

Algorithmic Recommendation Empowering Targeted Ideological and Political Education: Endogenous Logic, Value Goals, and Practical Pathways

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Abstract: *With the rapid development of artificial intelligence, algorithmic recommendation, as the core technology of intelligent information distribution, is profoundly reshaping the landscape of ideological and political education. Focusing on the integration of algorithmic recommendation into targeted ideological and political education, this paper systematically examines the internal mechanisms and practical pathways through which the technology enables this integration. The study argues that traditional ideological and political education faces a set of practical dilemmas, including the barriers created by information cocoons, the erosion of educators' professional authority, the mismatch between content supply and demand, and the ethical risks that accompany the technology. Through an endogenous logic characterized by problem-driven necessity, functional complementarity, and process synergy, algorithmic recommendation provides technical support for realizing the value goals of personalized cultivation, intelligent teaching, and scientific evaluation. At the practical level, it is necessary to build a coordinated system spanning five dimensions, namely intelligent platforms, content ecosystems, teaching models, evaluation systems, and ethical governance, so as to balance technological empowerment with value guidance and, through human-machine collaboration, to advance the targeted transformation of ideological and political education, thereby offering theoretical reference and practical pathways for its innovation in the new era.*

Keywords: Algorithmic recommendation; Targeted ideological and political education; Endogenous logic; Value goals; Practical pathways.

1. Introduction

A new generation of information technologies, represented by artificial intelligence, big data, and cloud computing, is reshaping the modes of social production and everyday life, presenting unprecedented opportunities and challenges for educational modernization. General Secretary Xi Jinping has pointed out that we should “use new media and new technologies to make ideological and political work come alive, promote the deep integration of the traditional strengths of ideological and political work with information technology, and enhance its contemporary relevance and appeal.” [1] The effectiveness of the traditional, broadcast-style model of education has declined sharply in today's personalized and fragmented information environment, leaving educational content at risk of failing to be heard, failing to hold an audience, and even forfeiting public trust. Against this backdrop, targeted ideological and political education has emerged as a new form through which ideological and political education adapts to the digital age. It emphasizes the accurate identification of learners, the targeted provision of educational content, and the precise assessment of educational outcomes, with the aim of replacing the blanket approach of traditional education with precise, individualized delivery. Meanwhile, as the principal mechanism of information distribution in the age of artificial intelligence, algorithmic recommendation has profoundly reordered the dissemination of online information and the reception habits of audiences through collaborative filtering, content analysis, user profiling, and other intelligent means, thereby achieving a close match between information and users. According to the 56th Statistical Report on China's Internet Development, as of June 2025 the number of internet users in China had reached 1.123 billion, the internet penetration rate stood at 79.7

percent, and algorithmically recommended content accounted for approximately 70 percent of all information distributed online [2]. The personalized, precision-oriented logic of algorithmic recommendation shows a profound intrinsic affinity with two principles long advocated in the theory of ideological and political education, namely teaching students in accordance with their aptitude and targeted education, and its technical strengths open up a new pathway for empowering targeted ideological and political education.

2. Practical Dilemmas Facing Ideological and Political Education in the Era of Algorithmic Recommendation

At present, in the information environment shaped by algorithmic recommendation, the effectiveness of the traditional models and pathways of ideological and political education is being steadily eroded. Drawing on both theoretical inquiry and practical observation, the core dilemmas confronting ideological and political education today can be summarized in the following four respects.

2.1 The Intensification of the Information Cocoon Effect and the Obstruction of Channels for Disseminating Mainstream Values

The core logic of algorithmic recommendation lies in matching information to user preferences. While this increases the efficiency of information acquisition, it also tends to produce and consolidate information cocoons. For students whose worldviews, outlooks on life, and values are still taking shape, prolonged immersion in a personalized information environment constructed by algorithms makes the information they encounter increasingly homogeneous

and one-sided [3]. This not only narrows their intellectual horizons and cognitive frameworks, but may also breed a predisposition to resist, or to experience fatigue toward, information that conflicts with their existing views, particularly mainstream value content that requires systematic and theoretical study. The dissemination of mainstream values therefore confronts obstructed channels: even when educators produce high-quality online content, such content may fail to penetrate the cocoon and reach its intended student audience, because it does not match the interest tags that algorithms in the current online ecosystem assign on the basis of students' past behavior [4]. What the dissemination of mainstream values faces today is thus not simply a matter of blocked channels but a deeper barrier of cognitive resistance.

2.2 The Erosion of Educators' Professional Authority and the Challenge to Agenda-Setting Capacity

In the traditional model, educators, acting as the gatekeepers of information dissemination, hold the power to select educational content, to determine the sequence of its presentation, and to define the framework of its interpretation; in other words, they hold the dominant power of agenda setting. In the algorithmic environment, however, this power has undergone a significant transfer. Through such mechanisms as trending lists and personalized feeds, online platforms have in effect become a new type of algorithmic gatekeeper. The prominence of carefully designed ideological and political education topics can easily be submerged by celebrity gossip, influencer content, and other items that algorithms push on the basis of traffic logic and engagement metrics, which directly erodes educators' professional authority [5]. As algorithmic recommendation eats into the dominance of ideological and political education, students' attention is highly fragmented across online platforms. If educators fail to adapt to and harness algorithmic rules proactively, their voice will be progressively diluted, trapping them in a spiral in which they cannot make themselves heard, attract no attention when they speak, and ultimately forfeit the trust of students; the standing of ideological and political education as a guiding force will then face severe challenges [6].

2.3 The Mismatch Between the Supply of and Demand for Educational Content and the Lag in the System for Assessing Educational Effectiveness

The algorithmic environment has thrown into sharp relief the long-standing mismatch between supply and demand in ideological and political education. On the supply side, many schools remain accustomed, in classrooms and on official platforms, to issuing lengthy, document-style narratives in a solemn and rigid register and in monotonous formats, which diverges sharply from the interactive, visual, and contextualized modes of information reception that contemporary students prefer. On the demand side, students' genuine needs are diverse, deep-seated, and constantly evolving, encompassing not only the systematic study of theoretical knowledge but also the interpretation of current social issues, the resolution of confusions about personal values, and guidance on paths of growth and development. Meeting such needs under the traditional working model requires substantial time and energy, and the result is a

persistent supply-demand mismatch; in essence, this mismatch reflects the insufficient capacity for targeted ideological and political education [7]. Moreover, the current system for assessing educational effectiveness lags severely behind technological development and lacks scientific measures of deeper-level indicators, such as the depth of students' identification with the values taught and the extent to which learning translates into behavior. A lagging assessment system of this kind cannot truthfully capture the actual effects of educational content, can hardly provide accurate feedback for optimizing the production and delivery of content, and deprives the improvement of targeted ideological and political education of a scientific basis, ultimately producing a steady erosion of educational effectiveness.

2.4 The Emergence of Technological and Ethical Risks: Algorithmic Black Boxes and Concerns over Privacy and Data Security

The application of algorithmic recommendation has also brought to the fore ethical risks that cannot be ignored. The first is the problem of the algorithmic black box. The complexity and opacity of mainstream machine learning algorithms make their recommendation processes difficult for ordinary educators, and even administrators, to comprehend or scrutinize [8]. When content carrying mainstream values is systematically assigned low weights in recommendations, educators often find it difficult to trace the specific causes or to intervene effectively, which introduces considerable uncertainty into the supervision of the educational process and the control of its ideological orientation. The second problem concerns data privacy and security. To achieve precise recommendation, algorithms must collect and analyze vast amounts of students' personal data, including browsing records, search histories, social relationships, location information, and even biometric characteristics. If the collection, storage, use, and cross-border transfer of such data are not subject to strict legal regulation and technical safeguards, they become highly vulnerable to leakage, misuse, and algorithmic discrimination, seriously infringing upon students' privacy rights [9]. This is not merely a matter of legal compliance; it also erodes the trust on which students' confidence in official online platforms rests, thereby undermining the legitimacy and effectiveness of ideological and political education itself.

3. The Endogenous Logic of Algorithmic Recommendation Empowering Targeted Ideological and Political Education

The integration of algorithmic recommendation and targeted ideological and political education is not externally imposed; it arises from a high degree of congruence between the intrinsic characteristics of the two, and this congruence constitutes the endogenous logic of the empowerment relationship. Specifically, this logic manifests itself at three levels: the necessity generated by practical problems, the complementarity of functions, and the synergy of processes.

3.1 Problem-Driven Impetus: The Need to Resolve the Dilemmas of Traditional Ideological and Political Education

Through long-term practice, traditional ideological and political education has formed relatively fixed patterns; yet in addressing students of the digital era it increasingly reveals such weaknesses as insufficient relevance, weak timeliness, and inadequate interaction. On the one hand, traditional education mainly adopts a one-size-fits-all approach that can hardly satisfy students' personalized and differentiated needs for growth. On the other hand, the updating of educational content lags behind the pace of social change, making it difficult to respond in real time to the issues of the moment that students follow closely. In addition, the one-way inculcation model of teaching can hardly stimulate students' active participation and deep reflection. Algorithmic recommendation offers a means of addressing these dilemmas. Through user profiling, algorithms can accurately identify the interests, cognitive levels, and value orientations of different students, thereby providing data support for differentiated instruction. Through real-time data analysis, they can track shifts in trending public issues and in students' focal concerns, enabling the dynamic adjustment of educational content. And through interaction design, they can support richer learning scenarios and strengthen students' engagement and experience [10].

3.2 Functional Alignment: The Intrinsic Requirement for Reshaping the Subject-Object Relationship in Education

In traditional ideological and political education, educators and learners occupy relatively fixed positions as subject and object: educators dominate the educational process, while learners passively receive information. This relational model had a certain rationality in an era of information asymmetry, but its effectiveness is now challenged in a digital age in which everyone has a microphone. By optimizing the allocation of educational resources, algorithmic recommendation reshapes this subject-object relationship through two-way interaction and data-driven processes [11]. On the one hand, it partially transfers the power to choose educational content to students, transforming them from passive recipients into active selectors and enhancing their

agency. On the other hand, educators, aided by algorithmic analysis, can grasp students' ideological dynamics more accurately, moving from experience-based judgment to data-informed decision-making and making their guidance more scientific. This reshaping is not a simple reversal of positions; it gives rise to a new type of relationship that is more equitable, interactive, and mutually sustaining, one that better accords with modern educational philosophy. Within this relationship, algorithms serve as the intermediary and catalyst between educator and learner, expanding the boundaries of educators' capabilities while awakening learners' subjective consciousness [12].

3.3 Process Synergy: The Efficiency-Enhancing Mechanism of Reengineering the Teaching Process as a Whole

The empowerment of targeted ideological and political education by algorithmic recommendation is reflected not only in the optimization of isolated links but, more importantly, in the reengineering and coordination of the teaching process as a whole. This process synergy consists mainly of a closed loop of three stages: precise identification, precise provision, and precise regulation. In the identification stage, algorithms collect multidimensional data on students' learning behaviors, social interactions, and emotional attitudes to construct dynamically updated digital profiles, thereby discerning students' cognitive levels, interests, and reception habits and accomplishing the transition from understanding cohorts to understanding individuals. In the provision stage, algorithms achieve the intelligent matching and personalized delivery of educational content on the basis of student profiles and content features. This encompasses not only the digital presentation of traditional content but also the dynamic generation of content responsive to students' real-time needs [13]. In the regulation stage, algorithms evaluate teaching effectiveness dynamically by monitoring students' learning feedback and behavioral data in real time, thereby providing a basis for educators to adjust their teaching strategies.

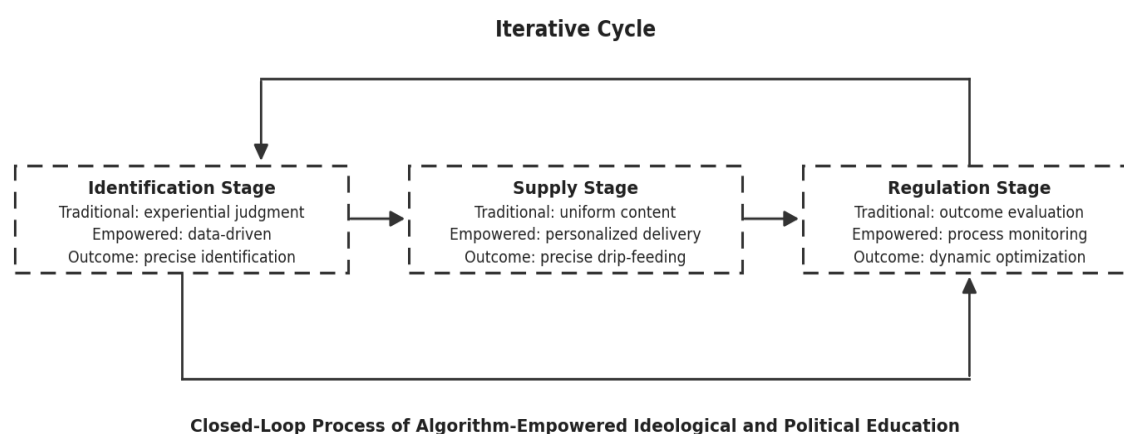


Figure 1: The Closed Loop of Algorithmic Recommendation Empowering Targeted Ideological and Political Education

4. The Value Goals of Algorithmic Recommendation Empowering Targeted Ideological and Political Education

Ideological and political education is not a descriptive undertaking but a value-laden and normative one, with a distinctive standpoint and orientation. The Marxist account of

the dialectical relationship between science and technology on the one hand and social production on the other provides fundamental guidance for clarifying the true relationship between technological empowerment and value guidance. In ideological and political education, the empowerment conferred by digital technologies must take as its core objectives meeting the educational needs of building a leading

country in education and realizing people's all-round development, and it must not degenerate into an uncontrolled instrument that dominates education [14]. The empowerment of targeted ideological and political education by algorithmic recommendation is therefore not merely a technological application but a form of value reconstruction, underpinned by a well-defined system of value goals. This system comprises three dimensions, namely personalized cultivation, intelligent teaching, and scientific evaluation, which together ensure that technological application remains subordinate to value guidance and jointly serve the fundamental task of fostering virtue through education. Of the three, personalized cultivation is the foundation, intelligent teaching the means, and scientific evaluation the safeguard; the three support and reinforce one another and jointly propel ideological and political education toward higher quality and greater effectiveness.

4.1 Personalized Cultivation: From Uniform Provision to Individualized Development

One of the principal dilemmas of traditional ideological and political education lies in its difficulty in accommodating students' individual differences: a one-size-fits-all approach has left educational outcomes less than satisfactory. The foremost value goal of algorithmic recommendation in targeted ideological and political education is personalized cultivation, that is, the provision of tailored educational programs based on an accurate identification of the characteristics and needs of each student, thereby genuinely realizing the principle of teaching students in accordance with their aptitude [15]. This goal is embodied in three respects. The first is the precise identification of learners: constructing digital profiles of students so as to grasp comprehensively their ideological conditions, cognitive characteristics, and developmental needs. The second is the precise matching of content: delivering material that corresponds to students' cognitive levels and interests on the basis of their profiles, thereby enhancing the relevance and acceptability of education. The third is the personalized design of educational pathways: adjusting strategies and methods dynamically in light of students' learning progress and feedback, so as to chart the growth trajectory best suited to each individual's development. By continuously collecting multi-source data, extracting features, and analyzing behaviors, algorithmic recommendation captures such elements as learners' cognitive structures, psychological characteristics, and value preferences, which constitutes precisely the technical foundation of personalized cultivation. Through personalized cultivation, ideological and political education ceases to be the mere transmission of knowledge and becomes, in a genuine sense, a tailored developmental program that promotes the all-round development of every student.

4.2 Intelligent Teaching: From Experience-Driven to Data-Driven Instruction

Traditional ideological and political teaching relies heavily on educators' personal experience and intuitive judgment, lacks the support of objective data, and can hardly achieve fine-grained, evidence-based teaching management. The second value goal of algorithmic recommendation in targeted ideological and political education is intelligent teaching, that

is, grounding teaching decisions in data analysis and algorithmic optimization so as to enhance the rigor and effectiveness of instruction. Intelligent teaching is manifested in two respects. The first is the real-time monitoring of the teaching process: algorithms track students' learning states, interactions, and emotional fluctuations as they occur, so that problems can be detected promptly and interventions introduced in a timely manner [16]. The second is the intelligent allocation of teaching resources: resources are allocated on the basis of data analysis so that limited educational resources yield the greatest benefit. For example, algorithms can predict, from learning data, the difficulties a student is likely to encounter and deliver relevant learning resources in advance, achieving proactive intervention rather than passive remediation. Through intelligent teaching, ideological and political education can move from a craft model dependent on individual experience to a data-grounded model of precision, greatly enhancing the professional standards and efficacy of education.

4.3 Scientific Evaluation: From Summative to Formative Assessment

The evaluation of traditional ideological and political education is dominated by summative forms such as examinations and essays, which can hardly reflect students' ideological changes and growth processes in a comprehensive and objective manner. The third value goal of algorithmic recommendation in targeted ideological and political education is a scientific evaluation system that accomplishes the transition from a single measure to multiple measures and from outcome-based to process-based assessment. This goal comprises three levels. The first is the diversification of evaluation indicators: algorithms track multidimensional data on students' learning behaviors, interactive participation, and attitudes to construct a comprehensive indicator system. The second is a process orientation in evaluation methods: emphasis is placed on the continuous observation and documentation of students' learning processes rather than on final outcomes alone. The third is the timeliness of feedback: algorithms analyze data to generate feedback reports promptly, providing a basis for teaching improvement. Through scientific evaluation, ideological and political education is no longer confined to the question of how much has been taught but attends more closely to how much has been learned and how much has changed, thereby genuinely realizing the function of evaluation in improving both teaching and learning.

5. Practical Pathways for Algorithmic Recommendation Empowering Targeted Ideological and Political Education

As the national strategy for education digitalization continues to mature, algorithmic recommendation provides entirely new technical means and methodological support for the implementation of targeted ideological and political education. To make this empowerment effective, a systematic and operable practical program must be constructed along five dimensions, namely platform construction, content innovation, model restructuring, evaluation reform, and governance systems, so as to form an integrated whole in which each component reinforces the others.

5.1 Platform Construction: Building a Data-Driven Support System for Targeted Ideological and Political Education

The platform is the operational foundation of algorithmic recommendation in targeted ideological and political education, and it requires an intelligent platform system that integrates data collection, analysis, and application. The platform should be capable of multi-source data collection: by integrating multidimensional data on students' classroom learning, online behavior, and social practice, it can form rich and well-rounded digital profiles of students, thereby establishing a robust campus database for ideological and political education [17]. On this basis, the platform needs an algorithmic analysis and recommendation module that employs collaborative filtering, content analysis, knowledge graphs, and other advanced techniques to identify students' personalized needs and achieve the intelligent matching of educational content. Particular attention must be paid to the explainability of algorithms in this module, so as to avoid black-box operations and ensure that educational decision-making remains transparent and controllable. At the same time, the platform should incorporate an intelligent interaction and feedback module that provides teachers with personalized learning-path recommendations, resource delivery, and real-time interaction functions, thereby supporting precise teaching interventions. In addition, leading counselors, distinguished teachers of ideological and political theory, and outstanding student leaders should be actively encouraged to run their own columns on various platforms, building influential brands of ideological and political content and fostering a diverse yet directionally coherent content landscape. In platform construction, the principles of unified standards, open interfaces, and tiered development must be observed, so as to guarantee the integrity and standardization of the system while accommodating the individual needs of different institutions, to prevent the emergence of new information islands, and to achieve the optimal allocation and efficient use of resources. On the premise of strict compliance with data privacy laws and regulations, efforts should be made to break down data barriers between platforms, enabling the orderly flow of high-quality content across platforms, its coordinated delivery, and its resonant amplification, thereby promoting the interconnection of the platform matrix [18].

5.2 Content Innovation: Constructing a Human-Machine Collaborative Content Ecosystem for Targeted Ideological and Political Education

Content innovation is the central link through which algorithmic recommendation empowers targeted ideological and political education, and it requires a content ecosystem built on human-machine collaboration. The foundation of this ecosystem is a sound content tagging system that annotates ideological and political education resources along multiple dimensions. The tagging system should cover content themes, levels of difficulty, formal characteristics, and emotional orientations, forming multidimensional profiles of content that provide foundational support for precise algorithmic matching. On this basis, frontier technologies such as natural language processing and generative artificial intelligence should be fully employed to establish a dynamic content generation mechanism, thereby promoting the creative

transformation and innovative development of educational content. This mechanism can generate timely and pertinent content in real time on the basis of current social events and students' focal concerns, keeping educational content consistently fresh and appealing. In terms of presentation, the social character of ideological and political content should be strengthened in line with students' personalized preferences and the features of their learning scenarios, with content converted into video, audio, graphics and text, games, and other formats so as to achieve multimodal adaptation and scenario-based presentation [19]. It must be emphasized that content innovation should always adhere to the principle of value guidance, technological empowerment, and diversity of forms, ensuring that educational content combines ideological depth and rigor with attractiveness and appeal, thereby achieving the effect of nurturing students quietly and imperceptibly. In this process, attention should be paid to combining traditional culture with modern technology and to balancing theoretical depth with breadth of dissemination, so that the content retains its intellectual profundity while achieving communicative effectiveness.

5.3 Model Restructuring: Forming a Two-Way Interactive Teaching Process for Targeted Ideological and Political Education

The restructuring of the teaching model is the pivotal link in the empowerment of targeted ideological and political education by algorithmic recommendation, and it entails a fundamental transformation of the traditional teaching process. In the pre-class stage, a preview model informed by students' digital profiles should be established. Through the targeted delivery of personalized preview materials and the administration of diagnostic pre-tests, teachers can gain an in-depth understanding of students' cognitive foundations and points of interest, thereby obtaining precise data support for classroom instruction. In the in-class stage, the traditional one-way inculcation model should be replaced by a dynamic adjustment mechanism based on real-time feedback. Teachers can promptly adjust the pace and emphasis of instruction in light of students' real-time responses, thereby achieving genuinely differentiated instruction. For example, students with stronger comprehension can be offered more advanced extension materials, while students experiencing difficulties can be provided with more targeted auxiliary resources, delivering the personalized learning experience implied by teaching students in accordance with their aptitude. In the post-class stage, an extension model informed by learning analytics should be established: in accordance with each student's situation and characteristics, personalized practical activities and research projects are delivered, promoting the integration of knowledge and action and the organic combination of theoretical learning with practical training [20]. The restructuring of the teaching model should follow the principles of data-driven operation, dynamic adjustment, and two-way interaction, transcending the temporal and spatial constraints of traditional teaching and constructing a new instructional paradigm characterized by the deep integration of online and offline instruction and the close articulation of in-class and extracurricular learning.

5.4 Evaluation Reform: Establishing a Multi-Source Data-Based Evaluation System for Targeted Ideological

and Political Education

The reform of the evaluation system is an important safeguard for the effective implementation of algorithmic recommendation in targeted ideological and political education. Because the traditional evaluation system often fails to reflect teaching effectiveness comprehensively and objectively, a scientific evaluation system based on multi-source data must be established. Such a system first requires a robust mechanism for multi-source data collection that integrates students' learning behavior data, classroom interaction data, and attitudinal data, so as to reflect students' growth processes and developmental trajectories comprehensively and objectively. On this basis, a sound formative evaluation mechanism should be established that moves away from the past overemphasis on outcomes and directs greater attention to the continuous tracking and assessment of students' learning processes. By analyzing data on learning paths and interaction patterns, algorithms make possible a precise assessment of the learning process and timely intervention. At the same time, a real-time feedback mechanism should be established to generate personalized learning reports promptly on the basis of data analysis, providing a scientific basis for teachers to improve their instruction and guidance for students to adjust their learning strategies. In evaluation reform, the principles of giving equal weight to formative and summative evaluation, combining quantitative analysis with qualitative assessment, and unifying diagnostic and developmental functions should be upheld, so as to give full play to the guiding, incentivizing, and regulating roles of evaluation and to promote the continuous improvement of the quality of ideological and political education.

5.5 Governance Systems: Establishing Sound and Well-Developed Mechanisms for Assessment and Ethical Regulation

The establishment of governance systems is the institutional foundation for ensuring the long-term effectiveness of algorithmic recommendation in targeted ideological and political education, and it requires a robust governance framework across multiple dimensions. First, an algorithmic ethics regulation mechanism should be established to ensure the transparency, fairness, and explainability of algorithms. This includes an audit system under which algorithms are reviewed and optimized on a regular basis; a bias detection mechanism to forestall algorithmic discrimination and unfairness; and a controlled cocoon-breaking mechanism that periodically interrupts students' prolonged exposure to highly homogeneous content. Second, a data security and privacy protection mechanism should be established to ensure the security and lawful use of student data. This includes a data classification and grading system under which differentiated protective measures are applied to data of varying sensitivity; an access-control system that strictly limits rights of data access and use; and an emergency response mechanism for data breaches so that potential security incidents can be addressed in a timely manner. Finally, a human intervention interface should be established to provide administrators of ideological and political education with convenient and efficient back-end tools for manual intervention. At critical communication junctures, when responding to breaking

public-opinion events or guiding discussion of major themes, administrators should be able to carry out the necessary manual calibration of recommendation strategies and the targeted delivery of content, ensuring that on critical issues it is human educators, not the technology, who remain in charge, thereby realizing human-machine collaboration in the genuine sense. In addition, a collaborative governance mechanism involving multiple stakeholders should be established, encompassing the joint participation of education authorities, schools, teachers, parents, and students, so as to form a concerted force for the healthy and orderly development of algorithmic recommendation in targeted ideological and political education.

6. Conclusion

Looking ahead, the application of algorithmic recommendation in ideological and political education will continue to deepen, evolving from instrumental empowerment toward paradigmatic transformation and ultimately bringing about a fundamental change in the form of ideological and political education itself. This transformation will be reflected not only in technological upgrading but also in the comprehensive reconstruction of educational philosophies, teaching models, and evaluation systems. As technology continues to advance and educational philosophies are continually renewed, it is essential to strengthen the productive interplay between theoretical research and practical exploration and to adjust and refine programs of technological application in step with technological progress and evolving educational needs. In this way, the overall quality of ideological and political education can be comprehensively enhanced, providing powerful support for the cultivation of a new generation capable of shouldering the mission of national rejuvenation.

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