technology, and avoid problems such as digital technology alienation and digital ethical problems.

5   Optimizing the Path for Big Data Empowering the Development of Precise Ideological and Political Education

Minister Huai Jinpeng of the Ministry of Education proposed the implementation of the digitalization strategy at the 2022 National Education Work Conference. In terms of ideological and political education in universities, innovation should be continu-

ously pursued to enhance the education's affinity, influence, targeting, and effectiveness in response to actual situations and contemporary demands. Therefore, it is urgent to delve into the internal mechanism of how digital technology empowers precise ideological and political education in universities, recognize the practical benefits of digital technology to precise ideological and political education, and explore breakthroughs for digital technology to empower the development of precise ideological and political education in universities.

1. Paradigm Shift:

   Integrate Digital Thinking into the "Big Ideological and Political" Framework. The primary task of promoting digital empowerment for precise ideological and political education in universities is to shift the mindset[9]. Digitalization is not merely a technological revolution but also a cognitive and thinking revolution. Universities should actively cultivate a digital culture from top to bottom, establish a firm digital thinking mindset, integrate digital thinking into the "big ideological and political" framework and daily ideological and political education work, strengthen digital thinking ability and precise education awareness, and adeptly apply digital thinking and platforms to perceive, identify, analyze, and solve problems.

2. Optimization mechanism:

   Schools should always adhere to the fundamental task of fostering virtue through education, fully coordinate resources and strengths in various fields of running schools and school management, various aspects of education and teaching, and talent cultivation, strengthen ideological guidance, innovate methods, and strive to create a good atmosphere. From the overall perspective of the digital transformation of ideological and political education in universities, overall planning and scientific demonstration should be carried out to define the legitimate boundaries and extension scope of digital technology in ideological and political education in universities. An integrated platform for ideological and political education resource information should be established to break the shackles of departmentalism and positionism, and to break down the barriers of "data silos" and "information isolation"[10].

3. Consolidating the foundation:

   We should establish a new information network, build a digital ideological and political education platform with interconnection, application completeness, and collaborative services. At the same time, we should develop new resources and tools, enrich the digital application scenarios of ideological and political education, and improve the digital level of teaching, learning, management, evaluation, and research.

4. Strengthening governance:

   Universities should conduct data sorting for ideological and political education, compile a full data resource catalog, and grasp the bottom line of data assets. At the same time, efforts should be made to continuously improve the data analysis and application capabilities of ideological and political education, not only to vigorously cultivate compound talents who master modern digital technology and have a deep theoretical foundation in ideological and political

education, but also to strengthen cross-disciplinary cooperation, actively introduce excellent data analysis and artificial intelligence technology, and strive to build a high-quality data analysis team.

6   Conclusion

The research results in this field can provide theoretical support and practical reference for colleges and universities to carry out precision ideological and political education, and have broad application prospects for improving the teaching quality, precision teaching governance and implementing the evaluation of wisdom.

The core key to promoting precise ideological and political education in universities with digital empowerment is to strengthen the digital top-level design of "triple integral education" in schools. By fully unleashing the potential and value of digital technology, targeted education can be carried out to avoid educational deviations caused by information asymmetry, thereby enabling learners to form a correct understanding of university ideological and political education theory. Therefore, universities should actively respond to digital development, deeply integrate digital technology with ideological and political education, and continuously promote the development of precise ideological and political education in universities to meet the needs of the times.

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