



# New Method for Precise Ideological Education for "post-00" Students in The New Media Era based on Big Data

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## Abstract

The diversification, fragmentation, openness, and complexity of information in the online society in the new media era are constantly impacting their values and even behavioural norms, which also brings new opportunities and challenges to education management and profoundly affects the change of education methods. Based on big data theory, we collect massive basic data generated by college students during their school years and carry out deep mining and correlation analysis to explore the behaviour pattern of college students' networked life and learning style and its multi-dimensional influencing factors, to provide personalized education services for teachers and students, promote students' personalized growth and make college students' management twice as effective with half the effort. In this paper, we will start from the four major needs of college students' education management, such as academic prediction, precise funding, precise guidance, and early warning of lost connection, and build an integrated education management platform in digital space for "post-00" college students to solve the problems of precise, effective and early warning education in the Internet era.

**Keywords:** *new media era, "post-00" college students, big data mining analysis, digital space integration*

## 1 INTRODUCTION

The education of college students in China has long been valued by the state, which is not only closely related to the formation of correct outlook on life, values, and worldview of college students, but also related to the future development and destiny of the country. As "post-00" college students born in the era of network, they are enjoying their study and life in the era of new media, and even influencing their ideology through new media, which makes some traditional education methods lose their effect, and colleges and universities must face the impact and challenges brought by the new media era to the education work of colleges and universities. Facing the rapid development of information network technology, as early as in 2010, the state emphasized in the Outline of National Medium and Long-term Education Reform and Development Plan (2010-2020) that it should speed up the process of informatization of education work, continuously improve the attractiveness and infectivity of moral education work and enhance the relevance and effectiveness of moral education work. [1]

In the new media era, at present university education is more focused on teaching and often ignores big data-driven education, and there is relatively little exploration in the use of big data to accurately grasp the supply and demand match between teachers and students as well as precise and personalized education management models. In order to better cope with the impact and challenges, we need to sort out the intergenerational characteristics of "post-00" college students in the new media era, profoundly analyse the opportunities and challenges facing them in education and management of college students, use the integrated education management platform, use big data mining and analysis to achieve accurate portrayal of students, and continuously explore the new education management model applicable to "post-00" college students in the new media era. With the integrated education management platform and the use of big data mining and analysis, we can realize the accurate portrayal of students, explore the new path of accurate education and management for "post-00s" college students in the new media era, and answer the questions

of "what is happening, what will happen, and what should be done now" in the process of student training.

## 2 INTERGENERATIONAL CHARACTERISTICS OF "POST-00" COLLEGE STUDENTS IN THE NEW MEDIA ERA

In 2018, Tencent, together with China Youth Daily, released the "Post-00s Portrait" report. The report is based on the 783 million monthly active users of Tencent QQ and describes the "post-00s" group through questionnaires and analysis of big data platforms. The report shows that the "post-00s" have rejected the "buddha-like", "fresh meat", "bear child" and other labels given by society in their perception of their generation. Instead, the "post-00s" are more likely to describe themselves as open, independent, self-confident, and hot-blooded. The report also indicates that even in the new media era and the multicultural 21st century, most of the "post-00s" do not have deviated values. While they agree with the mainstream values, they also retain a strong self-sense. However, some surveys show that the ideal beliefs of the "post-00" college students are indifferent, and they are more likely to have radical emotions, weaker stress resistance, and more likely to have psychological problems.

After the synthesis of different levels of investigation reports and practical work, we summarize the following four characteristics of "post-00" college students. The first is the personalization of value pursuit. Compared with the "post-80s" and "post-90s" college students, the "post-00s" college students have a superior growing environment, and they have a strong sense of individuality and pay more attention to the realization of individual value. Second is the pragmatism of life is ideal. Many "post-00" college students think that in life planning, the first thing they should consider is their growth and future, and they will consider the development of the country and society only based on ensuring their personal development. Thirdly, the networked lifestyle matters. [2] The "post-00" college students grew up in the era of the rise of the Internet, and all aspects of their life and study are inseparable from the Internet, so they generally have strong online social skills and sense of online ownership. While enjoying the convenience brought by the Internet, their ideology is also influenced by the numerous information on the Internet. The last one is the diversification of learning methods. Unlike traditional learning methods, books are no longer the only learning tools, and the education scenarios for "post-00" college students are more diversified and intelligent. Parents are also paying more and more attention to their children's education, and practical learning and online learning are highly sought after.

## 3 OPPORTUNITIES AND CHALLENGES FOR THE IDEOLOGICAL AND POLITICAL EDUCATION OF "POST-00" COLLEGE STUDENTS IN THE NEW MEDIA ERA

### 3.1 *Opportunities for the ideological and political education of "post-00s" college students in the new media era*

In the era of new media, the dissemination of various information resources is not restricted by time and space, which is convenient, fast and efficient. With this advantage, many new media platforms for text, short video and other content distribution have emerged, occupying the electronic devices of the "post-00" college students, and to meet the needs of the "post-00" college students for personalization and networked lifestyles, online classes, catechism, webcast courses and other educational methods have emerged. To meet the needs of "post-00" college students for personalization and networked lifestyle, various education methods such as online classroom, catechism and live webcast courses have emerged one after another, and big data empowerment has improved the accuracy of education effect quantification and evaluation, and real-time data feedback can realize the functions of prediction and early warning. These new media platforms and technical support have brought more possibilities for college education. Firstly, it provides personalized customization and broadens the education platform. Post-"00" college students have stronger individual self-awareness and want to participate rather than passively accept. In the era of new media, teachers can use public platforms such as WeChat, Weibo, Tiktok and Bilibili to release educational information anytime and anywhere, which enhances the timeliness of information and greatly widens the space for college students' education. By cutting into college students' education through platforms and topics that students are interested in, students can choose learning methods more independently, thus realizing a private customized learning mode that combines online and offline and balances active and passive education. Secondly, it crosses the limitation of time and space and improves management efficiency. New media, with its virtual nature, allows teachers and students to contact each other at the same time and in different spaces, which can create a relaxed and cordial atmosphere, and even allows college students to communicate in an anonymous way, which protects their privacy and reduces their psychological sensitivity to a certain extent. In such an educational atmosphere, students can more openly confide some of their opinions and ideas. Teachers can use such a way to understand the relatively real thoughts of college students, and thus can prescribe the right medicine and improve the effectiveness. Thirdly, it highlights self-management and

data-empowered education. In the new media era, the use of big data mining and analysis will provide powerful empowerment to students' ideological and political education and daily services. Full use of the platform to collect diversified student data and integrate, process, and conduct deep mining and correlation analysis can gradually realize convenient, standardized, and standardized ideological and political education, and provide one-stop service and precise education for managers and students.

### 3.2 Challenges of ideological and political education for "post-00" college students in the new media era

With the rapid development of network information technology, new media have penetrated the study and life of college students in almost all aspects. College students' education also faces new challenges. First, the quality of education supply content varies. The production cost of online learning content is lower, the distribution channels are wider, and its reliability is more difficult to control, plus the knowledge as valuable information will inevitably be disturbed by noise in the process of dissemination, and even mixed with harmful information such as bad thinking or wrong views. Secondly, students' values are facing new impacts. The current "post-00" college students can obtain information quickly and in real time, and at the same time, they can express or forward relevant thoughts, feelings, and opinions at any time through their personal self-media platforms. However, college students are in the important period of shaping their worldview, outlook on life and values, and many of them lack the ability to distinguish and judge the authenticity of online information and are easily influenced by diversified social trends and Western ideologies. [3] Third, students' precise education is less explored. Some educational contents are not vividly expressed in network language, the released contents are not attractive enough, not good at conveying ideas in the form of network language, network words and network images, the content and form cannot be close to students, and the education for college students through the network has little effect. Fourthly, it is difficult to meet students' individual needs. At present, the way of thinking, behavioural characteristics, living environment and growth path of "post-00" college students present the characteristics and trends of the new era, and college students increasingly pursue individual needs and diversified value orientation. However, it is obvious that the traditional "flooding" education can no longer meet the diversified needs of the "post-00" college students. [4] Therefore, the education management of college students needs to have stronger communication power, guiding power, attractiveness, and influence.

## 4 ANALYSIS OF EDUCATIONAL MANAGEMENT NEEDS OF THE "00" POST-COLLEGE STUDENTS IN THE NEW MEDIA ERA

To better understand the needs in the education management of teachers and students, this study used convenience sampling method to conduct a questionnaire survey on 150 teachers and 400 students at the University of Electronic Science and Technology.

**Table 1:** Questionnaire of educational management needs

Role	Role requirement	Select number of people	Demand proportion
teacher	Accurate student group	120	81%
	Quantify students	41	27.7%
	Work real-time feedback	18	12.2%
	Academic warning	72	48.6%
	Psychological early warning	68	45.9%
	Accurate funding	52	35.1%
	Alarm loss	105	70.9%
student	one-stop service	322	84.3%
	Online service	355	92.9%
	Accurate guidance	210	54.9%
	interactive learning	282	73.8%
	Multi-source communication	136	35.6%
	Part-time job service	255	66.7%

A total of 550 questionnaires were distributed, 535 questionnaires were collected, and 530 questionnaires were valid (148 for teachers and 382 for students), with a valid return rate of 96%. According to the intergenerational characteristics of the post "00" college students and the pain points of education and management in the new era, this questionnaire set the indicators of teachers' and students' needs in the process of education and management, and all participants checked no more than 3 most urgent needs according to their personal situation. According to the valid questionnaires, we have the results shown in Table 1.

According to the analysis of teachers' needs, in the management process, managers first need to clarify the management objectives and groups, whose demand rate reaches 81%, followed by real-time feedback of students' data in academic (48.6%), psychological (45.9%), and financial support (35.1%). According to the analysis of students' needs, the most urgent needs of students in university education are one-stop online services, with a demand rate of 92.9%, followed by interactive learning methods and personalized guidance, which also reflects that the life and learning style of university students nowadays is basically in line with the intergenerational characteristics of the "00" generation of university students.

According to the main demands of managers and college students in the process of education management, we establish a data-driven precise, personalized and

dynamic education management platform for different subjects to realize the transformation from rough supply to precise supply of modern governance of student curriculum construction and student management services, to precisely solve the problems, demands and feedback of curriculum construction and management services, and to comprehensively promote students' comprehensive growth and success. First, build an education management model to accurately identify new student requirements and problems based on data, and promote personalized growth based on comprehensive student development. Second, to build a dynamic information "database" for curriculum construction and student management services, using big data technology to grasp students' dynamic needs, feedback, and evaluation, and analyse the shortcomings and weaknesses of college education. Thirdly, we will innovate new paths of productization and education of student management services in colleges and universities, such as visualization of "student portrait", "one-stop precise service", "precise poverty alleviation", etc. The new applications of education big data, such as "accurate employment", can improve the scientific decision-making, mechanism, and process of education, and develop and carry out personalized and differentiated educational management paths for college students.

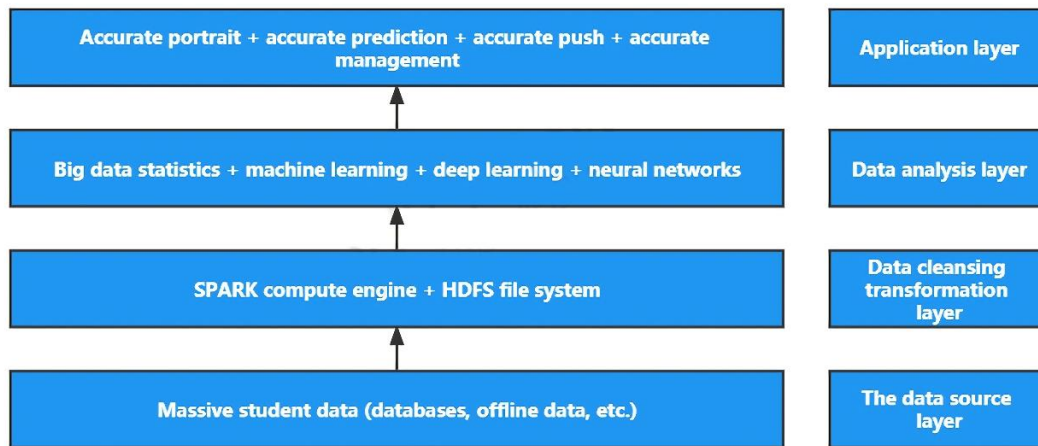
## 5 CONSTRUCTION OF INTEGRATED EDUCATION MANAGEMENT PLATFORM IN DIGITAL SPACE

To meet the changing and multi-dimensional needs of the "post-00" college students, we need to build an integrated management service and education ecology based on the Internet with big data analysis as the core, and to build digital applications and content services based on platform carriers that cover the whole school career cycle of students, including education and teaching, management services, campus life, media publicity, etc. It is necessary to build digital applications and content services based on the platform carrier covering the whole academic career cycle of students, including education and teaching, management services, campus life, media publicity, etc. To build a new model of education with a balance of supply and demand based on big data analysis, we apply new media and technology

to innovatively build a digital space integrated education management platform (Figure 1), obtain massive data of students through big data technology, conduct comprehensive data analysis, accurately grasp the dynamics of students' thoughts and behaviours in the process of data processing, and improve the timeliness, practicality and effectiveness of education in the process of data application. The overall architecture of the system includes data extraction, data cleaning and conversion layer, data analysis layer, and java application display layer. By cleaning and converting the massive data of students and using statistical algorithms and AI algorithms for data mining, the system presents the functions of student accurate portrait, accurate behaviour prediction, and accurate push in the form of business library after a lot of analysis and calculation. Through accurate portrait managers can check college students' indexes (academic, consumption, social, psychological, etc.) at any time, grasp students' dynamics in time, and precisely find work targets. Precise behaviour prediction can realize the needs of students' academic early warning, poverty early warning, lost contact early warning, etc., and precisely guide managers' next measures. Accurate push can realize personalized and customized management of students, reduce information redundancy, and improve the efficiency of college student education and daily student management. In the following, we will demonstrate the digital space integrated education platform through four major applications: academic prediction, precise funding, precise guidance, and lost connection warning.

### 5.1 *Digital space integrated education management platform academic prediction function*

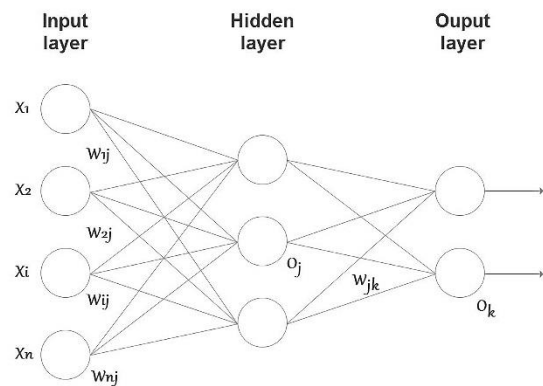
Through the integrated education management platform, we collect 1000 college students' academic performance monitoring for four years, record the attendance data, Internet data, borrowing data, access control data and other factors affecting college students' academic performance, input the data into a multi-layer feed-forward neural network, and use the failure result as the threshold for network learning to form a performance prediction algorithm (the topology of the prediction algorithm is shown in Figure 2).



**Figure 1:** Digital Ideological and Political Space Complex

In the process of application, the trend of individual college students' performance factors is recorded in a six-month cycle, and when the performance factors of individual college students reach the threshold value in the cycle, we can determine whether the individual has academic risks, to guide the manager to intervene in time, thus realizing the academic warning alert function. We process students' entrance examination scores, student origin, class attendance data, Internet data, borrowing data, and dormitory access data, scaling the features to [0,1], summarizing the feature values in months, taking the current semester as the standard, and taking the historical data of the same semester three years ahead as the historical value, and taking the feature values of students predicted in the current academic year as the predicted value. Calculate the current academic year, the current student of this course and historical data of the same semester, the same major, the same course of students seeking similarity, Euclidean distance as the gap between students, if the gap is smaller, the greater the

similarity, we take the minimum value of Euclidean distance \* 1.05 times the average score of the student of this course as the predicted score of the current student of this course (prediction process as Figure 3).



**Figure 2:** Prediction Algorithm Topology

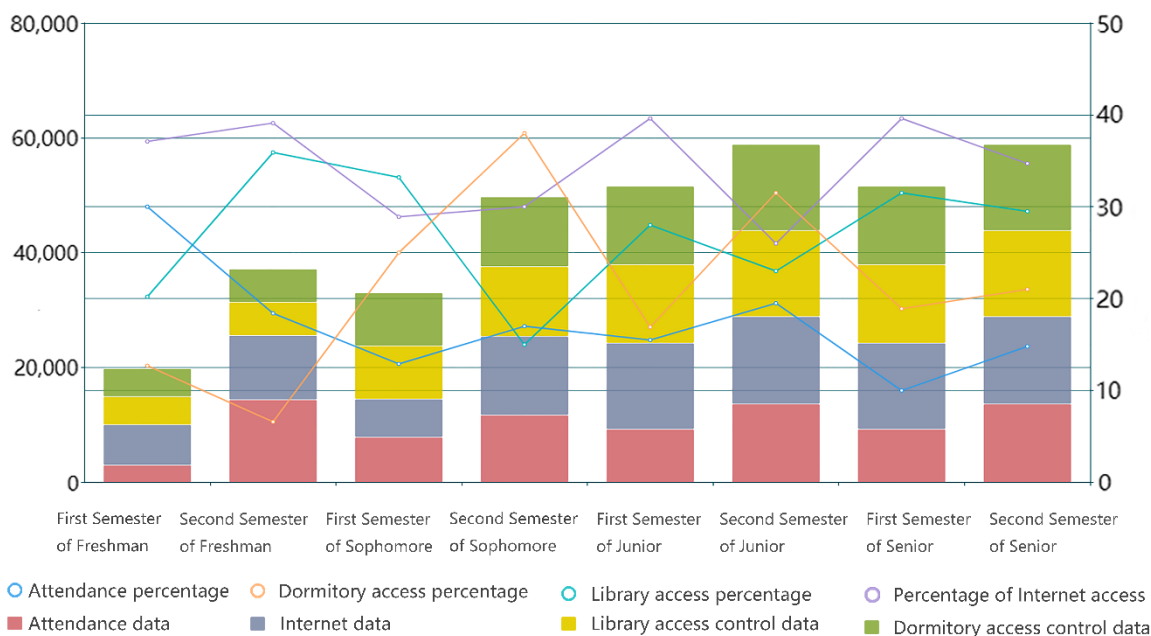


Figure 3: Prediction Process

### 5.2 Digital space integrated education management platform precision funding function

Conventional student financial aid work relies on the recognition of college students' difficulties, which has disadvantages such as lagging data, doubtful data authenticity, and difficulty in data audit, resulting in less in-depth and accurate financial aid work. Using big data technology to build an intelligent and accurate financial aid system, we collect and analyse data including students' family information and students' consumption at school, and accurately identify students with financial difficulties through a combination of manual evaluation and big data analysis to realize the whole process of tracking and dynamic management of students in difficulty. (The prediction calculation dimensions are shown in Figure 4.) The data come from the dimensions of students' place of origin, consumption data, and family situation, etc. The quantitative unification process is done for multiple dimensions, and then the weighted sum is found and scaled to [0,10] as the poverty index to deal with. Take the consumption dimension as an example, we calculate the average monthly consumption amount of "lunch" and "dinner", and then calculate the average consumption amount of each meal *avg\_count* and the total consumption count *sum\_month\_cn* from the beginning of the semester to get the average consumption amount now, and finally.

$$avg\_count = avg\_count * e^{\frac{1}{sum\_month\_cn}} \quad (1)$$

If a student has too little consumption data or consumption times per month, the student is spending on

meals outside of school and can be considered not poor. Here we replace the *avg\_count* of students with no consumption data or too few consumptions with  $max(avg\_count) * 1.05$ . The consumption amount is inversely proportional to the poverty index, so the inverse is taken and scaled to [0,1] to finally obtain the poverty index of the student consumption dimension. Finally, it is calculated by weighted sum: then birthplace (0.15) + consumption data (0.25) + loan data (0.25) + family situation (0.25) + other (0.1) weighted sum, scaled to [0,10] as the final poverty index indicator.

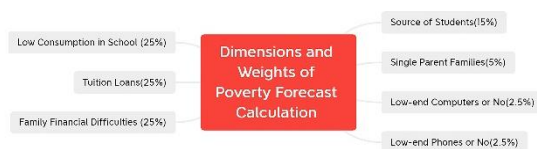


Figure 4: Prediction Calculation Dimension

### 5.3 Digital space integrated education platform precision guidance function

Establish a comprehensive and three-dimensional accurate portrait of students, comprehensively grasp the current state of mind and problem needs of college students, make full use of big data technology and Internet of Things technology to realize effective data precipitation, collection, and analysis, visualize content presentation, and realize accurate positioning of students' problems and needs (the dimension of students' graduation direction prediction is shown in Figure 5). Based on the algorithm distribution mode to implement accurate information recommendation, in the process of

using network algorithm technology to achieve accurate information recommendation, personalization is combined with value confusion and value recognition to achieve "accurate recommendation", and ultimately achieve the deep-seated recognition of socialist mainstream values among youth. At the same time, it can also realize accurate supply and demand matching, such as accurate information recommendation on study, competition, employment, and graduate school according to students' interests, academic foundation, and job-hunting needs, etc.



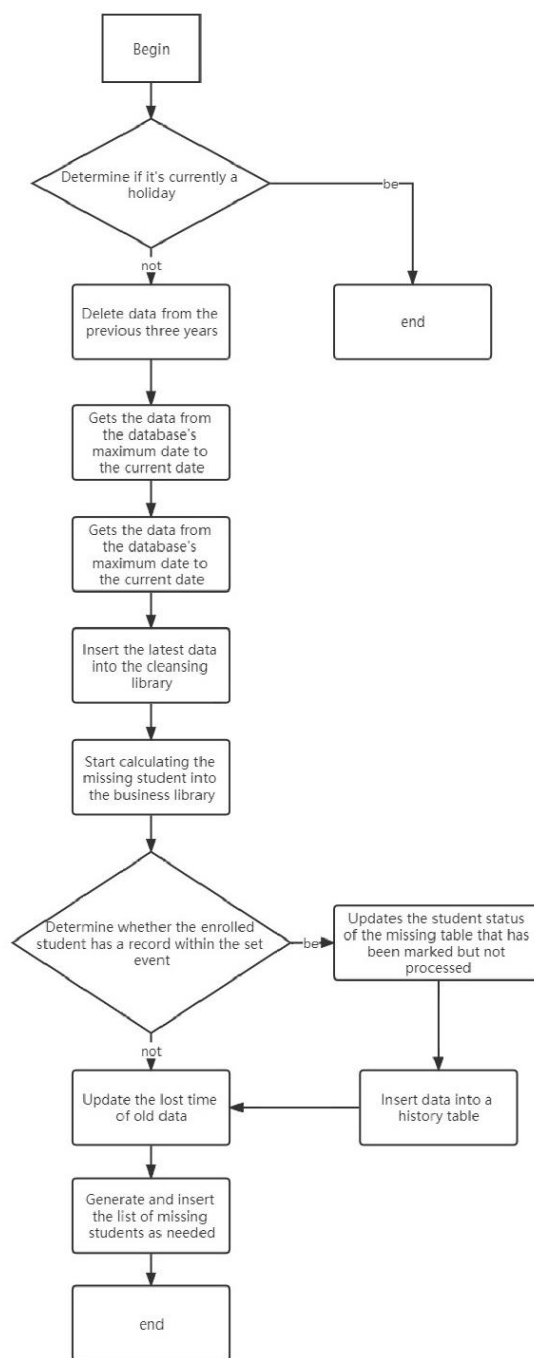
**Figure 5:** Predictive Dimensions of Students' Graduation Destinations

### 5.4 Digital space integrated education management platform lost connection warning function

Based on student consumption data, library access data, dormitory access data, Internet access data, and school gate access data, a data-driven student abnormal behaviour early warning platform with dynamic analysis and real-time feedback is established. It tracks the data changes of students in real time, uncovers and verifies the inflection points of students' behavioural characteristics that have changed significantly, and provides timely warning of abnormal behaviours. Based on the data of the last 3 days, the processing cycle is 4 minutes, and the logic of each processing is shown in Figure 6.

## 6 CONCLUSIONS

In the rapid development of the new media era, the education mode, education methods and education effectiveness are undergoing profound changes. Although "post-00" college students have high ability to use new media, their worldview, outlook on life and values have not yet been fully formed, and they are easily disturbed and influenced by the huge and complicated online contents, which constantly poses new challenges to the all-round education of college students.



**Figure 6:** Warning Processing Logic

Based on the integrated education management platform built by the big data analysis system of college students' online behaviour, the platform clarifies students' ideological characteristics, hot interests and multi-dimensional needs, makes full use of the advantages of new media communication, infiltrates the core socialist values into the first and second classrooms, fully considers the realistic demands of "post-00" college students, actively explores We make full use of the advantages of new media communication, infiltrate the socialist core values into the first and second classrooms, fully consider the realistic demands of the "post-00s" college students, take the initiative to discover hot topics,

conduct rational and objective analysis, strengthen the public opinion guidance of new media, and firmly grasp the leading power of college students' ideological education and public opinion guidance.

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