

# *Problems and Coping Strategies of Ideological And Political Education in Colleges and Universities under the Threshold of Big Data*

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**Abstract:** In the era of big data(BD), the rapid development of digital information technology inevitably causes profound changes in education mode. Informationization of education is inevitable, which is also the inevitable requirement for the reform and development of ideological and political education(IAPE) in new colleges and universities. How to use big data to combine IAPE of students with computer science has become a new urgent problem. The purpose of this paper is to study the problems and countermeasures of IAPE in colleges and universities from the perspective of BD. This paper focuses on exploring and analyzing the problems in the IAPE of college students, and discussing the causes of these problems in depth, and formulating corresponding strategies according to the actual situation and the causes of the problems. This paper uses system data analysis, system environment analysis and system management analysis to diagnose the problems, reveal the causes of the problems and effectively propose solutions. This paper analyzes the current problems and causes and proposes targeted and practical countermeasures on the basis of an objective summary of the achievements of IAPE in colleges and universities during the use of the Internet. The experimental results show that the proportion of students among the construction personnel of IAPE under BD in colleges and universities is more than 50%, which indicates that there is a certain degree of combination between IAPE of college students and BD in colleges and universities, and there is still room for improvement.

## 1. Introduction

The rapid development and great changes of network environment and technical means brought by BD have exerted new pressures on IAPE in colleges and universities [1-2]. Therefore, based on the perspective of BD, identification of the opportunities and challenges brought by big data to college IAPE [3-4], building the innovation system of college network IAPE under the perspective of BD, so as to comply with the new situation, new laws and new requirements for the development

of college network IAPE in the context of BD [5-6], and enhancement of the innovation of online IAPE in colleges and universities have become a major issue that has to be studied and solved in depth at present [7-8].

For example, Zhen C believes that the core of "BD" is prediction, and all words, directions, communication and things can be data [9]. As for a research institute of "BD", Liu F, Zhang Q considers "BD" as a massive, high growth rate and diverse information asset that needs new processing models to be more insightful, decision making and process optimization [10].

In this paper, we use entropy method to calculate index weight analysis, case and empirical analysis, literature analysis and so on, to closely link BD and online IAPE in Colleges and Universities(CAU), to explore how to use BD technology and methods under the threshold of BD, to take practical reference as the entry point, and to carry out research on three basic issues: firstly, to elaborate the related concepts and theoretical; secondly, to analyze the impact of BD on the IAPE of college students and its problems; thirdly, to propose the strategies to cope with the IAPE of students in CAU in the background of BD era.

## **2. Proposed Method**

### **2.1 Problems of IAPE of College Students in the Era of BD**

#### **2.1.1 Thinking mode needs to be updated urgently**

The conservative thinking, backward concept, lack of innovation, habit of thinking and solving the practical problems arising in the era of BD with experience and solidified mode of thinking are difficult to adapt to the objective law of the development dynamics of students' IAPE. The influence of solidified mode of thinking makes many educators dare not try to innovate, and in the face of complex new situations and new problems, they are often in a passive state.

They neglect the use of prediction function of BD technology platform in the IAPE of college students, and are accustomed to follow the traditional IAPE mode and still adopt the old-fashioned methods to grasp the ideological dynamics of students.

#### **2.1.2. Media carrier needs to be strengthened**

In the past, the education channels of IAP educators in CAU were mainly offline education. Most of the time is in-class education, while online education is relatively weak, and educators failed to make full use of advanced network media for education.

Lack of features and poor attractiveness. The process of learning in the era of BD is the process of information transfer and information reconstruction. If educators lag behind others in the process of BD application, do not deeply understand and analyze data, and lack active participation in BD, then BD is just a theory and a decoration.

Content is disorganized and poorly integrated. The subject system in the platform is not comprehensive and the navigation system is not clear. The education platform as a whole lacks diversified, systematic and lifelike contents, and lacks the correlation and interactivity among various disciplines.

#### **2.1.3 Educational resources still need to be integrated**

There is uneven sharing of subject resources among schools and faculties, and teachers' resources are scarce. At present, there are limited professional developers for online courses, and most of the development tasks are undertaken by teachers and student counselors, who have to provide online education and guidance to students on the one hand and complete their own work on

the other. To a certain extent, these problems restrict the sharing and integration of online education resources.

#### **2.1.4 Regulatory measures need to be improved**

The openness and universality of the era of BD make everyone a participant and user of BD, and they are receiving information while releasing information. The filtering technology and control technology of data information in China are relatively lagging behind, and the relevant laws and regulations are not sound enough, which also restrict the construction and purification of college campus network culture to a certain extent.

### **2.2 Strategies to Cope with the IAPE of College Students in the Background of BD**

#### **2.2.1 Increase investment and improve the construction of campus BD hardware facilities**

Maximally meeting students' personalized, differentiated and diversified actual needs are the core values of the construction of IAPE data platform for college students. On the one hand, CAU should increase investment and improve hardware facilities.

CAU should increase investment, strengthen and improve the construction of hardware facilities of data platform, and improve the stability and security of data hardware facilities. On the other hand, the construction of network facilities should be improved. CAU should increase investment in network technology and professional network talents, and equip special maintenance personnel for network platform technology, so as to provide IAP educators with network equipment and a platform for network maintenance to meet their work needs.

#### **2.2.2 Building an integrated education platform for society, schools and families**

CAU should cooperate closely with relevant social institutions, adopt the principle of attacking and sharing, strengthen the contact with social education resources, focus on joining with government propaganda departments and various education bases to build an integrated education and culture sharing platform. They should realize the "strong union" between CAU and quality resources of all social parties, avoid duplicate construction and waste of educational resources. Then, to play the role of family education. Based on the construction of national campus "three channels and two platforms", CAU should strengthen the communication and coordination with parents through microblogs, weibo, micro videos and mobile clients.

#### **2.2.3 Improve organization, clarify responsibilities, and strengthen supervision**

To establish a comprehensive management system of IAPE in the background of BD and to strengthen the IAPE of college students in the new media era, not only do we need to attach great importance to it in thoughts and actions, but also need a complete set of organizational management system. A sound organizational system and perfect supervision system are the prerequisites for the smooth implementation of online IAPE.

CAU should promote organizational changes and build a reasonable organizational structure. They should improve the internal and external innovation ability and adaptability of college education organization, strengthen horizontal management communication, dilute vertical leadership, build a learning organization, update organizational management concept, establish a learning organization that improves the quality of school operation and cooperation benefits, abandon the old concepts and behaviors, boldly practice the concept of continuous innovation, and realize the organizational team of people-oriented management.

### 2.3 Entropy Weight Method to Calculate Index Weights

In the process of exploring the mechanism affecting the construction of IAPE culture in CAU in the era of BD, the indicator weights can represent the importance of indicators to the construction of the whole mechanism. In order to avoid the influence of subjectivity, this paper uses the entropy weight method to determine the indicator weights.

Entropy weight method is a method to determine indicator weights according to the variation of the indicator data itself. It is not influenced by human subjective consciousness and can calculate indicator weights objectively. The smaller the entropy of information, the greater the amount of information provided by the indicator, the more obvious the influence on the whole system, and the higher the weight. The process of determining indicator weights by entropy method is as follows.

It is assumed that  $k$  indicators  $X_1, X_2, \dots, X_k$  are given ( $k=500$  in this paper), where  $X_i = \{X_{1j}, X_{2j}, \dots, X_{nj}\}$ , (where  $X_j$  is the evaluation value of the  $j$  item in the indicator, which in this study is the  $i$  indicator value of the  $j$  university ) The raw data were standardized using the 0-1 standardization method, assuming that the standardized values of each indicator data are  $y_1, y_2, \dots, y_k$ :

$$y_{ij} = \frac{x_{ij} - \min(x_i)}{\max(x_i) - \min(x_i)} \quad (1)$$

The information entropy of each indicator is calculated. The information entropy of the index of the  $i$  group is

$$\varepsilon_i = -\ln(n)^{-1} \sum_{j=1}^n p_{ij} \ln p_{ij} \quad (2)$$

Where  $p_{ij} = \frac{y_{ij}}{\sum_{j=1}^n y_{ij}}$ , if  $p_{ij} = 0$ , then define  $\lim_{p_{ij} \rightarrow 0} p_{ij} \ln p_{ij}$

The weights of each indicator are determined. The weights of each indicator are:

$$w_i = \frac{1 - \varepsilon_i}{k - \sum \varepsilon_i} \quad (3)$$

( $i=1, 2, \dots, k$ ), after processing the data of 500 valid questionnaires, the entropy weight was calculated according to the entropy weight method.

## 3. Experiments

### 3.1 Research Objects

The attention of college students to the topic of IAPE in the era of BD and the setting of full-time staff for IAPE in CAU reflect the degree of integration of BD and IAPE in CAU. 21 pilot CAU in this province that have established BD network construction are selected as the research objects.

### 3.2 Issuance and Recovery of Questionnaires

The official distribution of questionnaires is for college students in 21 pilot CAU in this province which have established network construction. 400 questionnaires were distributed and 372 questionnaires were collected, with a recovery rate of 93%, of which 353 questionnaires were valid, with an efficiency rate of 94.8%.

## 4. Discussion

### 4.1 Analysis of the Degree of Correlation between College IAPE and Students' Online Topics under BD

In order to study the degree of correlation between IAPE and students' online topics in CAU, we sorted the information of four representative CAU, as shown in Table 1:

Table 1: Data of online topics between IAPE and students in CAU under BD

	Total postings (article)	Statistical time (day)	Average daily postings (article)	Posting users (person)	Average user volume (article)
University A	853826	562	1519.26	27163	31.43
University B	24711	590	41.88	7810	3.16
University C	72621	477	152.25	6204	11.71
University D	15267	508	30.05	1733	8.809

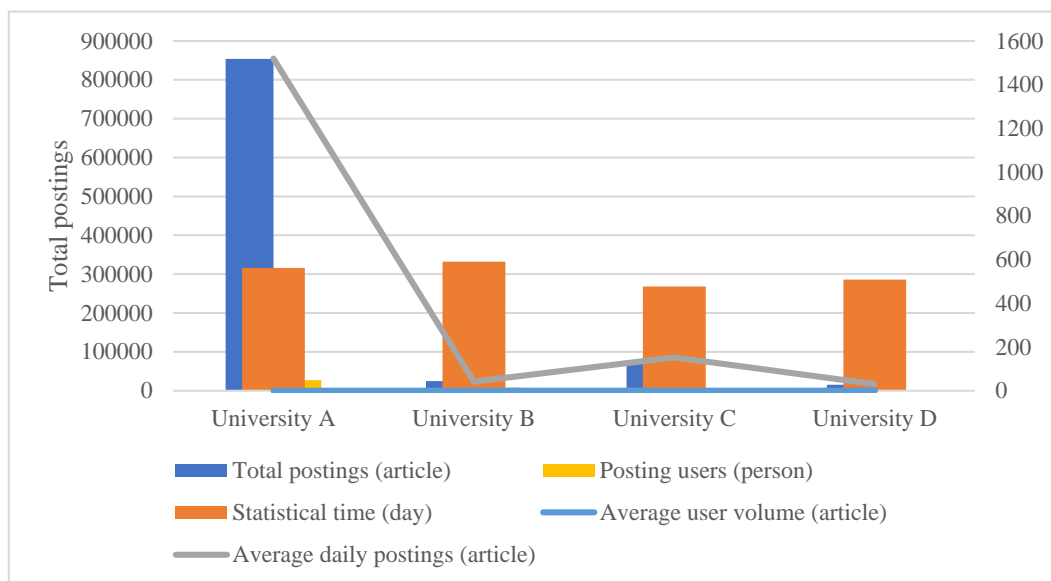


Figure 1: IAPE of CAU and students' online topics under BD

According to Figure 1, the total number of posts, the average daily posting volume and the average user posting volume of the four universities have reached a high number. This shows that from the overall point of view, students in CAU are in a higher state of activity on the topic of IAPE, among which University A is located in Beijing, the economic, political and cultural center of the country, where information is gathered in a higher density and where all kinds of ideas meet and collide, which has a greater influence on the ideas of college students, so it is in a more active state no matter from the total posting volume, daily posting volume and average user posting volume. Secondly, University of C, which is leading in the field of electronic information, also has a higher

degree of active users, especially from the average amount of user posts, and there is a group of students who actively express their views in the student forum of University of C.

#### 4.2 Analysis of the Difference in the Ratio of the Number of Full-time Staff of IAPE Construction under BD in Different Batches of Pilot Universities

As shown in Table 2, it can be seen that among all the CAU surveyed, the proportion of students among the personnel of IAPE construction under BD in CAU is more than half. In the first batch of pilot CAU, 75% of the IAPE construction personnel in CAU have the highest education level of doctorate, while in the second batch of pilot CAU and non-pilot CAU with the highest education level of doctorate in IAPE construction personnel are only 54.4% and 47.5%. And the prevalence of IAPE construction personnel with bachelor and master degree levels in CAU reached 52.3% and 80.4%.

Table 2: The ratio of the number of full-time personnel of IAPE construction in CAU under different batches of pilot BD

Different batches of pilot universities	Bachelor's degree	Master's degree	PhD
The first batch	61.4%	82.5%	75%
Second batch	52.3%	80.4%	54.4%
Non-pilot 985 institutions	44.9%	70.1%	47.5%

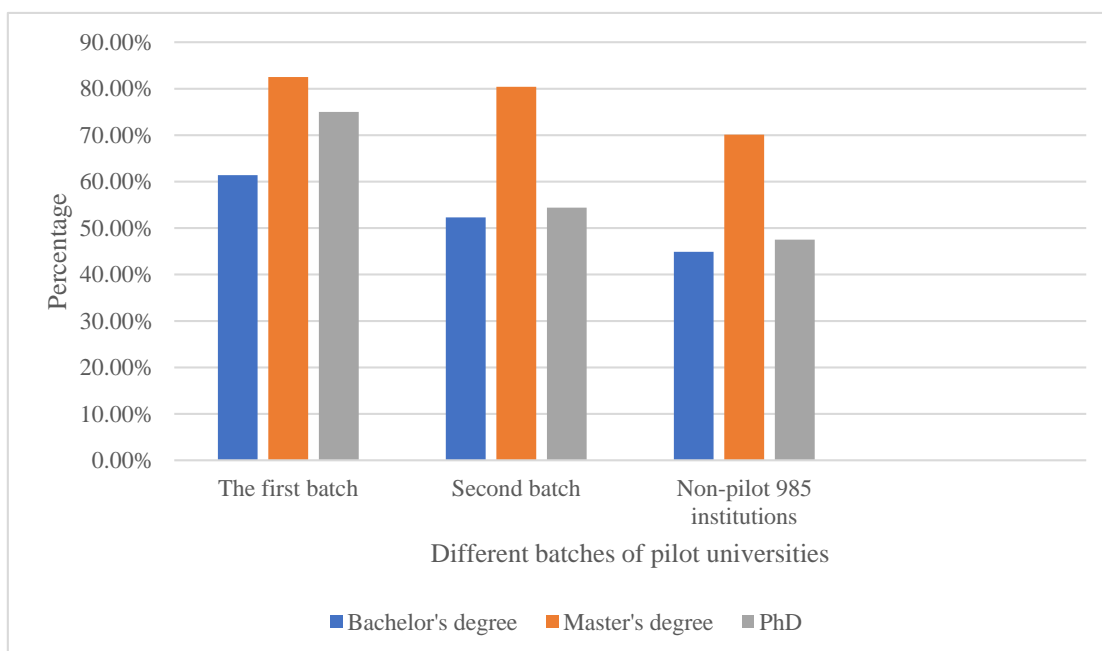


Figure 2: The ratio of the number of full-time personnel for IAPE construction under the BD of different batches of pilot CAU

As shown in Figure 2, the second batch of pilot institutions and non-pilot 985 CAU lack full-time personnel for IAPE construction, students of IAPE construction in CAU are the main force of IAPE construction. Moreover, the full-time personnel and personnel of the second batch of pilot institutions and other non-pilot 985 CAU have significantly less and lower education levels than the

first batch of pilot institutions.

## 5. Conclusions

The advent of BD brings new science and technology, productivity and education concept, shortens the spatial distance of the world, and the rich information resources make college students get rid of the embarrassment behind closed doors. With the development of BD carrier, the problem of IAPE is becoming more and more prominent, and the reform research work of IAPE in CAU is imminent. This paper points out that BD technology provides technical means and realization ways for IAPE in CAU, the concept of IAPE in CAU needs to be innovated, the method needs to be improved, and the technology needs to be advanced. Nowadays, the improvement of students' attention on IAPE problems and the proportion of teachers are important ways to promote the current IAPE reform in CAU.

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