

# Innovative Research on College Ideological and Political Teaching Methods Under the Background of Big Data

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## Abstract

The arrival of the era of big data (BD) is not only a revolution in the field of Internet information technology, but also a global ideological and political (IAP) revolution, an unprecedented comprehensive change in the way of thinking and reform path for people to discover the world, think about the world, and master the world. This paper aims to study the innovation of IAP teaching method in colleges based on BD background. This paper uses the improved M+Kmeans algorithm to establish a BD technology feedback IAP education mechanism, and proposes innovative strategies for IAP education reform in Central Agricultural University from the actual link. When studying the teaching methods that teachers are good at, finds that most teachers tend to be intensive teaching, ignoring the individual development of students. When studying the impact of BD information on college students' values, 58.01% of the students believed that the network information had an impact on the values, and 44.49% of the students believed that the impact was greater. According to the analysis, CAU need to improve IAP teaching methods, enhance students' interest in IAP courses, and correct students' values to improve the quality of IAP teaching.

**Keywords:** Big Data, Ideological and Political, Teaching Innovation, M+Kmeans algorithm

## 1. INTRODUCTION

In order to keep pace with the development of the times, the innovation of IAP education in CAU has become a key issue that we cannot ignore (Zhao, Wang, 2020). Only by reforming the methods and content of IAP education can we adapt to the situation in the new era. To better face the new issues and requirements of the times (Song, 2017). In the context of the era of BD, the combination of IAP education and BD in CAU provides a new opportunity for the innovation of IAP education in our country, and also brings many challenges (Zhang, Hu, Li, 2017). Therefore, how CAU innovate in IAP education in the context of the era of BD has become a new topic worthy of our research (Dang, 2020).

In the research on the innovation of IAP teaching methods in CAU based on the background of BD, many scholars have conducted research on it and achieved good results. For example, Zhang Y believes that BD is not only for the decision-making of educators and managers, but also for students. Resource acquisition has an extremely important role and significance, and these specific links are explained (Zhang, Wu, 2020). Yi Y

emphasizes cultivating school administrators and educators' awareness of the value of data education, and gradually builds a sense of trust in data throughout the education system. The use of BD can more clearly reflect the current situation of education in the country, and further make education decision-making more scientific (Yi, Dan, 2020).

In this paper, by establishing BD thinking, relying on the great value of data in the development of IAP education, and innovating work ideas, can the IAP education work of CAU advance with the times, and stabilize the position in the trend of rapid development. Through the exploitation of the innovative path of IAP education under the background of BD, this paper seeks better solutions for the combination of IAP education and BD technology in CAU, improves the effectiveness of IAP education in CAU, and better serves the teaching activities in the real world.

## 2. INNOVATIVE RESEARCH ON COLLEGE IAP TEACHING METHODS UNDER THE BACKGROUND OF BD

### 2.1. Role and Model of BD in IAP Education in CAU

#### 2.1.1. Conducive to improving the efficiency of IAP education in CAU

As active users of the Internet, CS will leave a large amount of data in life, study and other aspects. Educators can collect this information and use the analysis and results provided by the new technology of BD to observe and understand students' thinking dynamics and changes to actively adjust their own teaching methods and plans, use the predictive function of BD to discover and solve various problems in teaching, and formulate brand-new teaching programs to effectively improve the efficiency of IAP education.

#### 2.1.2. Conducive to the expansion of the content of IAP education in CAU

In the era of BD, the massive amount of Internet shared resources makes the process of obtaining information for students easier and faster, and at the same time it has become broader in types. Teachers and students can easily get the content they want through PC and mobile terminals, and they can also express themselves. At the same time, as the specific forms of expression have become rich and diverse, specific IAP education activities can bring interest, and their content is more specific and easier to be accepted, and the spirit and ideas conveyed can be better understood. What students understand has greatly improved the efficiency of IAP education.

#### 2.1.3. Conducive to the improvement of the work model of IAP education in universities

The data collection and analysis of BD provides scientific guidance and support for the smooth progress of IAP education activities. BD can supplement the deficiencies of previous teaching methods in data information. Through the analysis and evaluation of a large amount of information resources, it can supplement the problems of precision and scientific insufficiency in the traditional teaching model, and better realize its own development.

### 2.2. Innovative Strategies for IAP Education in CAU Under the Background of BD

#### 2.2.1. Establish a BD platform integration mechanism

With the help of BD technology to understand and track the basic situation of students inside and outside the school, through this activity, you can better grasp the dynamics of students' thoughts and behaviors, and effectively prevent students from possible physical and psychological crises or unexpected accidents. At the same time, it also reduces sudden dangers and provides a certain degree of protection for the physical and mental safety of students.

#### 2.2.2. Establish a mechanism for BD technology to feed back IAP education

In order to better implement teaching activities, it is necessary to improve BD professional theoretical knowledge. In addition, in the context of BD with openness and sharing as the main spirit, the degree of data interaction affects the actual level of action. The state and schools should also build organic links between universities and between universities and other social organizations to increase information resources available in IAP education in CAU.

### 2.3. Data Mining Algorithm Under BD Platform

Commonly used accuracy and normalization information are used to evaluate the performance of the improved M + Kmeans algorithm in this paper. Suppose a data set has  $n$  data, let  $l_i$  be the class label learned by different algorithms, and  $r_i$  be the class label provided by the data set. The definition of accuracy is:

$$AC = \frac{\sum_{i=1}^n \delta(r_i, \text{map}(l_i))}{n} \quad (1)$$

Among them,  $\delta(x, y)$  is the Dirac delta function, when  $x = y$ , the Dirac delta function is equal to 1, otherwise equal to 0.  $\text{map}(l_i)$  is the projection function to project each class label into a label equivalent to the data set.

In the clustering problem, Mutual Information (MI) can measure the similarity between two clusters. Given two data class clusters  $C$  and  $C'$ , their mutual information metric is  $MI(C, C')$  defined as:

$$MI(C, C') = \sum_{c_i \in C, c'_j \in C'} p(c_i, c'_j) \log \frac{p(c_i, c'_j)}{p(c_i)p(c'_j)} \quad (2)$$

Among them,  $p(c_i)$  and  $p(c'_j)$  represent the probability that a piece of data arbitrarily selected from the data set belongs to the clusters  $c_i$  and  $c'_j$ , and  $p(c_i, c'_j)$  represents the arbitrarily selected data at the same time the joint probability of belonging to clusters  $c_i$  and  $c'_j$ . This article uses the following normalized mutual information  $NMI(C, C')$ , whose value ranges from 0 to 1:

$$NMI(C, C') = \frac{MI(C, C')}{\max(H(C), H(C'))} \quad (3)$$

### 3. EXPERIMENTAL RESEARCH ON COLLEGE IAP TEACHING METHODS UNDER THE BACKGROUND OF BD

#### 3.1. Test Methods

##### 3.1.1. Questionnaire survey method

In order to make the research results more real and effective, and countermeasures to solve practical problems in a more targeted manner, I make full use of the effectiveness, anonymity, and convenience of the survey questionnaire by conducting random questionnaire surveys among CS in this province. And the exchange interviews with educators, a comprehensive and in-depth analysis of the current situation of CS' IAP education under the background of the new era, highlighting the urgency and importance of the current research on CS' IAP education.

##### 3.1.2. Cross research method

By combining computer science, psychology, sociology, political science, philosophy, IAP education and other related disciplines and fields of research, it provides more accurate and comprehensive theoretical support and data.

#### 3.2. Collection of Ideological Information Data of CS

In the school, some young teachers represented by the "80s" learn about students' network dynamics and ideological development trends through the Internet, forums, Weibo, WeChat, QQ and other new media. This paper selects students from different majors in two universities in this city as the experimental subjects. The number of male and female students surveyed is the same. 200 questionnaires were sent out and 200 copies were collected. The recovery rate was 100%.

### 4. EXPERIMENTAL INVESTIGATION AND ANALYSIS OF COLLEGE IAP TEACHING METHODS UNDER THE BACKGROUND OF BD

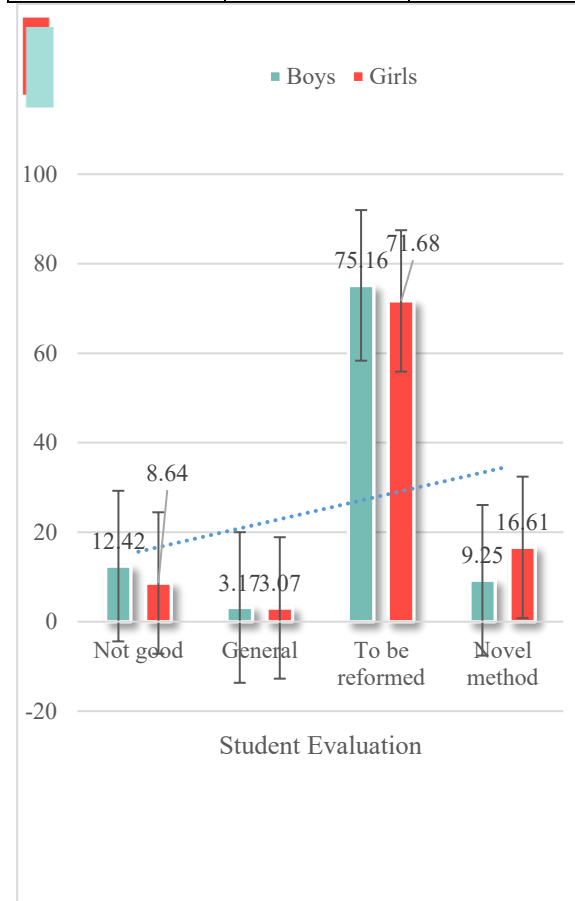
#### 4.1. Evaluation and Analysis of CS' IAP Education Theory Courses

According to the survey, current CS' evaluation of the implementation of IAP education theory courses in our school, as shown in Table 1, only 12.93% of people think that teachers can integrate resources such as the Internet and new educational methods, and 73.60% think that

textbooks are often the mainstay, PPT content failed to keep up with current affairs and politics, teaching methods need to be reformed, 3.15% of people think it is fair, barely passable, and 9.60% think it is not good.

**Table 1.** Evaluation of CS' IAP education theory courses

Student Evaluation	Boys	Girls
Not good	12.42	8.64
General	3.17	3.07
To be reformed	75.16	71.68
Novel method	9.25	16.61



**Figure 1.** CS' evaluation of the school's IAP education theory course

As shown in Figure 1, when asked about the teaching methods that college IAP educators like and are good at, most teachers are still accustomed to intensive teaching and pay less attention to the individual development of students. It can be seen that the current IAP education is still based on the educator's right to speak and determine the content of the teaching. It is based on theoretical indoctrination and emphasizes classroom teaching. It is a one-way educational activity that focuses on moral

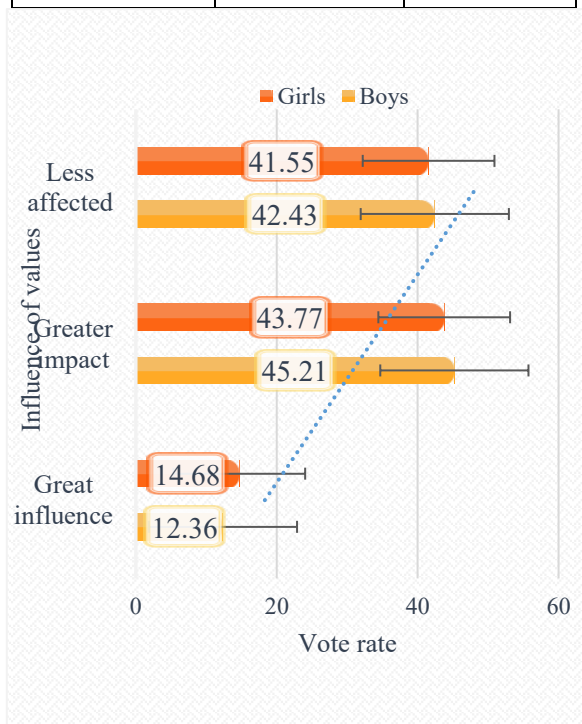
education and emotional people. The educated in this way of education cannot make independent choices, lack pertinence, and effectively integrate the convenience of resources such as the Internet. For educational objects, it is difficult to produce the attractiveness of learning. Some CS mistakenly believe that IAP education theory courses have almost no practical meaning in the real life, and regard it as a redundant burden, thus psychologically Correspondingly, they resisted this course and lacked the confidence to learn this course.

#### 4.2. Increasing the Crisis of Penetration of the Mainstream Ideology of CS

The university period is a critical stage in shaping students' world outlook, outlook on life, and values, and is a turning point for the establishment of three correct outlooks. Students generally have a strong ability to master data, but at the same time have the characteristics of screening, filtering, and judgment. With the influx of rich and huge amounts of information and data, this characteristic they possess is magnified in the context of the new era. What impact will it have on CS' values? This question is worthy of our investigation. The results of the survey are shown in Table 2.

**Table 2.** The influence of network information on the values of CS

Influence of values	Boys	Girls
Great influence	12.36	14.68
Greater impact	45.21	43.77
Less affected	42.43	41.55



**Figure 2.** The influence of network information on the values of CS

As shown in Figure 2, 41.99% of the students think that the influence is small and will not change their values. They just look at it on the Internet and will not change their value orientation. They think that there are too many rumors about online information. This information is seldom believed. 44.49% of CS believe that the impact is greater, their position is not firm, and values are easily shaken. 13.52% of CS believe that this information has a great impact on themselves, that is, 58.01% of CS believe that Internet information has an impact on one's own values.

#### 5. CONCLUSIONS

Based on the background of the era of BD, this article starts from the BD itself, analyzes and interprets the corresponding connotation, dimensions and characteristics of BD, combines BD-related thinking and technical means, and explores the relationship between IAP education methods and BD. On the basis of previous research, the content of this paper mainly includes related concepts, foundations, motivations, innovative principles, and the innovation of IAP educational methods in the BD era in terms of ideas and specific methods. Although this paper proposes the data mining algorithm of the big data platform, it does not apply it in the analysis of ideological and political teaching, and this paper only investigates the teaching methods that teachers like, and does not explain how to innovate ideological and political teaching by improving teaching methods. In addition, this paper analyzes the impact of big data on college students' values in order to prove that there is no clear purpose. Finally, the paper needs to give the path of innovative ideological and political teaching in the context of big data.

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