

# Research on Development Strategies for Empowering Ideological and Political Education in Higher Education Institutions Through Algorithmic Recommendation Technology

WANG, Xubin <sup>1\*</sup>

<sup>1</sup> Xinjiang Normal University, CN

\* WANG, Xubin is the corresponding author, E-mail: 1485225573@qq.com

**Abstract:** Abstract: As the primary arena for conducting and implementing ideological and political education, universities must adapt to the tide of development in the digital age. Algorithm recommendation technology, as a vital component of emerging digital-age technologies, holds significant importance for advancing the high-quality development of ideological and political education in higher education institutions. It is essential to actively explore the theoretical basis and practical foundation for leveraging algorithm recommendation technology to empower ideological and political education, while clarifying its critical value in this context. Concurrently, development strategies should be strengthened across three dimensions—technology, stakeholders, and institutional frameworks—to enhance the educational effectiveness of ideological and political education in higher education institutions.

**Keywords:** Algorithmic Recommendation, Ideological and Political Education, University Students, Development Strategy.

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## 1 PROPOSING THE PROBLEM

As an emerging technological tool, algorithmic recommendation technology can efficiently and accurately recommend content tailored to user needs through content-based, collaborative filtering, and hybrid recommendation methods, thereby enhancing user satisfaction. By reasonably and effectively integrating algorithmic recommendation technology into ideological and political education—a vital means of elevating college students' ideological awareness and moral integrity—we can further enhance the relevance and effectiveness of such education. This holds significant importance for instilling correct values and guiding students toward virtue.

## 2 FEASIBILITY ANALYSIS OF THE EMPOWERMENT OF ALGORITHM RECOMMENDATION TECHNOLOGY

Algorithm recommendation technology has a profound impact on the effectiveness of ideological and political

education in universities, and it has raised new requirements for ideological and political education of college students in the new era. Based on the theoretical basis and practical foundation of algorithm recommendation technology empowering ideological and political education in universities. We explore an innovative and precise educational model that is tailored to the characteristics of algorithm recommendation technology, which is conducive to achieving educational innovation.

### 2.1 THEORETICAL BASIS

“With the acquisition of new productive forces, people change their mode of production; and with the change in their mode of production, that is, their means of livelihood, they also change all their social relations.”<sup>[1]</sup> Here, Marx emphasizes that production relations must correspond to the development of productive forces, profoundly elucidating the vital role of new productive forces in driving social progress during societal development. As a concrete manifestation of new productive forces, applying algorithmic recommendation technology to ideological and political education in higher education institutions aligns with the requirement that advanced productive forces drive social development. It helps innovate the practical pathways of ideological and political education in universities and plays a

vital role in promoting its vigorous development in the new era. General Secretary Xi Jinping pointed out: “Digital education is a key breakthrough for China to open up new avenues for educational development and shape new advantages in education.”<sup>[2]</sup> Here, General Secretary Xi Jinping emphasizes the vital role of educational digitization in advancing educational development. Algorithm-based recommendation technology, a product of the digital era, serves as an effective vehicle for driving educational digitization. Its core application logic continues to gain prominence in communication and service scenarios. Phonexay Vilakone has proposed that recommendation systems, as core technologies, primarily analyze user behavior to deliver information and services aligned with user needs.<sup>[3]</sup> Therefore, empowering ideological and political education in higher education institutions with algorithmic recommendation technology not only meets China's needs for educational digitization and developing new advantages in education but also aligns with the requirements for innovative development of ideological and political education in the new era. This approach injects powerful momentum into further advancing the orderly implementation of ideological and political education in higher education institutions.

## 2.2 REALISTIC BASIS

In today's society, the internet has permeated every household, integrating into all aspects of people's lives, studies, and work. As the primary users of the internet, college students make it particularly crucial to leverage the value orientation and online ideological guidance of ideological and political education in higher education. In this era of widespread big data and cloud computing applications, effectively utilizing algorithmic recommendation technology holds significant importance for enhancing the targeted educational impact of ideological and political education in universities. To date, the development of algorithmic recommendation technology has yielded three primary recommendation methods. The first is collaborative filtering-based recommendation, which identifies items and content preferred by similar users based on their shared interests. The second is content-based recommendation, which analyzes extensive content repositories and user-related information—such as the relevance of a particular item and target users' ratings, likes, and browsing history—to generate recommendations tailored to specific users. The third category is hybrid recommendation methods. These analyze the strengths and weaknesses of each approach, combining their advantages to enhance overall effectiveness and achieve optimal solutions that gain user acceptance. Regardless of the method employed, the ultimate goal remains improving the accuracy and quality of algorithmic recommendations to enhance user satisfaction. Ideological and political education in higher education institutions is an educational practice aimed at continuously elevating students' ideological awareness and moral cultivation while promoting their comprehensive development. Given the rapid advancement of the internet, effectively integrating ideological and

political education into online platforms necessitates the utilization of algorithmic recommendation technology. This plays a crucial role in enhancing the relevance and effectiveness of related educational activities. Therefore, empowering ideological and political education with algorithmic recommendation technology has profound practical significance and contributes to its innovative development.

## 3 THE VALUE OF ALGORITHMIC RECOMMENDATION IN EMPOWERING IDEOLOGICAL AND POLITICAL EDUCATION IN HIGHER EDUCATION INSTITUTIONS

The report of the 20th National Congress of the Communist Party of China explicitly states: “Advance the digital transformation of education and build a learning society and a learning nation for lifelong learning by all.”<sup>[4]</sup> This fully demonstrates the Party and the state's emphasis on educational digitization. As a vital pathway for universities to cultivate new generations for the era, ideological and political education plays a significant role in guiding thought and practice. In practical implementation, algorithmic recommendation technology has demonstrated remarkable practical value and adaptability. Jeong Woon Hae et al. argue that in personalized service processes, recommendation systems can push services or products that target customers are likely to enjoy. Online shopping platforms like Amazon and CD Now have widely adopted and applied various types of recommendation systems.<sup>[5]</sup> Leveraging algorithmic recommendation technology, higher education institutions have innovated their ideological and political education methods, expanded their educational domains, enhanced educational outcomes, and continuously elevated their digital capabilities—better aligning with contemporary developmental needs. Consequently, algorithmic recommendation technology holds significant value in driving the innovative development of ideological and political education in higher education.

### 3.1 IT CONTRIBUTES TO THE INNOVATION OF IDEOLOGICAL AND POLITICAL EDUCATION METHODS IN HIGHER EDUCATION INSTITUTIONS.

Methods of ideological and political education serve as powerful tools and essential means to achieve its objectives and fulfill its tasks. Scientific and effective approaches facilitate the deep integration of its content into students' consciousness. Currently, theoretical indoctrination remains a prevalent method in implementing ideological and political education within universities. Educators conduct ideological

and political education through forms such as theoretical advocacy, lectures, and seminars, purposefully and systematically conveying corresponding worldviews, life perspectives, values, and ideological concepts to university students. However, during this process of theoretical indoctrination, the methods employed are characterized by mass appeal and broad applicability, often lacking educational specificity. Due to differences in students' original educational backgrounds and varying levels of personal qualities, significant individual differences exist. Traditional ideological and political education methods fail to meet the new demands arising from these individual differences. The integration of algorithmic recommendation technology effectively addresses this need.

On one hand, leveraging algorithmic recommendation technology, educators can analyze students' personalized content needs. Supported by big data and cloud computing, this enables the precise recommendation of relevant ideological and political education information to students, thereby enhancing the targeted nature of university ideological and political education.

On the other hand, it facilitates a shift away from traditional educator-centric approaches. By creatively leveraging the internet as a medium, ideological and political education content—in text, image, and video formats—can be uploaded to platforms like computers and mobile devices. Algorithmic recommendation technology then effectively delivers this content to target audiences, innovating educational methods while boosting students' enthusiasm for self-directed learning and their ideological and political awareness.

### 3.2 IT HELPS TO EXPAND THE DOMAIN OF IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES.

As an educational practice, ideological and political education in higher education institutions inherently operates within specific contexts. Historically, such education primarily relied on offline channels—including faculty lectures, campus presentations, and expert seminars—which yielded significant outcomes over time. However, with societal evolution and widespread digital technology adoption, new circumstances and challenges have emerged in this domain. Applying algorithmic recommendation technology to higher education ideological and political education can effectively mitigate these issues and challenges.

On one hand, leveraging algorithmic recommendation technology in ideological and political education can enhance the targeted nature of online ideological and political education. By recommending content aligned with students' preferences, it increases their interest in relevant ideological and political education materials, encouraging them to actively search for and access such content online. This facilitates the opening of new frontiers for higher education

ideological and political education.

On the other hand, as the internet evolves, people freely express their views on online platforms, leading to intense ideological clashes. Strengthening online ideological and political education and firmly upholding the banner of mainstream ideology has become particularly crucial. Leveraging algorithmic recommendation technology to guide college students in establishing correct values and ideological awareness online, while effectively managing this crucial digital space, helps expand new dimensions for ideological and political education. Thus, algorithmic recommendation technology provides multidimensional educational support for the effective implementation of ideological and political education, contributing to the further expansion of educational channels for nurturing students.

### 3.3 IT CONTRIBUTES TO ENHANCE THE EFFECTIVENESS OF IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES.

In the new era, the innovative development of ideological and political education in higher education institutions cannot be separated from the support of algorithmic recommendation technology. Fully leveraging the advantages of algorithmic recommendation technology in precise supply and intelligent push notifications can further enhance the educational effectiveness of ideological and political education in universities.

On one hand, algorithmic recommendation technology can improve the educational effectiveness of ideological and political education in universities. Historically, ideological and political education in universities has primarily relied on traditional models such as classroom instruction, campus broadcasts, and school newspaper publicity. However, with the development of the internet and digital technology, these traditional models struggle to meet the digital demands of contemporary ideological and political education, significantly diminishing their educational impact. Therefore, conducting ideological and political education in the new era necessitates firmly grasping online platforms as a crucial battleground. Through channels like WeChat Official Accounts, Weibo, and Xiaohongshu, algorithmic recommendation technology can swiftly and effectively identify target users, delivering personalized content recommendations to college students. This approach reduces students' resistance to ideological and political education content, deepens their acceptance of such material, and ultimately enhances the educational impact of campus ideological and political education.

On the other hand, algorithmic recommendation technology can improve the learning outcomes of the target audience for campus ideological and political education. Algorithmic recommendation technology enables effective analysis of target groups' online activities. By examining students' browsing histories, search records, and

viewing durations on web pages, it identifies relevant ideological and political education content that aligns with their interests, facilitating targeted recommendations and feedback. This approach satisfies students' demand for personalized recommendations while boosting their cognitive engagement and learning interest in ideological and political education content. It encourages greater proactivity and initiative in educational activities, ultimately yielding superior learning outcomes. Consequently, empowering ideological and political education with algorithmic recommendation technology enhances its educational effectiveness and better propels its innovative development.

## 4 APPROACHES TO EMPOWERING IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES THROUGH ALGORITHMIC RECOMMENDATION

In the digital and intelligent era, algorithmic recommendation technology can effectively elevate the digitalization level of ideological and political education in higher education institutions while meeting the current need for precision cultivation. Consequently, the construction and development of ideological and political education in the new era require the support of algorithmic recommendation technology. During this empowerment process, practical improvements in the educational effectiveness of ideological and political education can be achieved through pathways such as optimizing algorithmic recommendation technology, enhancing the algorithm literacy of relevant stakeholders, and improving the institutional framework for algorithmic recommendation systems.

TABLE 1 DEVELOPMENT TACTICS CHART

Improvement Path			
Analysis of the Dimensions of Empowerment	Technical dimension	Subject dimension	Institutional dimension
Specific measures taken	Focusing on the optimization of algorithm recommendation technology	enhancing the algorithm literacy of relevant entities	improving the national algorithm regulatory system.

### 4.1 FOCUSING ON TECHNOLOGICAL OPTIMIZATION TO ENHANCE THE EMPOWERING EFFECT

The development of ideological and political education in higher education is a dynamic process that continuously evolves alongside societal changes. Cohn and Jonathan conceptualize algorithmic recommendation as a cultural phenomenon that profoundly shapes daily life and even

influences ideological frameworks.<sup>[6]</sup> Therefore, algorithmic recommendation technology must align with the developmental needs of ideological and political education and coordinate effectively with it to enhance educational outcomes. Optimizing algorithmic recommendation technology requires a two-pronged approach.

First, from a technological perspective, as a novel digital technology, algorithmic recommendation is still undergoing continuous integration and refinement with ideological and political education. Consequently, efforts must be intensified to optimize and innovate algorithmic recommendation technology, integrating these advancements into existing systems. Concurrently, research and investment in algorithmic technology should be expanded to enhance the efficiency of translating research outcomes into practical applications and strengthen the core competitiveness of algorithms.

Second, regarding the platforms supporting a algorithmic recommendation technology, efforts must focus on improving the foundational infrastructure to provide suitable platforms for the effective empowerment of this technology. Without a suitable environment, the application of algorithmic recommendation technology to empower ideological and political education in higher education institutions would remain mere rhetoric, and its effectiveness would be significantly diminished.

Therefore, the construction of algorithmic recommendation platforms must be prioritized. Establish a platform feedback mechanism to adjust algorithmic recommendation content and strategies based on user behavior and feedback. Simultaneously, enhance the platform's autonomous detection system to enable rapid response to system failures or erroneous recommendations.

### 4.2 IMPROVING ALGORITHMIC LITERACY TO EXPLORE THE DEPTH OF THE EMPOWERING EFFECT

Ultimately, digital technology serves humanity. As users and beneficiaries of algorithmic recommendation technology, enhancing the algorithmic literacy of relevant stakeholders in higher education is an urgent necessity for the innovative development of ideological and political education in the new era.

First, strengthen the understanding and recognition of algorithmic recommendation technology among university administrators, highlighting its crucial role in ideological and political education to facilitate its smooth integration into campus life.

Second, intensify training in algorithmic recommendation technology for frontline university faculty. Frontline faculty members are key implementers of ideological and political education and vital forces in cultivating university students' political awareness. Therefore,

it is imperative to enhance their algorithmic literacy through regular training. This will enable them to maintain proficiency in algorithmic recommendation technologies, develop tailored educational plans for diverse student needs, improve the effectiveness of ideological and political education, and drive its innovative development.

Finally, students must be empowered to independently adapt to algorithmic recommendation technologies. In the digital age, cyberspace is inundated with diverse information. As scholars like Ngo Tung Son have noted, online learning platforms offer students a wealth of courses, yet this abundance makes it increasingly difficult for students to identify relevant resources. Recommendation systems address this challenge by tailoring unique learning paths based on individual student conditions and backgrounds.<sup>[7]</sup> However, the paramount task remains enhancing students' own learning and cognitive abilities regarding algorithmic recommendation technology. This enables them to discern truth from falsehood within the vast sea of mixed information and maintain sound values, which holds significant value for effectively conducting ideological and political education in higher education institutions.

### 4.3 IMPROVING THE ALGORITHMIC SYSTEM TO ENSURE EFFECTIVE EMPOWERMENT

Professor Sally contends that the "filter bubble" mechanism within algorithms significantly accelerates the spread of attention-grabbing and even extreme viewpoints across social networks, granting those who control the algorithms—be they individuals or organizations—an unfair position of power. This underscores the necessity and urgency of establishing a robust national regulatory framework for algorithms to ensure their orderly implementation. The effective application of algorithmic recommendation technology in empowering ideological and political education in higher education institutions hinges on robust institutional constraints. Comprehensive institutional frameworks are crucial measures to ensure the effective empowerment of algorithmic recommendation technology. Specifically, institutional development for leveraging algorithmic recommendation technology in higher education ideological and political education should be implemented at three levels.

First, at the legislative level, relevant legislative bodies must strengthen the development of laws and regulations governing algorithmic recommendation technology to ensure its lawful and compliant operation within the legal framework. To address legal gaps in the application of algorithmic recommendation technology within ideological and political education, specialized legislation must be developed to ensure the technology's implementation is both reasonable and lawful.

Second, at the governmental level, relevant authorities should establish regulatory frameworks for algorithmic recommendation technology in accordance with the law.

Strengthening administrative oversight through comprehensive regulatory systems will ensure the technology's proper and effective empowerment of ideological and political education. For instance, the "Regulations on the Management of Algorithm Recommendations in Internet Information Services," jointly issued by four departments including the Cyberspace Administration of China on March 1, 2022, plays a crucial role in standardizing the reasonable application of algorithm recommendation technology and ensuring its scientific implementation. The government should establish relevant technical regulatory departments to provide guidance during the implementation of algorithm recommendation technology. Simultaneously, any illegal activities identified during the regulatory process must be dealt with strictly in accordance with laws and regulations, with increased penalties.

Third, at the institutional level within universities, it is essential to develop teacher manuals for algorithmic recommendation technology to ensure standardized usage. Furthermore, regular training programs on algorithmic recommendation technologies should be provided to faculty to ensure they can proficiently apply these tools in ideological and political education. Thus, leveraging relevant institutional frameworks will help establish a robust regulatory system for algorithmic recommendation technology, ensuring its smooth implementation in empowering ideological and political education at universities.

## 5 CONCLUSION

In summary, the digital transformation of ideological and political education in universities is a process of reconstructing teaching models and creating a new paradigm of education through digital technology. The algorithm recommendation technology enables ideological and political education in universities to achieve a deep alignment in terms of theoretical basis and practical basis, providing a feasible path for the algorithm recommendation technology to support ideological and political education in universities. In practical exploration, universities should adhere to the student as the main body, guide educators to actively learn and master the algorithm recommendation technology, deeply understand the intrinsic connection between the algorithm recommendation technology and ideological and political education, and profoundly understand the all-round empowerment value of the algorithm recommendation technology for ideological and political education in universities from the aspects of methods, fields, and effects. Explore innovative practices of algorithm recommendation technology empowering ideological and political education in universities from dimensions such as content, subject, and system, and add new impetus to the innovative development of ideological and political education in universities.

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## ABOUT THE AUTHORS

**WANG, Xubin**

Xinjiang Normal University, CN,  
1485225573@qq.com.

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