Research Article

Research on the Development of Innovation Path of Ideological and Political Education in Colleges and Universities Based on Cloud Computing and K-Means Clustering Algorithm Model

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As a distributed computing technology, cloud computing has the characteristics of fast processing speed, large-capacity data processing, and high overall efficiency. With the continuous development of communication technology today, cloud computing technology has begun to be applied in various industries and has promoted the development and progress of the industry. As an important part of college education, ideological and political education in colleges and universities is also constantly developing. The integration of cloud computing and ideological and political education is the main trend in the future. At present, the application research of cloud computing and wireless communication technology in the ideological and political education of colleges and universities has obtained some results, but there are still some problems. Therefore, the research on innovative methods of ideological and political education is extremely important. At present, under the attention of all walks of life, scholars have strengthened the research on new paths of ideological and political education in colleges and universities, and they are also constantly experimenting with innovative methods. In this context, this paper studies the current situation of ideological and political education in colleges and universities through questionnaire surveys and analyzes the innovative mode of ideological and political education in colleges and universities in the context of cloud computing through the K-means clustering algorithm model.

1. Introduction

Cloud computing is a distributed computing that processes and analyzes data through a system composed of multiple servers [1]. Cloud computing has a variety of core advantages, enabling cloud computing technology to undertake important tasks in a variety of scenarios in the future [2]. Compared with the past, its advantages mainly lie in the fast processing speed, ability to perform large-capacity calculations, and high overall efficiency [3,4].

The current ideological and political education in colleges and universities is different from the previous single textbook model and the introduction of online teaching and online courseware. However, this change is simply the use of communication technology to achieve the digitalization of the teaching mode [5], and the main way for students to acquire knowledge is still through the combination of teacher dictation and PPT. This method does not make full use of the advantages of cloud computing technology.

Under the current high development of communication technology, some universities and enterprises have combined computer technology to develop an online course platform that can store courses. College students can improve their ideological and political knowledge by taking courses corresponding to famous teachers. However, although this teaching method is effective, it requires extremely high awareness of students, and some students will complete the learning tasks in a perfunctory manner [6].

At present, colleges and universities have used WeChat applets, Weibo, and various short video platforms to conduct comprehensive ideological and political education for students in their lives. This method belongs to self-media communication and has a certain degree of innovation. However, adding too many of these elements to the

ideological and political teaching of colleges and universities may make students feel disgusted [7].

With the continuous development of communication technology, cloud computing technology continues to innovate. However, adopting today's popular university ideological education methods has not kept up with the pace of scientific and technological progress [8].

This paper obtains research data through questionnaire surveys and uses the K-means algorithm model for quantitative analysis. It points out the current problems of ideological and political education in colleges and universities and proposes a new path for ideological and political education in colleges and universities based on cloud computing [9].

2. Related Work

This article mainly uses the K-means clustering algorithm to study the development of the innovation path of ideological and political education in colleges and universities. It first introduced the K-means clustering algorithm model and method and then obtained data related to ideological and political education in colleges and universities through the questionnaire and finally analyzed the data according to the K-means clustering algorithm model to draw conclusions.

Authors such as Zhang Xiaoli studied the application of K-means clustering algorithm in education and teaching evaluation, but did not use K-means clustering algorithm to study specific subjects such as ideological and political education in colleges and universities. Deng Jingyan and others studied the innovative model of ideological and political education in colleges and universities under the background of big data, but they did not establish a model for quantitative analysis. Wu Xinghui et al. used the PERMA model to conduct quantitative research on ideological and political education, but the selection of the model was not optimal.

In short, although the abovementioned scholars have conducted research on the innovative development model of ideological and political education in colleges and universities, there are defects such as insufficient quantitative analysis and poor model selection. This research uses the optimized K-means clustering algorithm to study the innovative development path of ideological and political education in colleges and universities, which can solve these problems.

3. Algorithm Model and Method

3.1. K-Means Clustering Algorithm Model. K-means is a classic clustering algorithm, clustering according to the distance or dissimilarity between samples, classifying samples with similar characteristics into one category,] and dissimilar samples into different clusters. Compared with other algorithms of the same type, the K-means clustering algorithm is relatively fast, and at the same time, it has higher computational efficiency. It is very suitable for initial screening of large quantities of data. The main steps of the K-means algorithm are as follows:

(1) Select m samples from the training set $S = \{x1, x2, \ldots, xn\}$ as the initial cluster centers $C = \{c1, c2, \ldots, cm\}$.

(2) Calculate the distance from each sample xi to the initial center point of m samples in the data set and divide each sample into the class of the center point closest to it. The distance calculation is shown as follows:

$$f\left(x, C_i\right) = \sqrt{\sum_{j=1}^{m}\left(x_j - C_{ij}\right)^2}. \tag{1}$$

(3) Each cluster category is δi; recalculate the centroids of all samples in the cluster $\delta i \in Cj \sum Xj$. The calculation formula of the cluster center point is as follows:

$$C_i = \max\left\{D_j; j = 1, 2, \ldots, n\right\}, \tag{2}$$

$$D_j = \min\left\{f\left(x_j, C_i\right)\right\}. \tag{3}$$

(4) Repeat the above two steps, iteratively update until the change of the centroid of each type is less than the threshold or reaches the maximum number of iterations.

In short, it is to select the data center, calculate the distance, cluster, reselect the centroid of the data, and repeat until the data converge or reach the maximum number of iterations. The steps to select the training process are as follows:

(1) Train n k-dimensional data and randomly generate m k-dimensional points of the initial cluster center

(2) Find all the data points belonging to this cluster and calculate the centroid of this type

(3) Repeat the above steps until the centroid change of each type is less than the set threshold or reaches the maximum number of iterations

(4) Set the maximum number of features, set the group K value of the classification, and perform data analysis on the training feature data

Although the algorithm cannot guarantee convergence to the global optimum, it can be as close to the global optimum as possible by optimizing the training process. The specific optimization directions are reflected in the following aspects:

(1) Expand the scale of training data and reduce convergence deviations

(2) Filter all data points of the cluster and clean the meaningless edge data points

(3) Optimize the selection of K value to improve the analysis accuracy of training data

This paper filters and cleans the data, removes stop words, transforms it into a vector model, and uses the TF-IDF algorithm to calculate the weight of the word frequency.

TF is the word frequency, IDF is the inverse document frequency, and TF-IDF reflects the importance of a word in the text. Use the TFIDF transformer and count vectorizer methods of the sklearn module in *Python* to calculate the TF-IDF value, convert it into a space vector model, and select the K-means clustering algorithm to mine and analyze the data.

3.2. Questionnaire Survey

3.2.1. Survey Object. An online questionnaire survey was conducted among 600 students and teachers majoring in ideological and political education in 20 universities across the country. The questionnaire is anonymous, and the questions in the questionnaire have been fully designed and demonstrated. 600 questionnaires were distributed, 582 questionnaires were returned, and the questionnaire recovery efficiency reached 97%.

3.2.2. Investigation Method. Online questionnaire survey is a questionnaire survey conducted through the Internet, which is one of the most suitable methods for surveying contemporary college students. It cannot be restricted by region. It can not only increase the number of teachers and students participating in the questionnaire survey but also save time and increase the enthusiasm of teachers and students to participate. In terms of problem setting, in addition to drawing on the merits of existing research, it has also been optimized according to the actual situation of the survey subjects to make it more information-based one.

3.2.3. Design of the Questionnaire. It mainly investigates the current status of ideological and political education in colleges and universities, including students' attitudes towards ideological and political subjects, students' mental state, and teaching content. Attitudes to the ideological and political disciplines mainly include the following: do you think that the ideological and political discipline is an important subject? Are you interested in ideological and political subjects?

The mental state of students includes exercise time, sleep time, work and study efficiency, self-friendliness and universal humanity, mindfulness, self-criticism, overidentification, isolation, and other personal behavior factors.

The teaching content is mainly about students'recognition of ideological and political classroom teaching methods, including whether it is recommended to use communication technology completely, whether it is believed that 5G technology will have a qualitative impact on ideological and political teaching, whether it will cooperate with communication technology to teach, and whether 5G technology is expected. The details are shown in Table 1.

4. Results and Discussion

4.1. Insufficient Attention to Ideological and Political Courses. Judging from the actual situation in colleges and universities, although every school offers a Marxist ideological and political education course, students often treat it as a side course and fail to correctly understand its importance. Some students also completed ideological and political courses. The content of professional courses is just to get some play time after class. Some students think that ideological and political education is meaningless, and there are cases of not completing homework, skipping classes, and even cheating on exams [10]. Some college students are not interested in learning ideological and political content and do not usually pay attention to political development. They learn Marx only because they need party members and course credits; some students show that they blindly follow Western culture and ignore the study of ideological and political courses [10]. On the other hand, the ideological and political curriculum system in colleges and universities is relatively outdated, and a set of textbooks has been used for many years. The classroom teaching of ideological and political teachers is sticking to the old rules and lacks close contact with the contemporary. Various classical theories are readily available, but they cannot guide students to use them in the judgment of social phenomena, which makes students question the practicality of ideological and political courses.

4.2. The Student's Personal Mental State Is Poor, and the Study Is Not Concentrated. Keeping students in a good state of mind is the first step in effective ideological and political learning. According to reports, most contemporary college students have mental health problems, mainly due to the development of network technology, communication, and communication between people is mostly done through social software. Students may become addicted to mobile phones when using related software, even abandoning ideological and political courses because of playing online games. Statistics show that more than half of the students only go to bed early in the morning because they play on mobile phones. In this case, because of the lack of communication with others and staying up late, students are prone to mental health problems, which leads to ideological and political education courses, The mental state is not good, and the learning effect is poor. Some scholars have analyzed the data on the impact of sleep and isolation of college students on physical and mental health [11], including exercise time, sleep time, work and study efficiency, self-friendliness and universal humanity, mindfulness, self-criticism, overidentification, isolation, and other personal behavior factors. This article draws it into an intuitive display diagram, and the specific situation is shown in Figure 1.

4.3. The Actual Interaction between Students and Teaching Content Is Not Enough. The current ideological and political course education in colleges and universities is mainly because students sit side by side under the platform and receive the corresponding content dictated by the teacher. However, when this traditional teaching method is combined with the content of the ideological and political course itself, it will give some students a sense of irritability, mainly because this teaching method is the same as that of other courses, and there is not much communication in the whole course [12]. The author found through a survey of 500 students in a university that 39%

TABLE 1: Questionnaire survey theme design.

| Attitudes towards ideological and political disciplines	Do you think that the subject of ideological and political is an important subject? Are you interested in ideological and political subjects?
Student mental state	Exercise time Sleep time Work and study efficiency Self-friendliness and universal humanity Over-identification Isolation and other personal behavior factors
Ideological and political teaching content	Is it recommended to use communication technology entirely Do you think 5G technology will have a qualitative impact on ideological and political teaching? Will it cooperate with the communication technology Do you expect 5G technology application teaching It is not recommended to use wireless communication technology It is not recommended to introduce 5G in college classrooms
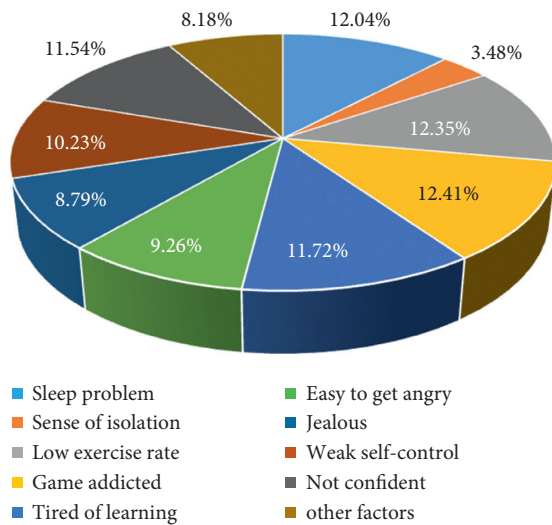
FIGURE 1: The relationship between sleep and isolation of college students and personal health.

TABLE 2: Students' recognition of ideological and political classroom teaching methods.

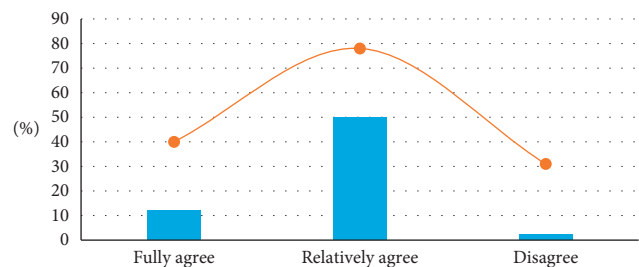| Option	Proportion
Fully use 5G technology	0.393
5G technology will revolutionize the classroom	0.147
Teaching with communication technology	0.682
Looking forward to 5G technology application	0.528
Do not use wireless communication technology	0.031
Not recommended to 5G	0.089

FIGURE 2: Visualization of the proportion of students' recognition of ideological and political classroom teaching methods.

of the students believe that the full use of advanced wireless communication technology in the classroom will make the classroom more active; 15% of the students believe that 5G technology will completely change the classroom teaching mode, and 68% of the students It is believed that video or documentary clips are interspersed in the class, and with communication technology equipment, the teacher will explain that the effect of this kind of teaching is better than simply listening to the teacher. 53% of the students expect 5G technology application to teach, only 3% of the students feel that the acceptance of teaching without using any wireless communication technology is good, 9% of students do not recommend the introduction of 5G technology in college classrooms. The details are shown in Table 2 and Figure 2.

From the data in the figure, it can be inferred that students expect the reform of classroom teaching methods for ideological and political education in colleges and universities. Because the teaching methods in colleges and universities are still the same as traditional teaching methods, students can only listen to the teachers in most cases. In college education, classroom resources are more stressful, usually two classes with more than 60 people in the class, students have fewer opportunities to participate in answering questions raised in the teacher's course, so a single duck-filling teaching is formed, no interaction or less interaction.

5. Innovation Path of Ideological and Political Education in Colleges and Universities under the Background of 5G and Wireless Communication

5.1. Build a 5G Data Platform for Students to Customize Learning Content. We often say that interest is the best teacher. For ideological and political courses, interest teaching should also be put first. Combining 5 G and wireless

communication technology with the application of the latest technology can provide interactive immersive teaching experience, big data data analysis, and intelligent personalized learning content recommendation support for ideological and political education in colleges and universities, which can provide ideological and political learning for college students a source of great interest [13].

Through the analysis of the aforementioned problems and causes, it is found that students have a deviation in understanding of ideological and political education. The solution to this problem is to build a student 5G data platform and use the big data analysis method in the application of 5G communication technology to analyze students. Due to the fast speed of 5G communication, 5G communication is also more advantageous than 4G in big data analysis. It can recommend ideological and political learning content for students through recommendation algorithms, so that each student's ideological and political learning content is different. The same and they are all recommended content that the students are satisfied with. The personalized customized data can also be separately assigned to the students' ideological and political teachers and counselors through 5G and wireless communication, so that relevant teachers can pay attention to the current status of the students in time and grasp the recent personal information of the students [14]. The dynamic changes of thoughts and emotions and the specific content of the follow-up ideological and political education courses are arranged according to the emotional problems of the students, so that there will be no problems of cognitive deviation and misconduct.

5.2. Health Reminder Based on 5G and Wireless Communication Technology. In response to the current problems of college students who are personally addicted to social media and mobile games, 5G technology and wireless communication technology can be combined with personal wearable devices to remind students of their time management. Whenever students are addicted to games or short video software, they exceed the normal time. To remind or force the shutdown operation, 5G technology combined with wireless communication technology, the data transmission speed is extremely fast, allowing students to immediately end the current entertainment activities, long-term so that they can form a healthy work and rest habits, for the follow-up ideological and political. The course study maintains a good mental state, not only that 5G communication technology includes multiple personal privacy and security protection applications but also the use of 5G and communication technology for personal health management reminders does not have to worry about data leakage [15].

5.3. Explore Flexible Teaching Methods. In view of the current problem of no interaction between students and teaching content in ideological and political education in colleges and universities, it can be solved by the application of 5G communication technology. VR is one of the applications of 5G and wireless communication technology. It

can be used to simulate real situations, such as using virtual reality (VR). Interactive technology simulates scene pictures to increase the interactivity of the classroom. VR requires higher image quality, so it also needs a higher data transmission speed; so, the high speed of 5G can just match the VR needs of most college students. First, colleges and universities can prepare the background VR images of the content of the ideological and political courses in the classroom, and then students can watch them live in the classroom or remotely participate in the viewing in the dormitory [16]. The specific content in VR is interactive. Students are interested in the ideological and political courses. The level of mastery is also evaluated in the context of VR use. If the evaluation fails, the device will record the results of the evaluation on the spot and determine the time for the next re-examination. This will increase the interest of students in learning ideology and politics while not forgetting the most fundamental teaching methods. On the other hand, college teachers can also make full use of the application of 5G and wireless communication technology to assist their own teaching and research work in the teaching process. For example, the big data analysis in 5G applications is used to determine whether the teaching content meets the needs of all students in the class. In this case, the actual interaction between college students and the ideological and political teaching content is sufficient, and there is no performance assessment problem.

6. Conclusion

Colleges and universities are the cradle of talents in the motherland, and political and ideological education in colleges and universities is an important link in the cultivation of talents in the motherland. Contemporary college students belong to the rebellious era of freshmen. The education that most students receive from childhood has cultivated them into people with independent thinking ability and at the same time makes their thinking more "elegant." They always think about problems from strange angles, and they are thinking about colleges and universities. Problems in ideological and political education are also prone to deviation or lack of interest. Only the latest 5G and wireless communication technologies can be fully applied to ideological and political education in colleges and universities, and various 5G-applied equipment and black technologies can be used to improve students' interest in learning and thinking ability can truly cultivate qualified contemporary college students.

As the implementers of education, most college teachers know best about the problems and needs of college education at this stage. In particular, teachers with a background in science and engineering know the many possibilities that 5G and wireless communication technology applications can bring to college ideological and political education. The ideological and political education in colleges and universities under the background of the current technological age can no longer be the same as the duck-filling education model in the old age. College administrators and college teachers should use new technologies in their daily

education work to influence their understanding of ideological and political learning [17]. Students who are aware of deviations will eventually realize that all college students correctly accept the influence of ideological and political education and culture.

In general, under the current background of continuous deployment of wireless communication and 5G technology, colleges and universities have gradually begun to use the applications brought by these new technologies in ideological and political education. If colleges and universities want to give students good ideological and political education effects, they need to rely on students starting from needs, learn to walk into student life, think from the perspective of students, and use the latest communication technology to make obscure political principles easy to understand, so as to show the true meaning of ideological and political affairs and allow students to spontaneously establish learning ideas of political interest.

Data Availability

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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