



Assessing the Effectiveness of Ideological and Political Education Based on Big Data

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Abstract. Research Overview: Evaluating Ideological and Political Education in the Big Data Era

As information technology progresses swiftly, the integration of big data in educational settings is increasingly prevalent, offering robust backing for the precise evaluation of the efficacy of ideological and political instruction. The notion that "data should be vocal, facts should be evident" is also pertinent in the sphere of ideological and political education. According to the "Report on the Advancement of Intelligent Educational Technology in China (2019-2020)," "data-informed targeted teaching paradigms are poised to set the standard for upcoming educational trends, fostering refinement and specificity in educational practices. Big data holds extensive potential across higher education domains and serves as a strategic resource and vital catalyst for the progressive evolution of ideological and political education within academic institutions. [2]

Keywords: Ideological and Political Instruction; Big Data; Higher Education.

1 Educational Transformation in the Era of Big Data

Elucidate the principles, attributes, and significance of targeted ideological and political instruction within the university context during the big data epoch, and dissect its foundational principles. [3] Within the big data epoch, targeted ideological and political instruction at universities constitutes an educational endeavor that employs contemporary informational technologies, including big data, to gather, extract, and scrutinize pertinent data concerning university-level ideological and political education. Leveraging instantaneous data feedback, the educational process is meticulously directed, exerted, and moderated to yield targeted educational results. The hallmarks of targeted ideological and political instruction at universities in the big data epoch primarily encompass the concurrent existence of relevance and tailoring, the interplay of a closed-loop and manageability, the amalgamation of widespread applicability and collaborative effect, and the concurrent presence of practicality and efficacy. [7] By harnessing big data analysis, a more objective comprehension of the ideological shifts and behavioral patterns of students can be achieved, thereby enabling the formulation of more precise educational strategies and augmenting the efficacy of ideological and political instruction. [1] [2]

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F. Zeng et al. (eds.), *Proceedings of the 2024 7th International Conference on Humanities Education and Social Sciences (ICHESS 2024)*, Advances in Social Science, Education and Humanities Research 887,

https://doi.org/10.2991/978-2-38476-323-8_12

The emergence of the big data epoch has presented significant possibilities for advancing the realm of ideological and political instruction within higher education settings. By leveraging the capabilities of big data analytics to delve into the ideological landscape of university students and proactively refine the pedagogical strategies for this form of education, it is possible to markedly boost its efficacy. [1] Concurrently, academic institutions must be vigilant in addressing the challenges that arise from the big data phenomenon in relation to students' ideological and political learning experiences, and should continuously strive to innovate the pedagogical approaches employed. [2] This involves expanding the scope of the educational material and achieving greater efficacy in the ideological and political instruction of university students.

Consequently, an exhaustive examination of how big data can be harnessed to assess the effectiveness of ideological and political education is not only of substantial theoretical merit but also carries substantial practical implications. Within the framework of the big data epoch, it is imperative to capitalize on the strengths of data analytics to stimulate innovative advancements in ideological and political education, thereby firmly securing the foundational objective of fostering virtue and integrity. [1]

As a discipline grounded in both educational theory and practice, ideological and political instruction must be proactively aligned with current realities and adapt to the evolving demands of modernity. The General Secretary has repeatedly emphasized the imperative to harness the potential of emerging media and technological innovations to invigorate the field of ideological and political education. This underscores the necessity to leverage cutting-edge technologies and innovative approaches to foster novel paradigms and methodologies within the realm of ideological and political education that are reflective of contemporary times. [2]

In July 2021, directives were issued by the Central Committee of the Communist Party of China and the State Council, advocating for the enhancement and advancement of ideological and political work in alignment with the digital age. The document explicitly advocates for the profound intermingling of informational technology with ideological and political endeavors, thereby transforming the Internet—a highly variable element—into a potent catalyst for professional advancement. Ultimately, the pursuit of modernization and scientific advancement in ideological and political education is inextricably linked to the adept utilization of an array of digital technologies. It is imperative that we align ourselves with the prevailing currents of our era and the trajectory of technological advancement, ensuring that ideological and political education remains contemporary and forward-thinking, while continuously seeking new avenues of exploration and innovation.

2 The Importance of Data Collection and Preprocessing

Data collection and pre-processing. The importance of data collection and pre-processing as the cornerstone of the evaluation process in building a big data-based ideological and political education effectiveness evaluation system is self-evident. In order to achieve a comprehensive and accurate assessment goal, we must start from diversified channels and systematically gather relevant data. To accurately apply big data to

the evaluation of the effectiveness of ideological and political education, it is necessary to improve the depth and breadth of data collection, enhance the quality and quantity of data, and effectively solve the problem of timeliness in data collection. The data related to ideological and political education is extensive, including both natural and social data. Therefore, it is necessary to integrate a series of relevant data such as ideological and political curriculum learning, student management, student activities, and student learning. And pay attention to the timeliness of these data.

This methodology necessitates a comprehensive aggregation of student information, encompassing both static elements, such as fundamental personal details and enrollment data, and dynamic elements, which include the wealth of data produced through student engagement in academic settings, extracurricular activities, on-campus transactions, and digital and physical interactions. Following the collection phase, the preprocessing of data assumes a pivotal function. It entails a sequence of intricate and nuanced processes, such as data purification, consolidation, transformation, and the establishment of data standards.

These preparatory measures are designed to distill high-fidelity insights that authentically mirror the fluctuating landscape of student cognition and conduct, addressing issues of data omissions, irregularities, and superfluity to guarantee the precision, exhaustiveness, and applicability of the data. A multifaceted approach to data acquisition, coupled with meticulous preprocessing, establishes a robust basis for evaluating the efficacy of ideological and political education. This lays the groundwork for ensuing data analysis, model development, and the formulation of conclusive assessment reports, facilitating a more methodical and exhaustive evaluation of the tangible impacts of ideological and political education.

3 Application of Data Analysis and Result Feedback

Data extraction and interpretation. Within the framework of a big data-driven ideological and political education efficacy evaluation system, the collection and preprocessing of data are foundational. In the realm of college-level ideological and political education, the fusion of AI and big data technologies can more adeptly uncover the synergistic potential of technological integration, which is instrumental in tightly interweaving technological insights with pedagogical initiatives.[4] This facilitates the seamless infusion of ideological and political education throughout the diverse developmental phases of college students, equipping them with a multifaceted and comprehensive educational framework. Moreover, it enables the analysis of student engagement data to gauge the efficacy of ideological and political education, utilizing these insights as critical feedback for refining subsequent educational strategies.

To fulfill the objective of a thorough and precise evaluation, it is essential to delve into data mining and analysis to gain an in-depth understanding of the ideological and behavioral trends among students. Firstly, educational resources should be tailored to individual needs. Leveraging the capabilities of big data mining, we can identify and develop high-caliber resources for ideological and political education, customizing the curriculum to align with the specific requirements of students. These resources are then

refined continuously on educational technology platforms to improve the relevance and effectiveness of the learning material.

Secondly, an analysis of learning behaviors is imperative. By examining data on how students engage with their studies, we can gain insights into their study habits, preferred methods, and strategies, which are crucial for evaluating their dedication and the outcomes of their learning processes.

Thirdly, there should be a focus on the real-time tracking of ideological shifts. Employing technologies such as web crawlers, text mining, and object recognition, we can monitor students' responses to ideological and political education in real time. By analyzing their interactions on social media platforms, we can accurately track their feedback, discussions, and the evolution of their thoughts, enabling a precise assessment of educational impact.

Lastly, the development and application of predictive models are crucial. Utilizing big data analytics and AI algorithms, we can construct a robust framework for evaluating the effectiveness of ideological and political education. This model can forecast and assess students' academic performance and ideological development, offering substantial scientific backing for educational strategies.

The key advantage of utilizing big data to uncover patterns in student learning is its capacity to facilitate a more objective and personalized approach to instruction, transcending the limitations of educators' subjective assessments and past experiences. Ensuring that data remains reliable, exhaustive, and up-to-date is crucial, necessitating meticulous synthesis and stringent analytical processes, as well as fostering a societal emphasis on data's pivotal role in educational settings.

Assessing the quality of ideological and political instruction in higher education encompasses assessing educators' proficiency, pedagogical strategies, and demeanor, as well as students' learning approaches and outcomes, the content of the curriculum, and the broader impact of instruction. Given the intricate, nuanced, and long-term outcomes of education, traditional evaluation methods often fall short. However, big data offers a means to sidestep these limitations, enabling a more precise and quantifiable evaluation.[2] By analyzing daily interactions and interactions between teachers and students and developing corresponding relational models, it is possible to conduct quantitative studies that augment the scope and impartiality of traditional evaluations.

To achieve a comprehensive and precise assessment, it is imperative to engage in a scientific review and provide feedback based on profound data analysis, which is essential for enhancing educational outcomes. Educators can leverage big data to identify where students are starting from in their learning journey, anticipate potential pedagogical challenges, gather suggestions for instruction, and refine their teaching strategies.

On one hand, educators can employ a variety of analytical techniques, including comparative and mean analyses, to scrutinize student attendance, classroom conduct, and grading in courses like "Ethics and Law" and "Fundamentals of Marxist Theory". This allows them to gauge students' understanding of ideological and political theories, anticipate their potential for growth, and set educational goals. Specifically, adopting a multidimensional evaluation approach is central to this objective. During the evaluation process, it is essential to consider multiple perspectives, not just academic performance, but also students' ideological beliefs and social responsibility, thereby conducting a

comprehensive, multi-tiered assessment of the efficacy of ideological and political education. This approach aids in obtaining more holistic and unbiased evaluation results, offering robust data-driven support and a scientific foundation for future educational strategy adjustments and enhancements.

4 Big data and the Future Challenges and Opportunities of Education Reform

Conversely, instituting a feedback loop is equally vital for enhancing the efficacy of education. To facilitate ongoing refinement in educational practices, it is essential to establish a sustainable and reliable feedback system for educational assessments. This entails ongoing data collection and analysis to precisely track the development of students' behaviors over time, and to delve into the core relationships and patterns between ideological and political educational initiatives and shifts in students' ideologies and actions. Such a system can enhance the scientific guidance of educational activities and offer robust backing for the ongoing enhancement of ideological and political education. The integration of big data in this field can lead to more tailored educational experiences, aligning teaching content more closely with the unique attributes of each student and streamlining the educational process.[1] Moreover, the precision inherent in big data can alter the prevalent perception among university students that courses on ideology and politics are monotonous and unengaging.

As the economy grows and technology progresses, the influence of big data on Chinese university students is becoming more pronounced, with far-reaching effects on educational methodologies. The future trajectory of modern college students is closely tied to their ideological and theoretical proficiency. Effective ideological and political education can profoundly shape a student's life trajectory. Tailored evaluation and mentorship are crucial for conducting impactful assessments of ideological and political education outcomes and are seen as key strategies for bolstering overall educational impact.

On one hand, crafting detailed student profiles lays the groundwork for this objective. It demands an in-depth exploration and comprehensive exploitation of big data's capabilities to dissect and illustrate the distinct attributes of students. In the big data era, with the internet serving as a hub for a vast number of college students, the "online plus classroom" approach has emerged as the predominant method for nurturing the intellectual frameworks of today's college students.

Hence, there is an immediate need to establish a strong presence for ideological and political education in the digital realm. To address this emerging scenario, universities must proactively embrace the internet as a novel platform for education, thoroughly understand the nuances of big data, and utilize it to enrich campus cultural development. By examining a broad spectrum of student data—including academic performance, grades, library checkouts, dining hall transactions, and shopping activities online—a nuanced and detailed system of personalized labels can be established. Employing new media technologies for ideological and political education, and gathering data such as messages, voice notes, and feedback from surveys, educators can gain real-

time insights into students' educational requirements, thereby enhancing the impact of their teachings. Additionally, by analyzing students' activities on the school's official website, social media channels, discussion boards, and microblogs, educators can predict and understand students' interests, study routines, and life aspirations, offering a basis for refining educational strategies.

These labels collectively paint an accurate and detailed data-driven portrait of each student, vividly illustrating their cognitive and behavioral patterns and trends through various visual and textual mediums, thus equipping educators with the necessary tools to deeply comprehend the unique requirements and traits of each student. Concurrently, it is essential to develop customized ideological and political education programs based on these detailed student profiles to cater to their specific needs. Crafting bespoke teaching plans that reflect students' backgrounds and employing suitable instructional techniques are crucial for enhancing the quality of education. From this standpoint, educators can adeptly employ big data technologies to create detailed "profiles" of students, pinpointing their individual learning entry points and developmental needs, ensuring the efficacy of their ideological and political education initiatives.

When crafting educational programs, it's imperative to take into account the unique circumstances of students to ensure that educational content and strategies resonate with their specific requirements, thereby igniting their enthusiasm and contentment with the learning process, and enhancing the impact of ideological and political education. Enhancing data collection efforts is essential to create a robust platform for understanding the evolving interests of learners and to bolster the efficacy of online ideological and political instruction.[2] With the rapid evolution of information technology, leveraging the power of "data" is becoming increasingly pivotal in advancing ideological and political education, innovating pedagogical strategies, diversifying teaching frameworks, and enhancing the overall effectiveness of instruction while offering tailored support to students.

Ongoing surveillance and refinement are crucial for the effective assessment of the impact of ideological and political education facilitated by big data. To precisely harness big data for evaluating the efficacy of such education, it's essential to expand the scope and depth of data collection, augmenting both the caliber and volume of data, and addressing the timeliness of data acquisition. The scope of data pertinent to ideological and political education is broad, encompassing natural and social sciences. It's vital to synthesize an array of relevant data points, such as curriculum engagement, student governance, extracurricular activities, and academic progress, while ensuring the currency of this information.

On one hand, establishing a dynamic, comprehensive, and scientifically sound monitoring system is necessary for ongoing and profound scrutiny of the ideological and political education process. This necessitates that educators maintain a vigilant perspective on the educational process, promptly identifying and addressing changes and issues to swiftly react and make necessary adjustments.[5] Dynamic monitoring ensures that ideological and political education remains relevant and adaptive to student needs and temporal developments. On the other hand, relentless refinement is key to achieving a meaningful assessment. It's imperative to consistently reassess and calibrate the evalu-

ative approaches and techniques of ideological and political education in light of monitoring outcomes and extensive feedback. It's critical to uphold a mindset that is open and inclusive during this process, and to be willing to experiment with innovative evaluative techniques and instruments to guarantee that the assessment process is both scientifically sound and impactful.

Furthermore, it is essential to create a positive feedback loop and a cycle of continuous improvement to translate assessment findings into concrete steps for enhancing teaching practices and to bolster the ongoing advancement of ideological and political education. A key component of university ideological and political education theory is the concept of holistic human development. The benefits of big data, characterized by vast datasets and rapid processing capabilities, enrich the channels of interaction between educators and students. University educators should leverage these benefits to direct students toward the development of sound worldviews, life philosophies, and value systems. The big data era has opened up extensive avenues for both educators and students, fostering closer interaction and maximizing their potential. Concretely, teaching strategies should be dynamically adjusted in response to feedback, and the content and methods of teaching should be refined to ensure that ideological and political education resonates more closely with students' realities, thereby increasing its relevance and efficacy. Through this ongoing refinement, the caliber and impact of ideological and political education can be progressively enhanced to more effectively support student growth and development.

Big data holds immense potential for application within higher education and represents a strategic resource and vital support for the innovative progression of university ideological and political education. Investigating the scientific essence, fundamental traits, and significant implications of precision ideological and political education in the big data era, organizing its theoretical underpinnings, conducting practical assessments, analyzing its development process, and exploring its practical implementation paths are essential steps for deeply integrating the digital strategy in education.[6] This aligns with the new trends of digital transformation in university ideological and political education, offering substantial theoretical and practical importance for increasing the scientific rigor, relevance, and effectiveness of such education. Big data technology has permeated numerous aspects of daily life.

Incorporating big data technology into ideological and political education can lead to tailored teaching approaches, elevate the quality of instruction, and modernize the classroom experience for such subjects in universities. Utilizing big data in assessing the efficacy of ideological and political education can significantly boost the scientific rigor, variety, impartiality, and thoroughness of these evaluations. Universities' ventures into big data-based ideological and political education present both considerable opportunities and challenges, primarily in terms of leveraging this technology to refine student information management and enhance instructional efficacy, while also confronting issues such as a shortage of qualified educators and concerns over the cybersecurity of big data systems. In light of these challenges, universities should bolster their administrative efforts, expedite the development of big data instructional platforms, and elevate the caliber of their instructional staff to solidify the groundwork for ideological and political education.

Educators specializing in ideological and political courses must also concentrate on enhancing their professional skills, actively mastering and applying technologies like big data collection and analysis, and updating their teaching strategies to align with the evolving demands of their field, including engaging in reflective practice to foster the effective progression of their educational mission. Ultimately, the evaluation of the impact of ideological and political education facilitated by big data represents a pioneering effort and a pivotal strategy for elevating educational standards and fostering the holistic development of students.

By conducting thorough excavation and scrutiny of data, it becomes feasible to attain a more exhaustive and precise understanding of the actual impact of ideological and political education, offering robust data-driven support for the modification and enhancement of educational strategies.[8] Additionally, instituting a multifaceted evaluation and feedback mechanism further strengthens the scientific basis and efficacy of these assessments, enabling educational initiatives to be more responsive to student needs and contemporary evolutions.

5 Conclusion: Summary and Outlook: The Future of Ideological and Political Education Driven by Big Data

Currently, the amalgamation of big data technology with ideological and political education within universities remains in its nascent stages, with the adoption of big data methodologies not yet widespread. It is essential to identify and address challenges through ongoing practical experience to refine and perfect these practices. As such, in advancing the synthesis of big data concepts with ideological and political education, it is imperative to integrate theoretical inquiry with practical innovation, more adeptly addressing the issues encountered by learners in their academic and personal lives, and substantially amplifying the efficacy of ideological and political education. Looking ahead, it is crucial to persistently deepen the role of big data in educational assessment, persistently seeking out innovative methods and tools for evaluation, with the aim of persistently refining the quality and potency of ideological and political education, and making a more substantial contribution to student growth and development.

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