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Precision Ideological Education via Social Media Analytics: A Case Study

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ABSTRACT

With the popularization of social media (98.7% of college students use it, with an average daily usage of 5.2+ hours), traditional ideological and political education (IPE) is facing challenges. In this study, an IPE data analysis framework integrating multi-source data (social media+campus system) and machine learning models (BERT, LDA, random forest) was constructed and verified in a key university in the east. Through stratified random sampling of 1,920 undergraduates (representing N=28,000, $\chi = 2.36$, p=0.67), three core strategies were tested: differentiated communication, dynamic intervention, and collaborative governance. The results show that the interaction rate of students is increased by 12.4%–18.7%, the response time of questions is shortened by 64% (7.5→2.7 hours), and the accuracy of cross-departmental decision-making is improved by 51%. Ethical protection includes hierarchical informed consent, AES-256 encryption, and manual audit, and the withdrawal rate is only 1.8%.

KEYWORDS

Social Media Data Analysis, Ideological and Political Work in Colleges and Universities, Precision Strategy, Data Privacy Protection

INTRODUCTION

The rapid advancement of digital technologies has positioned social media as a core component of college students' daily lives. According to the 2024 China University Students' Network Behavior Report, 98.7% of college students use social media for over 5.2 hours per day, with short video platforms (e.g., Ticktock, Billie) accounting for 68.3% of total usage time and social communication platforms (e.g., WeChat, Weirdo) for 54.1% (Ding et al., 2017). This trend has profoundly reshaped how students acquire information, engage in social interactions, and form behavioral patterns, creating both opportunities and challenges for data-driven ideological and political education (IPE) in higher education.

Traditional university Ideological and Political Education (IPE) models, which are highly dependent on classroom instruction and one-way information dissemination, are no longer in line with students' preferences for diverse, real-time, and interactive content (H. W. Fao, 2023). Students are increasingly engaging in public discussions regarding campus and social issues through social media, and they are demanding more responsive IPE interventions. Nevertheless, conventional IPE

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methods lack systematic data support, which makes it challenging to meet these evolving needs, highlighting the urgency of utilizing social media analytics to develop innovative, student-centered IPE strategies (Nu & Li, 2022).

Big data technology offers a new paradigm for evidence-based IPE in higher education (C. Fao & Huang, 2021). By analyzing multi-source social media data, educators can gain granular insights into students' interests, behavioral trends, and unmet needs (e.g., academic pressure, mental health concerns, career anxiety), enabling targeted interventions to enhance student engagement and well-being (Yue et al., 2023). Nevertheless, current data utilization in university IPE remains fragmented: most institutions only track basic metrics (e.g., content views, platform access frequency) and lack a comprehensive analytical framework to integrate unstructured data (e.g., text comments, sentiment signals), hindering a holistic understanding of students' ideological and behavioral dynamics (C. Li et al., 2021).

This study focuses on developing an innovative social media analytic framework for precision IPE, integrating multi-source data fusion, machine learning, and ethical data governance. By combining quantitative analytical methods (e.g., sentiment analysis, topic clustering) with educational practice, the framework aims to overcome the limitations of traditional experience-based assessment in IPE and advance the theory of data-driven education (A sad & Mali, 2023). During data collection and algorithm design, strict privacy protection protocols (e.g., data canonization, informed consent) and ethical review mechanisms were embedded to ensure that technology serves student development, providing a sustainable technical pathway for data-driven IPE in the digital age (Karen et al., 2025).

The primary objectives of this study are twofold. Theoretically, it contributes to educational technology research by demonstrating how machine learning models—such as BERT and latent Dirichlet allocation (LDA)—can be adapted to analyze unstructured student-generated content, bridging the gap between data science and IPE practice (Bong & Gang, 2021). Practically, it develops actionable strategies (e.g., personalized content delivery, real-time trend monitoring) to improve student engagement, optimize intervention timeliness, and address individualized ideological needs—ultimately supporting universities in fostering the all-round development of students (Han, 2023).

SOCIAL MEDIA APPLICATION IN DATA-DRIVEN IPE: CURRENT STATUS AND CHALLENGES

Application Status of Social Media in IPE

Social media has been widely integrated into student support systems in colleges and universities, with the coverage rate of official new media platforms reaching 98%. WeChat official accounts serve as a core channel for delivering student-centric content, including academic resource interpretations, campus event updates, and well-being guidance. Weirdo, leveraging its openness and real-time nature, is used to initiate discussions on campus-related topics (e.g., career development, mental health), with popular campaigns such as #Campus Wellness attracting millions of views through student activity shares. Short video platforms (e.g., Ticktock) have also become key tools for engaging students, with universities producing interactive content (e.g., animation-based study tips, student experience documentaries)—for instance, Communication University of China's "Campus Life Hacks" series has accumulated over 50 million views and 2.3 million shares, demonstrating strong student engagement (Chandler Garcia & Bigwig, 2024).

Key Challenges in Technical Application and Data Utilization

A primary challenge is the misalignment between social media IPE content design and student preferences, stemming from a lack of data-driven insights. Most content relies on traditional, one-size-fits-all formats with rigid language and fails to adapt to diverse student interests (e.g., academic-focused versus life-oriented content needs). For example, when addressing campus hot