

# Assessment and Practice of Ideological and Political Education in Curriculum Based on Big Data Technology

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**Abstract:** This article seeks to delve into the advancements and complexities surrounding ideological practices in the age of Big Data (BD), offering tailored solutions along the way. Initially, it examines BD's precise application and its role in refining ideological content, reimagining instructional approaches, and harnessing resources efficiently. Utilizing case studies, the article showcases the tangible successes achieved in course Ideological and Political Education (IPE) when propelled by BD, underscoring BD technology's proficiency in elevating the caliber and impact of IPE. In terms of methodological approach, the article employs a multifaceted blend of literature reviews and case studies to gain a nuanced understanding of the intersection and potential pitfalls of BD and curriculum IPE. The research not only gives priority to the opportunities brought by BD, but also makes a critical analysis of its challenges in ethics and privacy, technical limitations and so on. The research results show that BD technology provides a brand-new perspective and tool for curriculum IPE, which can significantly improve the pertinence of instructional content, the flexibility of instructional mode and the richness of instructional resources. It is hoped that this research can provide useful reference for the innovative development of IPE in the future.

## 1. Introduction

In the era of rapidly advancing information technology, Big Data (BD) has emerged as a prominent trend shaping today's society [1]. Given its significance, education—being the backbone of any nation's progress—must harmonize with this technological shift and explore ways to integrate BD into its fold. Specifically, Ideological and Political Education (IPE), which forms a crucial component of higher education, aims to foster students' ethical values and societal duties [2]. Traditionally, however, assessing the efficacy of IPE has been hampered by issues such as subjectivity and data collection challenges, limiting its ability to objectively reflect students' performance and ideological leanings [3-4].

Against this backdrop, our study ventures to explore the utilization of BD technology in evaluating and enhancing IPE curricula. This exploration is poised to offer fresh perspectives and methodologies for refining the quality of IPE. The research's importance is threefold:

(1) BD technology enables comprehensive data collection and analysis of students' learning patterns and ideological orientations, thereby providing a more robust and precise foundation for IPE assessments.

(2) BD unlocks insights into students' latent learning needs and challenges, aiding educators in understanding their charges more deeply and facilitating personalized instruction and guidance.

(3) The integration of BD into IPE practices promises to catalyze instructional innovation, boost student engagement and interest, and ultimately, elevate the impact of IPE instruction.

## 2. BD technology and curriculum ideology overview

### 2.1. Basic concepts and characteristics of BD technology

BD technology refers to a technology with stronger decision-making, insight and optimization

ability through new processing mode in the processing and analysis of super-large and complex data sets that traditional data processing application software can't handle [5]. Its characteristics are shown in Figure 1.

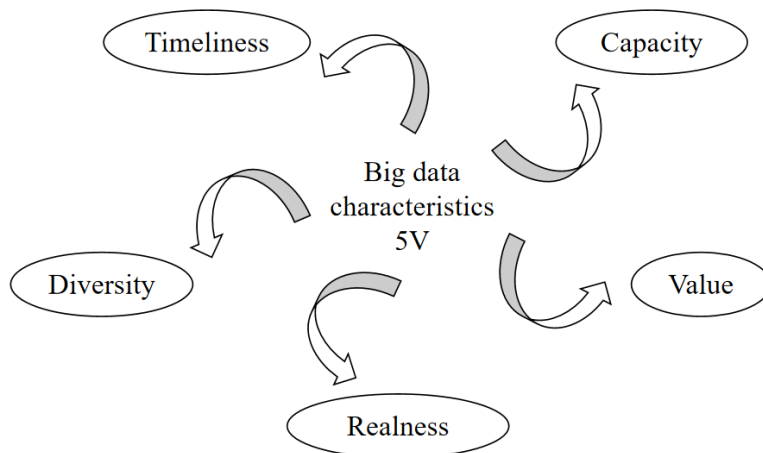


Figure 1 Characteristics of BD technology

## 2.2. The connotation and importance of curriculum IPE

Curriculum IPE represents an innovative educational approach that seamlessly incorporates IPE across diverse academic disciplines [6]. Its essence is found in the organic fusion of fundamental socialist values, patriotic sentiments, and ethical standards within the framework of subject-specific instruction, thereby guiding learners to forge a robust perspective on the world, life, and ethical principles. The significance of curriculum IPE is multi-faceted: it fosters well-rounded individuals, amplifies the impact of IPE, and advances the substantive evolution of tertiary education.

## 2.3. Correlation analysis of BD technology and curriculum ideology and politics

There is a close correlation between BD technology and curriculum ideology and politics, which is mainly reflected in the following aspects:

**Data support decision-making:** BD technology can provide comprehensive and objective data support for curriculum IPE, and help educators better understand students' ideological trends, learning needs and behavioral characteristics, so as to formulate more scientific and reasonable teaching strategies and programs [7].

**Personalized Instruction:** By harnessing the power of BD technology, educators gain the ability to continuously monitor and meticulously analyze students' learning progress in real-time. This allows for tailored instruction that caters to individual students' strengths, weaknesses, preferences, and needs, ultimately enhancing both teaching effectiveness and the overall learning experience.

**Innovative Instructional Mode:** BD technology serves as a catalyst for reinventing ideological instruction. It facilitates the integration of modern informational tools like online learning platforms and blended learning approaches, injecting dynamism into the curriculum and fostering a more engaging and motivated learning environment.

**Resource Enhancement and Collaboration:** BD technology is instrumental in identifying and curating high-caliber ideological educational resources. Through sophisticated data mining and analysis, institutions can streamline resource allocation, improving both efficiency and impact. Furthermore, BD facilitates cross-institutional and regional resource sharing, breaking down silos and promoting educational equity.

## 3. The application of BD in curriculum ideology assessment

### 3.1. Traditional methods and challenges of curriculum ideology assessment

The traditional methods of curriculum ideology assessment mainly include questionnaire survey, students' feedback and teachers' self-assessment. These methods can reflect the teaching effect of

ideology course to a certain extent, but there are also some obvious challenges and limitations [8]. First of all, traditional assessment methods often rely on subjective judgment and lack objective and quantitative assessment criteria, which leads to strong subjectivity and randomness of assessment results. Secondly, the traditional methods have limited data collection and processing ability, and it is difficult to effectively analyze and mine a large quantity of diversified data, so that it is impossible to fully and deeply understand students' actual performance and ideological trends. In addition, the traditional methods still have problems such as tedious assessment process and low efficiency, which can not meet the requirements of modern higher education for assessment work.

Compared with traditional methods, BD has the following obvious advantages in curriculum ideology assessment: data comprehensiveness and objectivity, real-time and dynamic, predictability and personalization, efficiency and automation.

### 3.2. Construction of curriculum ideology assessment index system based on BD

The construction of the assessment index system of curriculum IPE based on BD should follow the following principles: ① Scientific principle: The construction of the index system should be based on scientific educational concepts and instructional methods to ensure the objectivity and accuracy of the assessment results [9]. ② Systematic principle: The index system should comprehensively cover all aspects of IPE, including teaching objectives, instructional contents, instructional methods and teaching effects, and form a complete assessment system. ③ Operational principle: indicators should be measurable and operational, which is convenient for educators to carry out actual assessment. The specific construction process is shown in Table 1 below.

Table 1 Index system construction

Step number	Step name	Main content
1	Clear assessment objectives	Determine the overall goal and specific goal of curriculum ideology assessment-provide direction for the construction of index system
2	Screening key indicators	Through literature research, expert interviews and other methods to screen-screen out the key indicators that can reflect the effect of ideology teaching.
3	Constructing index system	According to the selected key indicators, an index system-a complete system including multi-level indicators-is constructed.
4	Determine the weight and assessment criteria	Through expert scoring, analytic hierarchy process and other methods to determine the weight-determine the assessment criteria of each index-form a complete assessment system

### 3.3. Case study: the practical application of BD in curriculum ideology assessment

Taking a university as an example, this article introduces the practical application of BD in curriculum ideology assessment. By constructing a curriculum ideology assessment system based on BD, the school has realized the comprehensive collection and analysis of students' learning behavior and ideological trends. The comprehensive system comprises four distinct components: a data acquisition module, a data management module, an analytical module, and a reporting module.

Within the data acquisition module, diverse channels such as online educational platforms and social media outlets are harnessed to gather crucial student data, encompassing learning metrics and ideological trends. The data management module then leverages Big Data (BD) techniques to meticulously cleanse, integrate, and standardize this information into a uniform format.

The analytical module delves deeper, utilizing advanced techniques like data mining and machine learning to unearth hidden patterns and potential challenges within students' learning journeys. Finally, the reporting module effectively presents these findings through intuitive charts and reports, providing educators with a clear and actionable overview of the assessment outcomes.

The implementation of this system has empowered the institution to achieve objective and precise evaluations of the impact of its ideological curriculum. It offers educators robust decision-making support, driving innovation in teaching methodologies and enhancing the

development and dissemination of educational resources. Consequently, both the effectiveness of ideological instruction and the overall student learning experience have been significantly elevated.

#### **4. The innovation of curriculum ideology practice driven by BD**

##### **4.1. The role of BD in course content design and optimization**

In the course content design and optimization, the application of BD technology provides educators with a new perspective and tools [10]. By analyzing a large quantity of students' learning data, educators can deeply understand students' learning interests, needs and learning difficulties, so as to design the course content more accurately, make it closer to students' reality, and improve the attraction and effectiveness of the course. Moreover, BD technology can also help educators to continuously optimize the course content. By collecting and analyzing students' feedback data on the course, educators can find out the problems and deficiencies in the course content in time, and make corresponding adjustments and improvements, so as to continuously improve the instructional quality and effect of the course.

##### **4.2. Innovation of ideology instructional mode based on BD**

In terms of instructional mode innovation, BD technology has brought many new possibilities for curriculum IPE. BD technology has promoted the development of blended instructional mode. By combining online learning with classroom teaching, BD can provide students with more diverse learning resources and interactive opportunities, and at the same time, it can provide educators with more comprehensive and in-depth teaching analysis and feedback, and promote the continuous improvement of instructional quality.

##### **4.3. The application of BD in the development and utilization of curriculum ideology resources**

In terms of resource development and utilization, BD technology provides a broader platform and opportunity for curriculum IPE. Through BD technology, educators can more conveniently acquire and integrate various high-quality instructional resources, including literature, case materials, multimedia resources, etc., and provide more abundant and diversified content support for ideology teaching. Moreover, BD technology can also help educators make more efficient and accurate use of instructional resources. Through the analysis of students' learning data, educators can understand students' preferences and needs for different instructional resources, so as to allocate and utilize instructional resources more reasonably and improve the efficiency of resource use and teaching effect.

##### **4.4. Case study: the practical results of curriculum IPE driven by BD**

Taking a university as an example, the university has made full use of BD technology in the course ideology practice and achieved remarkable results. First of all, in terms of course content design and optimization, the school accurately grasped students' learning interests and needs through the analysis of students' learning data, and adjusted and optimized the course content accordingly, making the course content closer to students' reality and improving the instructional quality and effect of the course. Secondly, in terms of instructional mode innovation, the school introduced personalized instructional mode and blended instructional mode based on BD technology, which provided students with more diversified and personalized learning experiences, and provided educators with more comprehensive and in-depth teaching analysis and feedback, which promoted the continuous improvement of instructional quality. Finally, in terms of resource development and utilization, the school integrates various high-quality instructional resources by using BD technology, and uses these instructional resources more efficiently and accurately through the analysis of students' learning data, which improves the efficiency of resource use and teaching effect. These practical achievements fully prove the important role and value of BD technology in curriculum ideology practice.

## **5. Challenges and countermeasures of IPE under the background of BD**

### **5.1. Ethical and privacy issues of BD in curriculum IPE**

With the wide application of BD technology, the practice of curriculum IPE is facing severe challenges in ethics and privacy. In order to meet these challenges, a series of measures are needed. First of all, establish a sound data protection system, clarify the norms of data collection, storage, use and sharing, and ensure students' privacy and information security. Secondly, strengthen ethical education, improve the ethical awareness and moral quality of educators and students, and promote the rational, fair and transparent use of BD technology.

### **5.2. The limitations of BD technology and its countermeasures in curriculum IPE**

Although BD technology has powerful functions and advantages, it also has certain limitations. In order to overcome these limitations, the following measures can be taken. First of all, improve data quality and ensure the accuracy, integrity and consistency of data. Secondly, optimize the data processing flow to improve the accuracy of data processing. Finally, strengthen the training of data interpretation and analysis ability, and improve the understanding and application level of data for educators and students.

### **5.3. Improve teachers' BD literacy to support the implementation of curriculum IPE**

Teachers are the key factors in curriculum ideology practice, and their BD literacy directly affects the application effect of BD technology in curriculum ideology practice. Therefore, improving teachers' BD literacy is an important measure to support the implementation of curriculum IPE. Specifically, teachers' BD literacy can be improved through the following ways: First, strengthen the training of BD technology and improve teachers' ability of data collection, processing and analysis; The second is to encourage teachers to actively participate in academic research and project practice related to BD and deepen the understanding and application of BD technology; The third is to establish an incentive mechanism to incorporate BD literacy into the teacher assessment system to stimulate teachers' enthusiasm for learning and applying BD technology.

### **5.4. Construct a curriculum ideology ecological environment that adapts to the era of BD**

In order to meet the development needs of the era of BD, it is needed to build a good ecological environment for curriculum IPE. Therefore, the following measures need to be taken: first, strengthen the top-level design, and clarify the objectives and planning of the ideology ecological environment construction; The second is to improve the infrastructure and provide stable, efficient and safe data storage and processing services; The third is to promote resource sharing and establish a unified instructional resource platform and management mechanism; The fourth is to promote exchanges and cooperation and build a diversified exchange and interaction platform; Fifth, strengthen technology research and development, and constantly improve the application level and effect of BD technology in curriculum IPE.

## **6. Conclusions**

This study deeply discusses the application of BD in curriculum ideology assessment and practical innovation, and draws the following main conclusions: BD technology has shown remarkable advantages in curriculum ideology assessment. It can provide comprehensive, objective and real-time data information, help educators to understand students' learning situation and ideological trends more accurately, and thus improve the accuracy and effectiveness of assessment. Moreover, BD provides strong support for the practical innovation of curriculum IPE. BD technology can play an important role in curriculum content design, instructional mode innovation, resource development and utilization, and promote the continuous innovation and development of curriculum ideology practice. Although some achievements have been made in this study, there are still some shortcomings and problems that need further discussion. For example, this study mainly

focuses on the application of BD in curriculum ideology assessment and practical innovation, but less on the application of BD technology in other educational fields. Future research can further expand the scope of research and explore the application and influence of BD technology in a wider range of education.

## References

- [1] Xu Huan-huan. Exploration on the innovative development path of ideological and political education in the psychological course of pre-school education in higher vocational colleges in the era of big data-comment on preschool psychology [J]. *China Grease*, 2022, 47(1):I0043.
- [2] Yu Wenqian. Research on the Combination of Big Data and Ideological and Political Education of College Students-Comment on the Theory and Practice of Ideological and Political Education in Higher Vocational Colleges in the New Era [J]. *Science and Technology Management Research*, 2021, 41(7):1.
- [3] Mei Ping, Han Jingwen. The advantages, difficulties and strategies of applying big data to the evaluation of ideological and political courses in colleges and universities [J]. *School Party Building and Ideological Education*, 2022(15):4.
- [4] Zhang Wenjing. Research on the strategy of improving the innovation ability of ideological and political teachers in the era of big data [J]. *Journal of Changzhou Institute of Information Technology*, 2018, 17(4):3.
- [5] Chen Wen. Innovative analysis of ideological and political education methods in colleges and universities in the era of big data [J]. *Brand Research*, 2018(4):2.
- [6] Zhang Xiaoting. Ideological and Political Education in Colleges and Universities from the Perspective of Big Data [J]. *Motherland*, 2019, 000(020):P.152-152.
- [7] Guo Hanqian. Research on the evaluation of ideological and political education in colleges and universities in the era of big data [J]. *Public Digest*, 2023(39):0128-0130.
- [8] Zhang Zhifei, Huang Haixia, Li Lisheng, et al. Exploration and practice of ideological and political construction of physiology curriculum [J]. *Medical Education Management*, 2023, 9(5):550-554.
- [9] Zhou Yufeng, Li Zhihua. Analysis of the innovation path of ideological and political education in colleges and universities under the background of big data [J]. *Journal of Shandong Agricultural Engineering College*, 2020, 37(4):3.
- [10] Yu Ziqi. Ideological and political teaching innovation in the era of big data [J]. *Times Report*, 2018, 000(008):178.