A Decision Support System Model for Middle School Education Management Based on Sparse Clustering Algorithm

1. Introduction

“Using educational informatization to drive educational modernization” is a common trend in the world’s educational reform and development, and it is also an important criterion for the rapid development of China’s education [1]. In view of the problems in traditional education, China is making great efforts to build educational informatization, collect students’ data information, and establish an educational data analysis system [2]. Compared with universities, higher vocational colleges and primary schools, the informatization construction of middle schools started relatively late. At the same time, due to factors such as region, economy, and teaching resources, the development of middle schools in the country is uneven. At present, most schools do not have information management standards. School leaders do not have real-time visibility into what is going on at the school [3]. The education administrative department has learned that there is a delay in the teaching data of each school, and some data are incompletely processed. Such phenomena do not help leaders to understand the actual situation of school teaching, so they cannot analyze and solve problems in a timely manner, and there is no objective database to make management decisions and formulate strategies [4]. In the actual development process, how to effectively solve these problems in middle school education management is a difficult problem faced by education authorities and school leaders [5]. On the basis of
certain environmental conditions and equipment, people can make certain decisions according to their current conditions and their own purpose needs [6]. The educational decision-making system is also like this. It analyzes the existing situation, combines with the changes in students’ information, makes corresponding predictions on students’ information, and carries out simulation according to the current environmental information, so as to obtain a possibility of optimal results, and then feeds back this possibility to managers as information recommendation [7]. In the aspect of traditional school management, the method of manual recording and summarizing is often adopted. Although it can be easy to judge and make everything handled in a better way, it undoubtedly brings huge administrative pressure, and the management is not comprehensive enough and the timeliness is insufficient; therefore, to the introduction of the computer technology and integrated systems to the relevant system, through the effectiveness of computer technology for large data processing, machine learning related-databases, to encode some daily transaction summary, so that you can through the integrated system faster processing everyday things, and some important things to feedback, so as to improve the efficiency of information processing. Under such circumstances, the educational management decision aid system proposed in this paper is very necessary. It can help teachers timely grasp the learning and living conditions of students, make correct decisions, and promote the scientific and standardized management of schools. The model of this paper can also provide a large number of data basis for the information construction of schools and improve the management efficiency of schools.

2. Related Work

Based on Oracle data warehouse, SSH framework, Lucene full-text search engine, OLAP data statistics, front-end JS visualization plug-ins, and other related technologies, the literature studies common data mining algorithms in the open-source machine learning main framework and data mining Mahout platform [8]. On this basis, a basic decision support framework is created and applied to the middle school management process. The literature proposes an improved algorithm, the structural weighted subspace clustering (SvSc) algorithm, which makes up for the lack of local constraints [9]. The improved algorithm can be demonstrated in synthetic data clustering experiments and applied to color image classification due to its effectiveness. The literature proposes an improved algorithm, structure adaptive subspace clustering (ASSC), which improves intra-class density and inter-class dispersion [10]. The effectiveness of the improved algorithm has been verified in synthetic data clustering experiments, and it can be used to process image clustering, color image classification, and color image segmentation. The literature makes a detailed analysis and design of the middle school management decision support system [11, 12]. Among them, the general requirements analysis combines the current situation of requirements with scientific research data, the real requirements of middle school management, and the technical concept of a decision support system; the overall architecture design includes system structure design, technical architecture, and functional architecture; the basic design of the structure includes data warehouse design, analysis, and online processing design, data mining design and pattern library design; application module design includes function design and interface design [13, 14]. The literature introduces the theoretical overview and research stage of the decision support system; secondly, it understands the modern management technology of student information, teacher information, course information, and grade information, and starts to collect student grades; finally, it uses Microsoft SQL Server 2008 to create a data warehouse based on student grades, uses Microsoft Visual Studio 2010 as a development tool to implement a decision support system for student achievement management, and uses data mining algorithms to discover effective rules hidden behind the data [15, 16].

3. Sparse Clustering Algorithms

3.1. Basic Principles. Sparse model optimization is to establish a sparse representation optimization model through sparse data constraints, use alternating direction multiplication (ADMM) to solve sparse coefficients, and then use the obtained sparse coefficients to build an association matrix. The spectral clustering of the correlation matrix can cluster high-dimensional data into low-dimensional latent subspaces, and at the same time, the number of subspaces and their corresponding dimensions can be obtained.

Currently, in the same subspace, each data can refer to the other through a certain correlation with other data, which is the self-representation of data. The specific algorithm is as follows:

$$x_i = Xc_i, c_{ii} = 0. \quad (1)$$

In the earlier literature, methods such as norm-constrained least squares regression or low-rank representations using nuclear norm constraints were often used to find the best representation for a correctly classified dataset. After the sparsity theory is proposed, sparse subspace clustering uses \(l1\) norm regularization to find the sparse representation coefficient \(c_i\) so that its nonempty elements and the data corresponding to \(x_i\) come from the same subspace. Therefore, for each \(i = 1, \ldots, n\), there is an optimized model:

$$\min \|c\|_1 \text{s.t. } x_i = Xc_i, c_{ii} = 0. \quad (2)$$

There is an optimized model for the data matrix \(X\):

$$\min \|C\|_1 \text{s.t. } X = XC, \text{diag } (C) = 0. \quad (3)$$

The sparse subspace clustering optimization model is written in the following ADMM form:

$$\min_C \|C\|_1 + \frac{\mu_1}{2} \|XZ - X_i^2 \|_2^2 \text{s.t. } Z - C = 0, \quad (4)$$

Where \(U1\) is the equilibrium parameter. According to the multiplier method, the augmented Lagrangian equation can be obtained:
\[ L_{\mu_2}(Z, C, \lambda_2) = \frac{\mu_1}{2} \|XZ - X\|^2 + \|C\|_1 \]
\[ + \text{tr}(\lambda_2^T (Z - C)) + \frac{\mu_2}{2} \|Z - C\|_2^2. \]  

(5)

The dual variable is abbreviated as
\[ u_2 = \frac{\lambda_2}{\mu_2}. \]  

(6)

This results in a shorthand form:
\[ L_{\mu_2}(Z, C, u_2) = \frac{\mu_1}{2} \|XZ - X\|^2 + \|C\|_1 \]
\[ + \frac{\mu_2}{2} \|Z - C + u_2\|^2_2. \]  

(7)

When the other variables no longer change, the Z value is updated.
\[ Z^{k+1} = \arg \min_{Z} \frac{\mu_1}{2} \|XZ - X\|^2 + \frac{\mu_2}{2} \|Z - C\|^2 + \|u_2\|^2_2. \]  

(8)

According to the derivation formula, the solution can be obtained as
\[ Z^{k+1} = (\mu_1 X^T X + \mu_2) \left( \mu_1 X^T X + \mu_2 (C - u_2) \right)^{-1} \]  

(9)

Similarly, the updated form of C is
\[ C^{k+1} = \arg \min_{C} \|C\|_1 + \frac{\mu_2}{2} \|Z^{k+1} - C\|^2 + \|u_2\|^2_2. \]  

(10)

Since the soft threshold is an optimal approximation of the l1 norm, the solution of the above equation can be expressed as
\[ C^{k+1} = S_{\mu_2}(Z^{k+1} + u_2), \]  

(11)

where \( S_{\eta}(a) \) is the soft threshold shrinking operation for each element in the given matrix, which is defined as
\[ S_{\eta}(a) = \max(\{a\} - \eta, 0) \cdot \text{sgn}(a). \]  

(12)

When Z and C are updated, the Lagrangian multipliers with gradient ascent with step size \( u_2 \):
\[ \lambda_2^{k+1} = \lambda_2^k + \mu_2 (Z^{k+1} - C^{k+1}). \]  

(13)

The first step in spectral clustering is to compute the Laplace matrix from the correlation matrix:
\[ L_W = I - U D U^T. \]  

(14)

3.2 Algorithm Improvement. In order to consider the local and global dataset structure in the algorithm model, so that the resulting correlation matrix has a block-diagonal structure in the case of being as small as possible, the LSGS algorithm proposed in this section incorporates the log determinant function of F. Combining these rules, the following mathematical model is created:

\[ \min_{C} \log \det (I + C^T C) + \lambda_1 \|C\|_F + \lambda_2 \|E\|_F \text{ s.t. } X = XC + E. \]  

(15)

Since the logdet (I + CTC) function is non-convex, the objective function of the model (15) is in non-convex form. To solve this problem, we can add a matrix Z, let \( Z = C \), so model (15) can be rewritten as

\[ \min_{C} \log \det (I + Z^T Z) + \lambda_1 \|Z\|_F + \lambda_2 \|E\|_F \text{ s.t. } X = XC + E, C = Z. \]  

(16)

ALM algorithm is used to solve the above formula to expand the calculation scale, suitable for processing a large number of data.
\[ L(E, Z, Y_1, Y_2, C, \mu) = \log \det (I + Z^T Z) + \lambda_1 \|Z\|_F + \lambda_2 \|E\|_F \]
\[ + \text{tr} (Y_1^T (Z - C)) + \text{tr} (Y_2^T (X - XC - E)) \]
\[ + \frac{\mu}{2} \|Z - C\|^2 + \|X - XC - E\|^2, \]  

(17)

where Y is the Lagrange multiplier and \( u > 0 \) is the penalty parameter, the variable can be updated using alternative minimization ideas. The plan is
\[ C^{t+1} = \arg \min_{C} \text{tr} \left( (Y_1^T (Z^t - C)) \right) \]
\[ + \text{tr} \left( (Y_2^T (X - XC - E^t)) \right) \]  

(18)

\[ + \frac{\mu}{2} \|Z^t - C\|^2 + \frac{\mu}{2} \|X - XC - E^t\|. \]
\[ Z^{t+1} = \arg \min_{Z} \log \det (I + Z^T Z) + \lambda_1 \|Z\|_F \]
\[ + \frac{\mu}{2} \|Z - (C^{t+1} - \frac{Y_1^T}{\mu}) \|^2, \]  

(19)

Update C: After derivation of (18), the solution of matrix C can be easily obtained:
\[ C^{t+1} = (I + X^T X)^{-1} \left[ X^T (X - E^t) + \frac{Y_1^T + X^T Y_2}{\mu} \right]. \]  

(20)

Update Z: The last step is to update the matrix Z. For the minimization problem,
\[ \min_{Z} F(Z) + \frac{\beta}{2} \|Z - A\|^2. \]  

(21)

Rearranging this equation yields a cubic equation with three roots. If you want to solve it, you can set the parameter \( \beta = 5.7 \) in the experiment, and then get the update method of the Z variable:
\[ Z^{t+1} = U \text{ diag} (\sigma_1^{t+1}, \ldots, \sigma_n^{t+1}) V^T. \]  

(22)
After updating \( E \): The solution of \( E \) can be obtained by a similar method.

\[
E^{t+1} = \frac{Y_1 + \mu^t (X - XC^{t+1})}{\mu^t + 2\lambda},
\]

(23)

\[
E_{ij}^{t+1} = \begin{cases} 
Q_{ij} - \frac{\lambda}{\mu^t} \text{sgn}(Q_{ij})\text{if} |Q_{ij}| < \frac{\lambda}{\mu^t}, \\
0, \text{otherwise}
\end{cases}
\]

(24)

\[
[E^{t+1}]_{ii} = \begin{cases} 
\|Q_{ii}\| - \lambda/\mu^t & \text{if} \|Q_{ii}\| < \frac{\lambda}{\mu^t}, \\
\|Q_{ii}\| & \text{otherwise}.
\end{cases}
\]

(25)

The remaining multipliers are easily obtained:

\[
Y_1^{t+1} = Y_1^t + \mu^t (Z^{t+1} - C^{t+1}),
\]

(26)

\[
Y_2^{t+1} = Y_2^t + \mu^t (X - XC^{t+1} - E^{t+1}).
\]

3.3. Simulation Experiment. The synthetic data for this experiment consists of three linear subspaces, two of which intersect at a point. By increasing the number of data points, the model in this paper is known to perform better on big data, so the experimental results listed in the table below are based on 300 data points per subspace. The clustering errors of the four experimental datasets are shown in Table 1. By comparison, it is not difficult to find that the performance of the LSGS algorithm proposed in this paper is better than other clustering methods.

To achieve a good clustering effect, the core idea is that the relationship between subspaces should be sparse, and the relationship between data in the same subspace should be close. This phenomenon can be displayed using an association matrix structure. Figure 1 is the correlation matrix image of each algorithm in the above experiment. It can be seen that the diagonal part of the correlation matrix block of the LSGS algorithm is clearer.

### 4. Research on the Model of Decision Support System for Middle School Education Management

4.1. System Requirements Analysis. There are a large number of secondary schools in China and they are widely distributed. Due to the unbalanced economic development in the regions, the ruling leaders place different emphasis on secondary education, schools, and building information. Some schools in more economically developed areas have realized the general computerization of school construction and information-based teaching, while some schools in less developed areas have not realized office computerization, or even have no campus network.

Due to the current situation of building informatization in middle schools and the above problems, the design of data collection methods will also be different.

<table>
<thead>
<tr>
<th>Table 1: Average clustering error rates for synthetic data.</th>
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<tbody>
<tr>
<td>Algorithms</td>
</tr>
<tr>
<td>Errors</td>
</tr>
</tbody>
</table>

In order to realize the original collection and dynamic collection of data collection activities, it is necessary to establish a standard, unique, real-time dynamic data center, so that the school-wide data can serve various applications and information systems and avoid repeated construction and information islands within the school. It is necessary to integrate and connect the general information data platform with other application systems, realize the intercommunication of the whole school data between different business subsystems, and realize the real-time sharing and exchange of data. The data center architecture of the secondary education management decision support system is shown in Figure 2:

There is a default timeline within the data center that can perform operations such as data aggregation, drill-through, and year-over-year and month-over-month comparisons. Through the data center, multi-party data exchange can be achieved to maintain data consistency. Each module of the system can realize information exchange and interconnection, and the establishment of a data center is independent of application programs. A data center can be equated with many software applications. It is beneficial for schools to make full use of various programs (including legacy software) for information exchange, information push, and business reorganization between application software. Integrate digital campus software systems to completely eliminate information silos.

4.2. System Architecture Design. The overall design architecture diagram is shown in Figure 3. We can understand the structure of the existing decision support system for middle school education management.

The middle school education management decision support system is implemented on the middle school management platform, and its development framework is mainly based on the three-level structure of the B/S model. Users can access it directly through different browsers without installing any applications, which is the biggest advantage of the C/S architecture. The overall technical architecture of the secondary education management decision support system is shown in Figure 4.

4.3. System Module Design

4.3.1. Data Warehouse Design. A data warehouse is a highly integrated set of data that can create a single point of data management by pulling data from other production databases and integrating them with similar themes and schemas. Building a data warehouse often relies on ETL tools to perform data processing. Since the data warehouse and production database are relatively isolated, incremental data needs to be extracted from time to time.
4.3.2. Online Analytical Processing Design. OLAP, online analysis and processing, is an important part of the decision support system for middle school education management, and its commonly used operations include drilling and segmentation. Online Analytical Processing for this topic is implemented based on Mondrian and MDX. Through the open source OLAP server Mondrian, MDX multi-dimensional query statements are parsed into SQL statements, and finally, the results are obtained through SQL query operations in the data warehouse.

4.3.3. Data Mining Design. This topic covers four algorithmic applications in data mining. The design idea of using these four algorithms is as follows:

The association algorithm analyzes the correlation from the interdependence of historical data, the clustering algorithm analyzes the similarity under a certain attribute, and project prediction based on the classification algorithm is usually used to predict the closure of open projects. The personalized recommendation is a recommendation algorithm based on collaborative filtering.

4.3.4. Design Pattern Libraries. There are three business functions in the middle school education management decision support system; that is, the same algorithm is suitable for three models, so all algorithm models must be managed based on the model library. Considering the scalability and easy accessibility of other components of the algorithm, the author designs a hierarchy with the Instrument layer and Data layer as the core. Among them, a tool corresponds to the application of the algorithm, and data corresponds to the training model of a specific business function. That is to say, in this system, since there are three major business functions, one Tool is equal to three corresponding Data.

4.3.5. Functional Design Part. The secondary education management decision support system is used to analyze the overall situation of secondary school subject development and program development and to provide assistance to managers so that they can easily establish a macro understanding of secondary school development. Users can freely choose the content section of the final analysis decision...
report and customize the final result through the parameter configuration function provided by the submission interface. If necessary, you can also configure specific model updates to get the latest analysis results. Finally, users can freely export the corresponding PDF documents. The functions corresponding to this part are briefly described as follows: secondary school selection, model update, analysis decision, and document export.
In the KPI data collection and decision support system, we combine core management modules such as user management, authority management, and application management with system functions to achieve unified management and services for each business system. User management can provide a unified way to determine user information and personnel relations, personnel relations, and system organization. Implementing personnel and organizational management, it provides unified views and services for different business systems, facilitating the definition and control of business flows between business system personnel.

Authorization management mainly provides access control functions for application systems and is an important part of application security. Simplify the development and maintenance of specific application systems.

System security requires a reliable authorization management system to limit the access and operation of each user's connection resources so that it is controlled by the content provided by the system, so authorization management plays an important role in the entire security application.

The secondary education management decision support system for data collection is usually used for each school to complete and report various data related to school teaching, support data aggregation and export, and report data to the superior. The main function of the module is to manage the configuration of the school data collection report, the management of the data collection process, and the management of the collection results. Figure 5 shows the functional structure of data collection in the decision support system for secondary education management.

4.4. System Test. System testing is the process of running a program using a manual method to determine system operation. The purpose is to verify that the system meets the system requirements and achieves the expected results. The importance of system testing and how it affects the reliability of software needs to be emphasized. During the software development process, we face many complex problems. The designer's understanding is not completely consistent with the objective facts, and everyone's operating habits are also different. Therefore, system testing is very important. Before running, it is necessary to find and correct software errors as much as possible to minimize losses. The fundamental goal of software engineering is to complete high-quality software that meets user needs.

In the system test summary, this work constitutes the core of the test. The final test results are obtained according to the functional modules analyzed by the requirements, and detailed data operation tests are carried out for each functional module to test whether the functional operation of each module is normal. The design of the examination system includes students' examination information management, score management, invigilator teacher management, and examination related information consultation. Then combined with the students' results, the design of the results of the statistical analysis chart, to discuss the changes in class results, as well as the students' individual behavior combined with the results of correlation analysis, the situation of learning statistics, and put forward some optimization suggestions. The detailed design is shown in Table 2.

In the user login test, mainly for the consideration of system security, the system will not log in to the system with different roles, and the test results are shown in Table 3.

5. Research on the Development of Middle School Education Management Decision-Making

5.1. Problems Faced by Decision Support Systems. Since the 1960s, with the development of data management requirements and the development of information technology, the construction of databases has experienced a process of developing from traditional databases to advanced databases. Different data models emerge one after another, and new technologies such as data mining continue to emerge. The continuous updating of data storage and presentation methods makes data occupy a very important position in the decision-making process and public management, and the database has become indispensable technical support for public decision-making.

In the field of education, with the development of China's education, especially the use of information management, such as the establishment of information systems for student status management and education funding management, the establishment of education databases has entered a period of rapid development. Assessing student quality, allocating educational resources, and evaluating satisfaction with public education services have become popular topics in database construction. At the same time, in order to overcome the functional limitations of the database, the construction of various indicators, especially the construction of comprehensive indicators such as student academic indicators, satisfaction indicators, and poverty alleviation indicators, is also constantly developing. It is undeniable that the construction of these indicators and the comprehensive database supported by the back-end are more reflective of the current state or future expectations of technological development than individual indicators or database types.

However, the development of database technology and even the model cannot completely overcome the limitations of the database itself. In the decision-making process, what supports the decision is evidence, not data. Data is a source of evidence, but not a substitute for evidence. Its function is to present the material and method of the problem, not the argument itself. Having a database does not mean having evidence. As far as decision analysts are concerned, databases are of great value and are the source of decision analysis. However, when the database is handed over to decision-makers, they may not necessarily attach importance to these data sets, nor may they have the will and ability to make decisions based on these data sets.

A database can only play a role in supporting decision-making when it is associated with a problem. Sometimes the
### Table 2: Function item distribution and test results.

<table>
<thead>
<tr>
<th>Test requirements</th>
<th>Test focus and results</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>System help</td>
<td>Whether the system help class file is available</td>
<td>Qualified</td>
</tr>
<tr>
<td>Develop and analyze lesson plans</td>
<td>Provide policy for the development of teaching plans and test whether certain subjects need to be adjusted for quality according to the set conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Correlate and analyze subject grades</td>
<td>Ability to obtain hidden relationships between disciplines by setting conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Graphs that count the grades of failing students</td>
<td>Whether the score records of failing students can be obtained through the corresponding statistical conditions and the corresponding charts can be generated by using the software</td>
<td>Qualified</td>
</tr>
<tr>
<td>Statistics on student grades</td>
<td>Whether the student’s grade information data can be counted through the corresponding statistical conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Query student grade information</td>
<td>Whether the student’s grade information data can be queried through the corresponding query conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Query course information</td>
<td>Whether the target course information data can be retrieved through the corresponding query conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Inquire about teacher information</td>
<td>Whether the target teacher information data can be retrieved through the corresponding query conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Inquire about student information</td>
<td>Whether the target student information data can be retrieved through the corresponding query conditions</td>
<td>Qualified</td>
</tr>
<tr>
<td>Manage student grade information</td>
<td>Whether the management module of student grade information is normal, including whether to modify, add, or delete student grade information and prompts for corresponding messages, etc.</td>
<td>Qualified</td>
</tr>
<tr>
<td>Manage course information</td>
<td>Whether the management module of the overall course information is normal, including whether to modify, add, or delete the overall course information and the corresponding message prompts, etc.</td>
<td>Qualified</td>
</tr>
<tr>
<td>Manage teacher information</td>
<td>Whether the management module of teacher information is normal, including whether to modify, add, or delete teacher information and prompts for corresponding messages, etc.</td>
<td>Qualified</td>
</tr>
<tr>
<td>Manage student information</td>
<td>Whether the management module of student information is normal, including whether to modify, add, or delete student information and prompts for corresponding messages, etc.</td>
<td>Qualified</td>
</tr>
<tr>
<td>Management operator</td>
<td>Whether the management module of operator information is normal, including whether to modify, add, or delete operator information and corresponding message prompts, etc.</td>
<td>Qualified</td>
</tr>
<tr>
<td>Log in</td>
<td>Log in to the system, this operation requires the correct user name and password</td>
<td>Qualified</td>
</tr>
</tbody>
</table>

**Figure 5:** Structure diagram of school data collection function.
importance of the data can obscure the real concerns of the decision maker, and sometimes a small difference in the statistics does not mean there are no problems. Due to the risky social focus on “Leviathan” data, individual characteristics may be overlooked if the general characteristics of the group are presented as “mechanized and faceted.” From the perspective of policy or decision-making, paying attention to minority groups or special groups is the best embodiment of public welfare and public spirit. The data argument is based on an understanding of the problem, the legality of data use, and a focus on people. From this perspective, providing concrete cases around decision-making issues can also constitute support for educational decision-making.

At the same time, with the increase in the amount of data and the expansion of the database, the abuse of data selection and use rights will lead to data abuse, misuse, and even data violence, thus endangering the democratic process. The data itself is emotionless, fair, and objective, but after human understanding and use, it has a subjective color. The same data can be used for two different decision-making scenarios. Differences in data usage are determined by the purpose of use and the personality of the user. As a result, there is a fatal misunderstanding of the database as one that can automatically support decision-making. Databases seem to help achieve functional goals for those hungry for quick profits, at the expense of some, and a high cost. Therefore, it is necessary to maintain a high degree of vigilance against the traps of databases and big data, soberly recognize that data and databases are “embedded in a specific personality subject,” and strive to achieve the transcendence of databases.

### 5.2. Educational Management Development Strategies

1. Decision-making needs to adopt different decision-making concepts so that as many people as possible can participate in decision-making. When making decisions, many aspects should be considered, not only the quality of department management but also the benefits. With the development of the economy and society, any unit that does not consider interests may be eliminated by society. Also, listen to as many students as possible.

2. According to different decision-making content, determine the personnel involved in decision-making and conduct systematic analysis on different decision-making issues. In this way, sufficient attention will be paid to recruitment and employment, purchase and maintenance of equipment and facilities, site construction, and fund allocation, so as to avoid losing content in the decision-making process.

3. In view of the traditional decision-making mode dominated by leaders, this paper believes that we should build a new evaluation system to evaluate the form of scoring, so as to make the evaluation more open and fairer.

4. In view of the traditional annual and quarterly summary, this paper believes that a real-time evaluation system should be established to provide timely information exchange and feedback and better grasp the situation.

The key to making good decisions is “90% intelligence plus 10% intuition (hunch),” which shows the important role of information in the decision-making process. Therefore, only by mastering a large amount of effective information before making a decision, the information can be comprehensively and systematically summarized, compared, and screened, and then the false and the true can be removed, various information materials can be analyzed, and then decision-making can be provided. That is, we need to provide service information for our decision-making tasks. In terms of management information systems, the physical education department is still very backward, displaying inaccurate and incomplete information, low reliability, slow transmission and feedback speed, and backward technology.

Decision-making is an important activity for human society to determine action goals, determine action policies and strategies, propose action plans and programs, and formulate different policies. It is an action that plans and affects the future. Whether the formulated policy or action plan is correct and feasible must be tested in practice. The principle of future forecasting must be based on accurate information because only accurate and reliable information can make correct predictions about future developments. To make the right decision, you also need to make the right
judgment about the possible consequences of the decision, and if you make a hasty decision without knowing the consequences of the action, you may make the wrong decision. The effects of many decisions are often invisible in the short term. If you find that corrections are needed, it will be too late and cause losses. Therefore, applying technical theories and methods to future research, making scientific predictions, and providing a scientific basis for decision-making are important principles for scientific decision-making.

6. Conclusion

With the continuous development of education and the continuous construction of public and private schools, education management has become a very important point in school competition. Therefore, the management of students’ scores, the management of teaching situation, the management of teachers, and so on are the current school leaders pay more attention to the content. The middle school education management decision support system developed in this paper can effectively help the school management to grasp the implementation situation more comprehensively and put forward some rectification suggestions. The system uses a sparse clustering algorithm to find potentially useful information about students, provide relevant decision-making for education administrators, better serve the school education process and improve teaching quality.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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References