Study about Impact of Big Data Technology on the Diversity of Ideological and Political Teaching Methods

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Abstract. Big data (BD) technology is a kind of information technology that has emerged in my country in recent years. It also plays an important role in the ideological and political (IAP) teaching of college education. Making use of BD technology to implement reforms in IAP education and breaking the traditional IAP teaching mode is an inevitable requirement for reforms. At the same time, IAP education can be carried out with high efficiency and high quality. This article analyzes the impact of BD technology on the diversification of IAP teaching, and gives some examples of the application of BD in IAP teaching. And the study finally gives suggestions on IAP teaching under BD.

Keywords: Big Data Technology, Ideological and Political Education, Teaching Methods

In modern society, information technology has brought huge changes in society, which are all related to the development of BD technology. BD technology has the characteristics of wide coverage and large amount of processed data. Based on these characteristics, it is gradually recognized that BD technology brings opportunities and challenges to IAP teaching methods. Therefore, how to combine BD technology with IAP teaching and change the original single teaching mode has become an important way to solve IAP teaching in my country. This research studies the impact of BD on the diversity of IAP teaching and puts forward more typical BD application cases. Finally this study puts forward some suggestions on the transformation of IAP teaching methods.

1. The Impact of BD on The Diversification of IAP Teaching

1.1. Change from linear relationship to nonlinear relationship

The traditional IAP teaching method is to find a linear relationship through causal analysis, and then use linearity to prove the essence behind it. [1-2]This kind of habitual thinking can effectively judge right and wrong, and can also solve the problems in IAP teaching. However, in the context of BD, the above laws can be changed. It is not to find the reason through this traditional causal analysis, but to find the objective laws that exist in the data through data mining. [3-4]In IAP teaching, you can use database data to find the consistency of the thoughts and behaviors of teachers and students in colleges.
and universities, so that this analysis is no longer a simple and linear linear analysis, but a more complex and indirect nonlinear analysis method. Through this kind of analysis method, we can find methods in IAP teaching and provide methods for teaching diversification.[5-6]

1.2. Transformation From Partial Analysis to Overall Analysis
The traditional IAP teaching methods prefer to use the methods of decomposing cattle and reducing decomposition, and then use partial sampling analysis to analyze the problem as a whole. Although this method can help students to quickly understand the teaching method, the IAP emphasize to see the problem from a holistic and comprehensive perspective. [7-8]If only use such a small sample to analyze the problem, it will inevitably be one-sided and subjective. Therefore, under BD, using smart terminals, cloud computing and other technologies, through automatic collection, automatic calculation, etc., the data can be visualized as a whole. As a result, people can see the authenticity of the sample more clearly. And we can show students more intuitively in teaching.[9-10]

1.3. Teaching Method From Single to Multi-dimensional
With the development of Internet technology, there are more and more ways for students to obtain learning resources, and more and more information and data will be absorbed. On the one hand, based on BD technology, various types of learning systems have begun to be launched. As a result, traditional offline learning can be transformed into online learning. And students can learn anytime and in anywhere. On the other hand, through the application of BD, teaching methods have been increased. For example, with the help of BD mining technology, it is possible to understand the latest developments of students’ values and perform analysis, which strengthens the effectiveness of IAP education. What’s more, various types of IAP resources are recommended to students through BD technology, which in turn makes IAP learning is more targeted.

2. Examples of The Diversity of IAP Teaching Methods Based on BD
In order to further demonstrate the impact of BD on the diversity of IAP teaching, the application of BD in IAP teaching mining is taken as an example to verify the changes brought by BD to IAP teaching.

2.1. Based on data mining IAP online learning analysis

2.1.1. Data Mining
Data mining is a kind of searching for valuable and unknown information from massive, fuzzy, incomplete, random and original data sets. The realization process is shown in the following figure:
2.1.2. Analysis of IAP Online Learning Behavior
In order to improve the learning of IAP lessons, using the campus network IAP learning data as a sample, the correlation matrix is used to analyze the behavior of students in IAP learning. Set \((x_1, x_2, x_3, ..., x_n)\) as a n-dimensional random variable, and the correlation coefficient of \(x_i\) and \(x_j\) exists, and is expressed by \(\rho_{ij} (i,j=1,2,...,n)\), then the n-th order matrix with elements \(\rho_{ij}\) is the correlation matrix of this dimensional random variable, expressed as:

\[
R = \begin{bmatrix}
\rho_{11} & \rho_{12} & \cdots & \rho_{1n} \\
\rho_{21} & \rho_{22} & \cdots & \rho_{2n} \\
\vdots & \vdots & \ddots & \vdots \\
\rho_{n1} & \rho_{n2} & \cdots & \rho_{nn}
\end{bmatrix}
\]

(1)
\[
\rho_{ij} = \frac{\text{cov}(x_i, x_j)}{\sqrt{DX_i} \sqrt{DX_j}}
\]

(2)

\[
\text{cov}(x_i, x_j) = E((x_i - E(x_i))(x_j - E(x_j)))
\]

(3)

The value of \( \text{cov}(x_i, x_j) \) output larger, the stronger the correlation. In other words, the higher the similarity between the two.

2.1.3. Behavior Analysis Effect

Based on the above model, the IAP learning behavior of the campus network is used as the data. And the number of learners, the length of study, the number of courses selected by the students, the length of landing, and the dropout rate are used as basic tags to establish an association matrix to obtain the result in Figure 3.

2.2. Mining Hot Topics on Campus

In order to better IAP guidance, build a microblog hot topic mining system, so as to better guide students in IAP learning. The overall architecture of the system is shown in Figure 4. In this system, in order to realize the microblog hot topic mining, it is divided into data collection, data preprocessing, data storage and hot topic mining. In these modules, each module measures each other, and the stability and reliability of the system operation are greatly improved through the internal high cohesion and low coupling design.

According to the above correlation matrix, it can be seen that the learning duration is strongly related to the maximum learning duration and the minimum learning duration.
3. Suggestions For the Diversity of IAP Teaching Methods Under BD Technology

3.1. Establish BD Thinking for IAP Education
At present, the main problem with the development of IAP teaching in Chinese universities is that they have not kept up with the development of the times. The main reason is that the traditional teaching method is too single and the teaching process lacks BD awareness. So it is impossible to use BD technology to carry out teaching methods improved. In order to make the IAP education becomes high efficiency and high quality, teachers need to improve their own BD thinking and BD value awareness. The role of BD technology in education is mainly to understand and grasp the changes in students' thoughts through data, and to predict the changes in students' future thoughts and behaviors. Therefore, teachers should establish BD thinking so that they can adjust teaching methods in a timely manner based on the data, so as to solve the problems arising in the IAP education process in time.

3.2. Introduce Advanced BD Teaching Model
When conducting IAP education in major colleges and universities, teachers should understand the characteristics of BD technology and analyze the advantages of BD technology. What’s more, teachers need to develop targeted teaching methods based on the direction and purpose of talent training and try to make the teaching system becomes interesting and contemporary. We can communicate with students through social platforms and conduct research on students’ thoughts and behaviors, and combine them with students’ learning conditions. Therefore, students can gradually establish correct IAP concepts in a subtle way. In addition, we can make influences on students’ ideological concepts and push the correct IAP knowledge for students by Internet. The MOOC method mentioned above can also be used to carry out online teaching to enable students to have a deeper understanding and perception of IAP knowledge. BD technology has gradually transformed the static IAP model to dynamic, which has brought into play the value of BD technology.

3.3. Building A BD Platform for Sharing IAP Teaching Resources
When colleges and universities develop IAP education, they do not make full use of BD resources which leads to teachers' ignorance of students and reduces teaching efficiency and quality. Building a BD platform for resource sharing can enable teachers and students to communicate more, analyze students' thoughts and behaviors, and formulate targeted teaching knowledge. The realization of a BD platform for sharing IAP teaching resources requires the integration of teaching resources in the school and social resources. With BD technology, teachers can view all the resources generated by students in the school, such as learning data and reading data, etc., And teachers can use these data to understand students' thoughts, discover problems and intervene in time. As a member of a large social group,
young people's IAP concepts will inevitably be affected by the social environment. Increase social resources in the BD platform and update them in time to ensure that the content of IAP education is effectively combined with actual life to gain student recognition.

4. Conclusion
In summary, information transmission has gradually shown its value with the development of modern society. And BD technology has gradually become popular and was gradually being applied in the field of education. This paper studies the role of BD technology in the diversity of IAP teaching methods in colleges and universities, and gives demonstration cases in the embodiment. In order to give full play to the role of BD technology in promoting the diversity of IAP education, teachers need to establish their own BD thinking. And we need to think about how to fully integrate IAP education and BD technology, and at the same time strengthen communication and exchanges with students. We should understand the needs of students in order to screen the teaching content and promote the development of students more comprehensive.

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