

Effectiveness Analysis of College Students' Ideological and Political Education in New Media Environment

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Abstract: In recent years, various education management systems have accumulated rich data. In this paper, the idea of cluster analysis in data mining and k-means algorithm are used to analyze the data of counselors' "job evaluation scale". Using the "job evaluation scale" in college ideological and political education management as data source, the algorithm is clustered and clustering is done on the "Work Check Scale" of counselors in our school. Finally, some conclusions have been drawn.

1. Introduction

Many schools study and implement an education management system based on their own situation, and each university has a different education management system [1]. The educational management system can realize the functions of coordinating data and information, studying histograms, generating reports and printing conclusions, and has the advantages of concise operation, convenient operation, high implementation efficiency and good analysis effect, which is in line with the analysis of teaching information in universities and filling in vulnerability in Education Management Systems [2]. However, the existing education management system in the ideological and political education in colleges and universities is still in the exploratory stage, especially for ideological and political education in the management of ideological and political education management of this issue, and the counselor's work to assess the scale analysis is the most important aspect of this subject. The traditional method of analysis is based on the manual calculation of the absolute fraction for comparison. This method has some shortcomings and deficiencies in evaluating the objectivity and accuracy of the results [3].

2. State of the Art

Many schools and scientific research institutions are investing a lot of money in the further development and further research of data mining technology [4] American Express uses a neural network to detect hundreds of millions of database records, recognizing how individual consumers are holding cards and trading, and getting the "propensity to buy" value of each card user, American Express matches the history of personal cardholders to the merchandise of the sellers of the relationship, this information is appended to the monthly report, which saves costs and provides the cardholder with more valuable analysis [5] Compared with other countries, the research on data mining in our country is still in the initial stage. Most of the work is focused on the design of local algorithms. There are few integrated system integration designs. Due to the lack of core technologies, data mining is only preliminary applications such as banking, finance, GIS [6]

3. Methodology

3.1. Model-Based Clustering Method

It is often based on the assumption that the data is generated from a potential probability distribution [7]. The most classic model-based clustering method is the COBWEB algorithm proposed by Fisher. The algorithm builds a hierarchical cluster by using a classification tree. All

data points in this tree represent a concept, including the probabilistic case of this concept, and the sum of all objects divided into this node. The probability case represents the concept probability and the conditional probability in the form of $P(A_{ij}/C_k)$ where A_{ij} refers to a property-value pair. C_k refers to the concept class. The sibling nodes on one level of such a tree create new divisions. The algorithm uses heuristic estimation to calculate - classification effectiveness guides the construction of classification trees [8]. The category utility (CU) can be described:

$$\frac{1}{n} \sum_{k=1}^n P(C_k) \left[\sum_i \sum_j P\left(A_i = \frac{v_{ij}}{c_k}\right)^2 - \sum_i \sum_j P(A_i = v_{ij})^2 \right] \quad \text{Where } n \text{ represents the number of nodes, concepts or}$$

"categories" in the new classification $\{C_1, C_2, \dots, C_n\}$ generated at a certain level of the classification tree. Similarities within classes of performance feedback class and similarities between classes: The probability $P(A_i = V_{ij}/C_k)$ represents a similar situation within a class, the larger the P value, the more the number of members that have the common attribute-value pair, and the more the class is predicted - The more likely the value pair belongs to the class member. The probability $P(C_k/A_i = V_{ij})$ refers to the inter-class dissimilarity. The larger the P, the less objects that share the comparison class for this attribute-value pair, and the more likely it is to predict that the attribute-value pair belongs to the class. COWEB operates by adding objects incrementally to the classification tree[9]. It begins by following an appropriate path down the tree, updating the counts all the way to the "best host" or node that categorizes the object[10].

3.2. Scheme Design of Clustering Technology in the Application Of Ideological and Political Education Management

From the School Student Affairs Office, the 2017 "checklist for counselors' assessment" is collected. "Counselors work assessment checklist" requires the assessment of counselors in the "adhere to the standard, rewards and punishments clear, objective and fair treatment of every student.", "accurate grasp of the situation of poor students, conscientiously do part-time student loans, student loans work "and other indicators of the project, according to the performance of counselors, divided into" excellent, good, qualified, poor, bad "and other five types of levels of division. For omission of the record sheet has taken further measures to deal with the final access to a complete evaluation record of the work assessment of a total of 117.

A data conversion was conducted, work assessment quantize the assessment of the project level has 15 items in total, as well as after-school grasp, and a comment and suggestions. How to synthesize these data items into a cluster analysis model? To this end, we reorganized the data in the QA work according to the following four major aspects: "management attitude", "management ability", "management method" and "management effectiveness". Among them: "management attitude" comes from the work assessment quantification table: adhere to the standard, rewards and punishments clear, objective and fair treatment of each classmate; with the classmates and harmonious students, good students; good speech, civilized, good the cultivation, as a teacher table; work objective, clean self-discipline. The "managerial ability" comes from the quantitative examination of work assessment: accurate grasp of the situation of poor students, conscientiously do a good job in work-study, student loans and other work; the situation of special student groups to grasp accurately, help the measures properly, the effect is obvious; strict educate and investigate disciplinary students, not short; competent work, have a strong ability to organize and manage, organize students to carry out beneficial activities and actively participate in student activities; conscientiously organize students to make first priority, award and push work, detailed work, adhere to the principle of openness, fairness and justice. "Management methods" from the work assessment quantification table: more than 3 times per week in-depth student classes and dormitories to fully grasp the ideological condition of students, the relationship between student learning and life, act and act on the students' mentality and help ; Insist on weekly checks dormitory health once; during the school year and students involved in the preparation of the conversation reached 1/3 and above; to actively participate in and check the students run morning and evening

classes; student scholarships, grants and other procedures in place, procedures complete. "Management effectiveness" comes from the work assessment quantification table.

The attribute values of these four properties are mainly from the following aspects: First, you need to convert the individual assessment ratings in the work assessment quantification table into a relatively easy-to-understand data type. The five grades of assessment grade are "excellent, good, qualified, poor, bad" in the order of their special meaning. We use a method of range mapping for these assessment levels and project them into the [0.0, 1.0] region to make all variables have the same weight. According to the formula can calculate the assessment rating of the five values "1, 0.75, 0.5, 0.25, 0". The values of the four attributes are measured in terms of the arithmetic mean of the terms that they include. Namely: "management attitude" = (adhere to the standard + harmonious relationship between classmates and students + objectivity); "management ability" = (accurately grasp the situation of poor students + accurate grasp of the situation of special student groups + strict education and investigation violation of discipline students + competent work + conscientiously organize students to do a good job of excellent work); "management method" = (more than 3 times per week in-depth student classes and dormitories to + insist on weekly checks dormitory health once + student talk + active participation and check-out of student morning run + grant of student scholarship); "management effectiveness" = (actively participate in or hold class meetings + after class to understand the situation + comments and suggestions), as shown in Table.1. Through the above process, we will work related to the assessment of the questionnaire related to the assessment of the fifteen grades, a grasp of the situation and comments and suggestions, all unified evolved into a "management attitude", "management skills" and "management methods" and "management effectiveness" four attributes. Below, the four attributes of 117 data sample information are analyzed by clustering mining analysis.

4. Result Analysis and Discussion

Table1 shows the data samples to be used in the analysis by taking the preprocessing data sample information process.

Table 1 The data pattern of clustering

Management attitude	Management ability	Management	Management efficiency
0.65	0.6	0.56	0.58
0.65	0.6	0.56	0.58
0.35	0.35	0.31	0.33
0.76	0.76	0.68	0.75
0.8	0.8	0.81	0.83

Trying to figure out something likes "what is the overall management level of the counselor?", and "what is better and what is not enough in the management?" Something likes this. For the selection of clustering methods, as discussed above, density-based methods, grid-based methods, and model-based methods are not suitable for these small to medium data mining. Hierarchical method of the two algorithms that cohesion level and split the level of clustering, for this has defined a category of applications do not apply. However, the classical algorithm k-means and k-center algorithm in the partitioning method are suitable for this application, where k is the number of categories (k = 3) that we need for the study. The basic idea of these two classical algorithms is dividing n objects into k clusters or classes makes the objects in the same cluster have higher similarity and the dissimilarity between different clusters is very high. The k-means algorithm uses the average value of the objects in the cluster as a reference value, while the k-center algorithm uses point objects at the center of the cluster as a reference for calculating the degree of dissimilarity.

In this paper, the k-means algorithm is used to analyze 120 sample data: 3 standard samples representing good, medium and poor, and 117 sample data obtained from the work assessment quantization table and data conversion. All the sample data contain four kinds of attributes:

management attitude, management ability, management methods and management effects of the four major aspects; these aspects of data mining clustering, set the initial K value of 3, the final mining results such as Figure.2 shows.

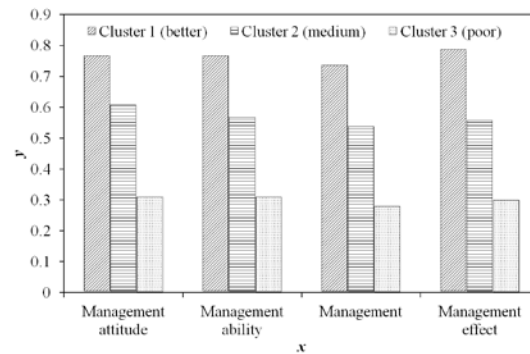


Figure 1 The result of clustering

Based on the above results, the distribution range of the final proportion of data samples included in each cluster is as follows: the first cluster (better), a total of 36 data samples, delete a predefined standard sample, leaving 35 data samples, accounting for $35/117 = 30\%$; cluster 2 (medium), a total of 74 samples, deducted a standard sample, leaving 73, accounting for $73/117 = 62\%$; the third cluster (poor), a total of 10 data samples, delete a predefined standard sample data, leaving 9 data samples, accounting for $9/117 = 8\%$; In order to further validate the final results of data mining, we again from the Student Affairs Office received 2009 a total of 248 students of the Computer Science Institute have obtained relevant quantitative scores obtained from participating in 10 activities organized by the college. The total score of 100 points, then we then these data samples by 0 to 100 points for the standard classification can be classified as 80 points or more, 80 to 60 points (including 80 points and 60 points) and 60 points or less kind of assessment. The final result is shown in Figure.2.

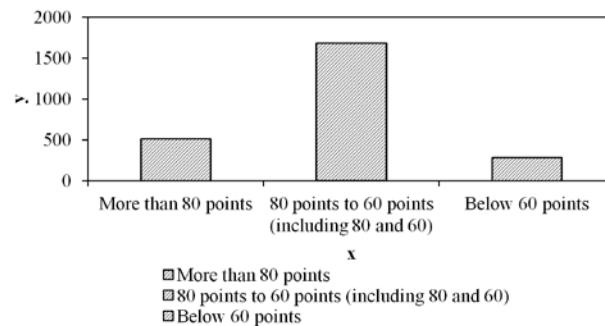


Figure 2 The result of assaying score

Comparing the scores of the two categories of comprehensive quantitative scores (80 points or more, 80 points to 60 points (including 80 points and 60 points) and 60 points or less) and the ratings used by the cluster ratings (0.75, 0.5 and 0.25). The proportion of branches at each level has increased. Based on the above analysis, the proportions of the three types of scores, ie 21%, 68% and 11%, are in good agreement with the sample proportions of 30%, 62% and 8% of the three categories in the cluster assessment, confirming that according to the counselor's work such a model of data mining adopted by the assessment quantification table is a very successful model, which brings some reference significance and certain guiding significance to the management and education work of college counselors.

In conclusion, through the above analysis, the effective application of cluster analysis in the ideological and political education management in colleges and universities are studied and implemented. In this paper, data mining is performed on the counselor's "work check-up quantification table" of our school. The data is processed by clustering analysis method first, and then the k-means algorithm in the partitioning method is used.

5. Conclusion

In this paper, the basic concepts, applications and prospects of data mining and clustering analysis are firstly discussed. Then it focuses on the data types, analysis process and main clustering methods of clustering analysis. Then, the main methods include the method of division, level method, density-based method, grid-based method and model-based method, especially for small and medium-sized database processing k-means algorithm and PAM algorithm and single connection algorithm, and a detailed discussion is made. Finally, on the basis of all the factors, the effective application of cluster analysis in the ideological and political education management of colleges and universities is studied and realized.

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