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Retraction

Retracted: Teaching Archives Information Management and Quality Diagnosis Method from the Perspective of Collaborative Education Based on Intelligent Computing

Security and Communication Networks

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] T. Liu, L. Tang, L. Yao, and G. Zhu, "Teaching Archives Information Management and Quality Diagnosis Method from the Perspective of Collaborative Education Based on Intelligent Computing," *Security and Communication Networks*, vol. 2022, Article ID 4194667, 12 pages, 2022.

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Research Article

Teaching Archives Information Management and Quality Diagnosis Method from the Perspective of Collaborative Education Based on Intelligent Computing

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With the growth of better education, improving the quality of better education has become a top priority. In order to facilitate the sustainable and healthy growth of better education and continuously improve the quality of education for faculty and staff, the Ministry of Education has established a regular assessment system for undergraduate-level education. This article analyzes the quality diagnosis of teaching archives management from the perspective of collaborative education by using the bionic method and summarizes the three methods. In the precision rate, the user interface is the highest, followed by accuracy, security requirements, hardware environment, system maintenance, and information flow; in the recall rate, the security requirements are the highest, followed by the hardware environment, accuracy, user interface, information flow, and system maintenance; in F1, the user interface is the highest, followed by hardware environment, information flow, accuracy, security requirements, and system maintenance. In the particle swarm optimization coverage algorithm, the security requirements are obtained, the user interface accuracy is relatively high, and the hardware environment is relatively low; the system maintenance and hardware environment are the most covered, and the security requirements are the least; the number of rejected samples is the largest. It is the hardware environment and system maintenance, and the least is the security requirement; the most correct number of rejected samples is the hardware environment and system maintenance. The scientific analysis of the quality diagnosis of teaching archives management from the view of collaborative education is extremely important for improvement of teaching. The archives management system can be effective in the process of the archives hardware environment, security requirements, system maintenance, user interface, information flow, and accuracy. The efficiency of the manual management process is improved, and the process is simplified.

1. Introduction

College archives management is a hot spot for new employment in colleges and universities. How to do a great job in file management in colleges is both solid and rich. Years of experience teaching file management at universities have shown that it is associated with an active discussion [1]. The main task of teaching diagnosis and improving management quality is to formulate principles and regulations for education management, focus on management team building, monitor, diagnose, and improve the education management process, and formulate and analyze an appropriate evaluation index system. By evaluating the results, setting goals and resources for the next round of diagnosis and improvement can effectively enhance the quality of education administration [2]. Building a quality culture in higher vocational education is the basic way to enhance the internal quality assurance system and the soft means to implement the operation mechanism of education quality diagnosis. Innovate higher education quality management and reform, strengthen spiritual and cultural construction, and establish a "people-oriented" educational quality management

concept. Create an institutional culture, build a long-term mechanism for diagnostic teaching and quality reform activate behavioral culture, implement the responsibilities and missions of disciplines in the field of quality generation strengthen the material and cultural structure, and establish a material foundation for ensuring the quality of education. Promote the diagnosis and improvement system of higher occupation education through the construction of quality culture, and always enhance the quality of education [3]. As an important part of college curriculum management, curriculum information management plays an important role in improving the level of college curriculum management. This paper sorts out the connotation and characteristics of higher vocational archives, analyzes the problems existing in the archives management of higher vocational colleges, and finally clarifies the rectification measures in the field of information of higher vocational archives management [4]. With the development of the evaluation of educationally talented persons and universities, the integrity of educational archives has played a decisive part in educational evaluation, and educational evaluation has also proposed new demands for educational archives management. Therefore, browsing educational archives is imperative. Management addresses existing problems from the perspective of educational assessment and improves management accordingly [5]. Using the idea of chemotaxis, a biomimetic approach was used to describe pedestrian interactions. This is a fairly simple situation, evacuation of a large room with a door or two. The results show that changes in model parameters can describe different types of behavior, from routine to panic. We find a nonmonotonic dependence of evacuation time on the feedback constant. These times depend on the strength of the feedback behavior, with the shortest evacuation times for some intermediate values of the feedback, the correct coupling of the feedback, and the shortest path exit using knowledge [6]. The definition and history of biomimicry, the importance of biomimicry in human development, and the boundaries and progress of biomimicry are expounded. Human creativity is the fundamental engine of technological innovation. Nature and society are the disciplines we know and serve, and the best teachers are those we learn from. The development of human beings only takes 5 million years, while the evolution of life has a history of more than 3.5 billion years. While imitating human creation is important, it has a greater potential and ability to imitate nature and is more likely to increase primary innovation capabilities [7]. Under the collaborative teaching mode of industry, university, and research, the problems faced by engineering graduate students are as follows: an insufficient number of business tutors; a research initiative that needs further improvement; a lack of flexibility in graduate study; business tutor documents; course graduates; research capabilities; and a quality assurance system. Some solutions to the problem have been proposed [8]. The document acknowledges the trend toward diversification among institutions in the sector and the need for a qualitative approach tailored to specific market niches. The impact of the emergence of communication and information technology and collaborative education and social learning on the nature and quality of university education is discussed. Distrust of the quality agenda is expected to decrease as data and methodologies improve, as well as researchers' sense of control over the formative use of quality-related activities [9]. The quality of education is the driving force for the survival and growth of higher education, and classroom education is the core of university work. Classroom teaching diagnosis is a significant measure to enhance the quality of teaching, and it is also an important measure to ensure the quality and effectiveness of classroom teaching. Classroom diagnostic testing has become an urgent and significant topic in the field of current teaching and education. In recent years, the claim of "class ethnography" in the diagnosis of school education has become a useful attempt. The research results show that the diagnostic paradigm of "class ethnography" is of great significance for transforming the existing educational concepts, methods, and programs and improving the quality of education and the level of personnel training. Therefore, the diagnosis of "classroom ethnography" is worthy of promotion in practical education evaluation [10]. The article compares eight factors of the Urumqi Vocational University, including admissions, school management, placement conditions, funding, teacher team composition, apprenticeship, social assessment and external evaluation. On the basis of an analysis, the role of status data in quality diagnosis and management improvement is discussed, and it is suggested to set up a data management department in universities, establish a data management economy, and establish a data analysis mechanism at the school level to ensure the authenticity of the department level [11]. A crisis management early warning mechanism is an effective means to prevent and manage crises. Apply the quality assessment, diagnosis, and early warning mechanism of higher vocational education and take effective measures as soon as possible to improve the status of education quality, enterprise management, and teaching quality. The quality evaluation, diagnosis, and early warning system of vocational education has been continuously improved in practice and has gradually produced results [12]. The imbalance between the internal governance model and the internal quality assurance system of higher vocational education has become an obstacle to improving the quality of higher vocational education. As a part of the internal quality assurance system of colleges and universities, we investigate the use of modern management ideas and tools to build a "management" quality assurance system and coordinate the development of the internal quality assurance of each component [13]. Bionics is the study of how organisms function and the creation of mechanical or electronic devices to replicate or mimic these functions. For the first time in the history of technology, we are able to look at molecules and molecular parts and make them the size of an instrumental molecular machine. At the same time, computer technology offers surprising new possibilities. Microtechnology and microelectronics, and more recently nanotechnology, have made electromagnetic measurements possible. Using all these new technologies, engineers can build machines that

not only detect molecular changes or move organisms at the molecular level but also respond to interactions, changes, and show physical phenomena [14]. To address the inherent problems of the Jacobi-based approach, a new inverse kinematics modeling approach has been proposed that approximates the inverse kinematics of a robot class with a hyperredundant continuum, namely the compact bionic processing assistant (CBHA). Neural network and radial basis multilayer perceptron (MLP) function as an approximation method. Validation using a rigid industrial manipulator with 6 degrees of freedom demonstrates the effectiveness and efficiency of the proposed method [15].

2. Research on the Quality Diagnosis of Teaching Archives Management from the Perspective of Collaborative Education

2.1. Background of Quality Diagnosis of Teaching Archives Management. With the continuous development of science and technology and the rapid development of the social economy, information management has gradually become an essential part of our daily life and work processes. Manage students' learning file information, completely liberate teachers from the traditional complex manual management stage, greatly improve teachers' work efficiency, and help students understand their learning status in real time. It is an important part of education management in social schools and training institutions. It is a database where managers can formulate appropriate management strategies. Real-time visibility into student learning is also an important benchmark for employee education. However, universities mainly implement the management of teaching files through manual methods. Obviously, there are too many limitations in this way of working, such as clumsy access, high storage costs, poor confidentiality, and difficulty in updating data. With the successive progress of message management technology, computer information management plays a significant role in the management of students' learning files. Using a computer to manage student course files has unparalleled advantages over manual file information management, for example, fast search speed, high security, large storage capacity, easy management, easy maintenance, and low cost as shown in Figure 1.

With the continuous advancement of science and technology and the rapid development of the social economy, message management has gradually become an inseparable part of our daily life and work process. The information management of students' teaching file information completely liberates teaching workers from the traditional and complex manual management stage, greatly improves the work efficiency of teaching workers, and also facilitates students to understand their learning status in real time. Teaching file management is a very important link in the management of schools and training institutions in society. It is very important for both school managers and teaching workers. It is the data basis for managers to formulate relevant management strategies. It is also an important reference for teaching workers to grasp the learning status of students in real time.

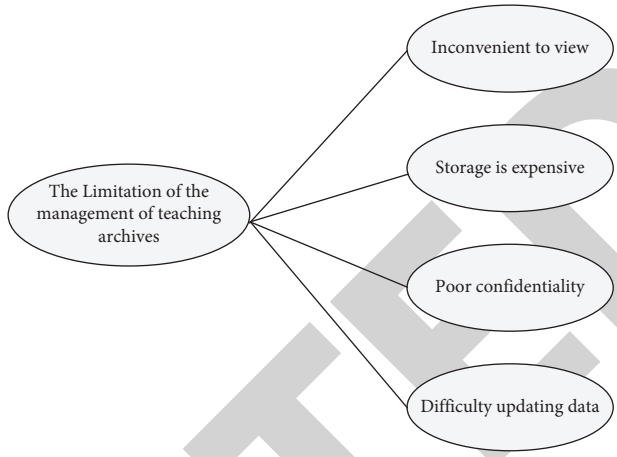

Figure 1: Limitations of teaching archives management.

2.2. Diagnosis of the Quality of Teaching Archives Management. According to the traditional method, the student learning file manager needs to create a paper version file for each student, which is not easy to save and whose security is not high. At the same time, paper files require a large amount of paper, which wastes resources. At the same time, the storage environment of paper files requires high requirements, which may cause file damage. Paper versions of documents are not conducive to finding and changing information. If you change the student profile information, you will need to modify the original profile information. The paper version of the document is not conducive to finding the document, and in the process of modifying the information, errors may occur, causing problems with the cleanliness of the entire document. The paper version of the document is not conducive to the statistical analysis of teachers or archivists. It can even be said that the paper version of the document has no statistical analysis function. Trying to find out the rules in the huge archives may be considered an impossible task. However, the problems existing in the traditional management of student status can be well solved by the method of bionics. The problem proposed in this paper is only to investigate and analyze on the basis of diagnosing the quality of student status:

(1) The student teaching file manager must establish a paper version of the file for each student. The paper version is not easy to store and has low security.

(2) The paper version of the file is not conducive to the query and the modification of information.

(3) Errors may occur in the process of information modification, so there are problems with the neatness of the entire file. The paper version of the file is not conducive to the statistical analysis of teachers or file managers.

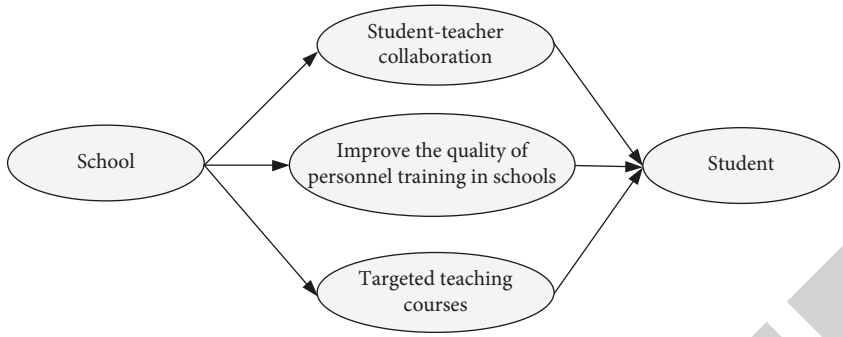

Figure 2: Influence mechanism of collaborative education on teaching.

2.3. Significance from the Perspective of Collaborative Education. By increasing the school's participation in collaborative learning and deepening the collaboration between teachers and students, it is beneficial for schools to set up courses, formulate courses, write teaching materials, improve internal and external training bases, and hire front-line technical and technical experts from enterprises for training. Pass on school practical skills to effectively improve the training quality of school staff through the systematic acquisition of theoretical knowledge and practical skills to ensure that students meet the needs of the industry and enterprises for technical and skilled talents, effectively reducing the time for students to adapt to jobs, and cultivate industrial enterprises and the truly skilled people that society needs. As an innovative talent training method, school-enterprise cooperative education is an important part of the development of vocational education. This study analyzes the quality of teaching document management at the current stage to diagnose the degree of collaboration, find out the factors that affect the degree of collaboration, and propose remedial measures to improve the degree of collaboration, so as to inspire schools to implement in-depth collaborative education and cultivate talents and talent industries that are more suitable for the market economy. It provides an effective way for schools to cultivate a large number of high-quality engineering and technical talents through collaborative education. The government has always attached great importance to the development of higher education, ignoring the importance of quality educational archive management. However, with the reform of the education system and the transformation and modernization of the social economy in recent years, the government, enterprises, and schools have gradually realized the important role of education archives management quality diagnosis in social and economic development. The education and training model helps to better understand the diagnosis of the quality of educational archives by enterprises of all backgrounds and schools and the collaborative education and training model, and promotes the development of the collaborative education and training model, as shown in Figure 2:

(1) It is beneficial for schools to set up courses according to the specific requirements of theoretical knowledge and vocational skills for students in relevant majors

(2) Effectively improve the quality of talent training in schools and cultivate skilled talents needed by industry, enterprises, and society

(3) Promote the school to achieve deep-level collaborative education and provide an effective path for cultivating batches of high-quality technical and skilled talents

2.4. Diagnosis and Optimization of Teaching Archives Management Quality from the Perspective of Collaborative Education. Business process optimization refers to the improvement of unreasonable or complex parts of the original business process. Its main purpose is to simplify the processing process in the system, improve the efficiency of the use of existing resources, and the work efficiency of key personnel. The computerization of file management makes the entire process more convenient, saves unnecessary troubles that may be caused by the repeated transmission of paper documents in primary business process management, and makes it easier to find and modify information, reducing information management costs. Information storage is more secure and reliable, reducing unnecessary risks. At the same time, compared with the original management process, the system has added a statistical function, and administrators can generate various statistical reports as needed to better understand student information, facilitate various teaching tasks, and classify a student's course information. Therefore, the classification of information is no longer so simple, and the management and storage of information are more convenient. Compared with business management, the new business process adds a statistical function to help file administrators better understand student course information and facilitate the development of teaching work. The management of the company has added a statistical function, and the file administrator can better understand the students' course information, which is very helpful for the development of teaching work. Students, teachers, and archivists can easily find and create statistics on student performance data. By changing the classification of students' grade information, information classification is no longer so easy, and information management and storage are more convenient. Each teacher is solely responsible for the grades in the courses he or she teaches. The addition of the statistical

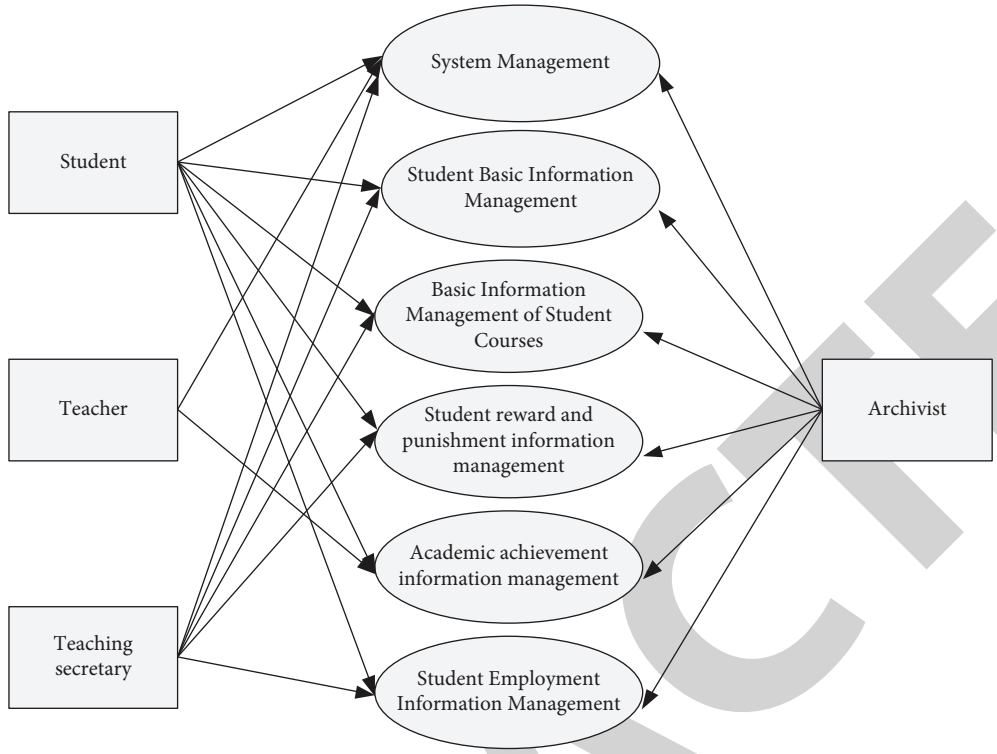

Figure 3: Overall use case diagram of the teaching file management system.

function makes the management of student performance more intuitive and convenient. Students can easily request and view their employment information; employment teachers can easily view student employment information; and it is more convenient to view difficult-to-assess information, and only need to log in to view and correct the relevant information. Sufficient information avoids the tedious process of modifying information in paper documents. At the same time, the classification of employment information is more diverse, which is convenient for different employees to search according to different needs, which greatly facilitates the search, modification, and storage of information and effectively reduces the burden on business personnel and improves work efficiency, as shown in Figure 3.

The informatization of file management makes the whole process more convenient, saves the unnecessary trouble that may be caused by the transmission of paper documents many times in the original business process management, and makes the query and modification of information more convenient, reducing the cost of information management and making the preservation of information more secure and reliable, and unnecessary risks are also reduced. In addition, compared with the original management process, the system has added a statistical function. The administrator can generate different statistical reports according to the needs for better understanding the information of the students, and the students can also easily query.

3. Biomimicry-Based Methods

3.1. Traditional Detection Technology. For the sake of simplicity, it is assumed that the channel is synchronized, the carrier phase is zero, the multipath effect is not considered, and the system modulation mode is BPSK mode. Assuming that there is a user K in the system, the baseband expression obtained is given as follows:

$$r(t) = \sum_{k=1}^{K} A_k(t) g_k(t) d_k(t) + n(t), \tag{1}$$

where $A_k(t)$ is the signal amplitude of the k-th user, $d_k(t)$ is the information bit value of the k-th user, $d_k(t)$ is the characteristic sequence of the K-th user, T_b is the time width of the information bit, $n(t)$ is the additive white Gaussian noise. The spectral density is $N_0/2\,(W/\mathrm{Hz})$.

$A_k(t)$, $d_k(t)$, $d_k(t)$, T_b, $n(t)$, $N_0/2\,(W/\mathrm{Hz})$ For the sake of simplicity, it is assumed that the channel is synchronized, the carrier phase is zero, the multipath effect is not considered, and the system modulation mode is BPSK mode. Assuming that there is a user K in the system, the baseband expression obtained is given as follows:

$$\rho_{i,k} = \frac{1}{T_b} \int_{T_b} g_i(t) g_k(t) \mathrm{d}t. \tag{2}$$

If $i = k$, then $\rho_{i,k} = 1$; if $i \neq k$, then $0 \leq \rho_{i,k} \leq 1$.

The output of the k-th channel of the matched filter bank in a certain symbol interval is given as follows:

$$\begin{aligned} y_k &= \frac{1}{T_b}\int_{T_b} r(t)g_k(t)\mathrm{d}t \\ &= A_k d_k + \sum_{\substack{i=1 \\ i\neq k}}^{K} \rho_{i,k}A_i d_i + \frac{1}{T_b}\int_{T_b} n(t)g_k(t)\mathrm{d}t \\ &= A_k d_k + MAI_k + z_k. \end{aligned} \tag{3}$$

The first term in equation (3) is caused by the autocorrelation of the kth user signal, which is a useful term; the second term is caused by the cross-correlation between the signals of other users and the kth user signal, which is multiple access interference; and the third term is noise.

The traditional detector is actually a filter-matched detector, which is handled by each user independently without considering the influence of other users, which is simple and easy to implement. The traditional filter matching receiver is the optimal receiver for a user in the additional channel of the Gaussian white noise, and the multiple access interference is obviously not a Gaussian distribution, so the performance of the traditional receiver in the system is not optimal, and there is multiple access interference, distraction, and close-up effects. At the same time, since this is an interference-limited system, the magnitude of the interference directly affects the throughput of the system, so how to effectively overcome and suppress multiple access interference and near-field effects has become a major problem for the system. In order to solve the problem of multiaccess interruption and short-range effect in the current system, multiuser detection technology emerges as the times require.

The traditional detector is actually a matched filter detector; each user is processed separately, and the influence of other users is not considered, which is simple and easy to implement. The traditional matched filter receiver is the optimal receiver in the single-user additive white Gaussian noise channel, and the multiple access interference is obviously not a Gaussian distribution, so the performance of the traditional receiver in the system is not optimal, and there are multiple access interference and near-far effects.

A matched filter plus the Viterbi algorithm to obtain the maximum probability of sequence detection applies to a given channel. The detector can achieve the theoretical minimum error probability. It adopts the principle of maximum a posteriori probability, so it is a maximum probability estimation algorithm. The algorithm formula is given as follows:

$$[b_1,\cdots,b_k] = \arg\max_{b_1,\cdots,b_k} \exp\left(-\frac{1}{2\sigma^2}\int_0^T \left[r(t) - \sum_{k=1}^{K} A_k b_k s_k(t)\right]^2 \mathrm{d}t\right). \tag{4}$$

Equation (4) is equivalent for making

$$\begin{aligned} J(b) &= 2\int_0^T \left[\sum_{k=1}^{K} A_k b_k s_k(t)\right] r(t)\mathrm{d}t - \int_0^T \left[\sum_{k=1}^{K} A_k b_k s_k(t)\right]^2 \mathrm{d}t \\ &= 2b^T Ay - b^T Hb. \end{aligned} \tag{5}$$

Maximize

$$\begin{aligned} y^{\mathrm{def}} &= [y_1,\cdots,y_K]^T, \\ A^{\mathrm{def}} &= \mathrm{diag}[A_1,\cdots,A_K], \\ H^{\mathrm{def}} &= \mathrm{ARA}, \end{aligned} \tag{6}$$

where R is the normalized cross-correlation function.

$$y_k = \int_0^T s_k(t)r(t)\mathrm{d}t. \tag{7}$$

In the asynchronous case, it is only necessary to generalize the probability function of the synchronous channel. In particular, the probability function should be computed as follows:

$$\begin{aligned} &f[\{r(t), t\in[-MT, MT+2T]\}|b] \\ &= \exp\left(-\frac{1}{2\sigma^2}\int_{-MT}^{MT+2T}[r(t) - S(t,b)]^2\mathrm{d}t\right). \end{aligned} \tag{8}$$

Maximize, where

$$S(t,b) = \sum_{k=1}^{K}\sum_{i=M}^{M} A_k b_k[i] s_k(t - iT - \tau_k). \tag{9}$$

Let A_M be a $K(2M+1)\times K(2M+1)$ diagonal matrix, where $k+iK$ diagonal elements are equal to A_k; A_k write

$$v_{k+iK}(t) = s_k(t - iT - \tau_k), \tag{10}$$

and define

$$r_{i,j} = \int_{-\infty}^{\infty} v_i(t)v_j(t)\mathrm{d}t. \tag{11}$$

Let R be the $K(2M+1)\times K(2M+1)$ matrix whose elements are r_{ij}, the matrix R can be written as follows:

$$R = \begin{bmatrix} R[0] & R^T[0] & 0 & \cdots & 0 & 0 \\ R[1] & R[0] & R^T[1] & \cdots & 0 & 0 \\ 0 & R[1] & R[0] & \cdots & 0 & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\ 0 & 0 & 0 & \cdots & R[1] & R[0] \end{bmatrix}. \tag{12}$$

We define

$$H = A_M R A_M. \tag{13}$$

The maximization of equation (13) is equivalent to choosing b such that

$$\begin{aligned} J(b) &= 2\int_{-MT}^{MT+2T} S_i(b)y(t)\mathrm{d}t - \int_{-MT}^{MT+2T} S_i^2(b)\mathrm{d}t \\ &= 2b^T A_M y - b^T \mathrm{Hb}. \end{aligned} \tag{14}$$

Since the boundary values used in the maximization function in the usual optimal decision equation (14) are derived only from the fitted filter, y is a sufficient b statistic.

Although it has been proved theoretically that the detection with the maximum probability can approach the

receiving performance of a single user and effectively overcome the short-range effect, the complexity of the Viterbi algorithm is the exponential power of 4 user numbers, namely A. The detector needs to know the amplitude and phase of the received signal, which can be obtained by estimation. Therefore, it is necessary to find a suboptimal multiuser detector that is relatively simple to compute.

Immunoselection is usually performed in two steps. The first step is to test the immune system, which means test the vaccinated individuals. If the conditions are not as good as the parents, it means that there has been serious degradation in the process of hybridization and mutation. At this point, the individual is replaced with a suitable individual in the parental generation, and the second step is the selection of annealing, that is, the probability of having B in the current population.

$$P(x_i) = \frac{e^{f(x_i)/\mathrm{T}_k}}{\sum_{i=1}^{n_0} f(x_i)/T_k}. \tag{15}$$

3.2. Adaptive Immune Algorithm. The immune operator consists of two parts: vaccination and immune selection. Vaccine refers to the basic feature information derived from people's more or less prior knowledge of the problem. However, when solving practical problems, two situations often occur: on the one hand, it is difficult to form relatively mature prior knowledge when solving problems, and relevant feature information cannot be extracted from the analysis process; effective immune vaccines are obtained; on the other hand, the cost of finding the local solution of the global solution is larger than the appropriate ratio, which increases the computational cost, reduces the efficiency, and makes the work of extracting vaccines meaningless.

In order to improve the generality and ease of use of the algorithm, we adaptively extract effective information from the genes of the best individuals during the evolution of the population and then create an immune vaccine. At the same time, in the vaccination campaign, the adaptation parameter p_1 is introduced, which represents the percentage of the number of people vaccinated. As algebra p_1 increases, it eventually increases to 1, which means that all individuals are vaccinated, so later in evolution, the algorithm is characterized by a large number of local mountaineering searches. Since the ratio of vaccines and vaccinees is adaptively changed in the algorithm for extracting immune vaccines, this algorithm is called an adaptive immune algorithm. In addition, in the above immune selection, we further improved the annealing selection formula, which in the algorithm is actually a survival strategy realized by competition between offspring and parents. At a given temperature value T, child C replaces parent P with the next probability p.

$$p = \frac{1}{1 + \exp\left(F(C) - F(P)/\left(T_k\right)\right)}. \tag{16}$$

Among them, $\alpha = 0.05$ can be obtained from Formula (16), at a sufficiently high temperature, the immune selection is random, so the search process represents a random search; at a sufficiently low temperature, efficient individuals are selected, turning the search process into a deterministic mountaineering search. After the ant has completed n cycles, the new information left on each path traveled by the last ant must be added to τ_{ij} before the next cycle. The amount of information should be adjusted according to the following formula:

$$\begin{aligned} \tau_{ij}(t+n) &= \rho\tau_{ij}(t) + \Delta\tau_{ij}, \\ \Delta\tau_{ij} &= \sum_{k=1}^{m} \Delta\tau_{ij}{}^{k}, \end{aligned} \tag{17}$$

where ρ is the information residual factor. By imitating the characteristics of human memory, the old information will gradually disappear and the remaining information will gradually disappear over time, and the parameter $1-\rho$ is used to represent the degree of information attenuation, that is, the degree of fluctuation. $\Delta\tau_{ij}{}^{k}$-The amount of information $\Delta\tau_{ij}$ left on paths i to j over a period of time in this cycle. D-represents the increase in the amount of information left on paths i to j by all ants that may pass $i \Leftrightarrow j$ in this cycle.

4. Diagnosis and Analysis of Teaching Archives Management Quality from the Perspective of Collaborative Education Based on Bionics

4.1. Construction of Quality Diagnostic Indicators of Teaching Archives Management from the Perspective of Collaborative Education. In order to study the quality diagnosis of teaching archives management from the perspective of collaborative education, it is necessary to analyze the indicators of teaching archives management and obtain the research results by calculating the obtained data. This paper establishes six indicators, namely, hardware environment, security requirements, system maintenance, user interface, information flow, and accuracy. These six important indicators are screened and analyzed accordingly, as shown in Table 1.

It can be seen from the figure below that the indicator layer is relatively important for the quality diagnosis of teaching file management, and only a few think it is not important. Among them, the most important number of people selected for security requirements is 201; the number of important people selected for system maintenance is less than other indicators; the number of people is 176; so, the indicators meet the standards of experimental indicators, as shown in Figure 4.

4.2. Bionic Approach. The data set used in the experiment is classified into statistical categories. The number of features of the hardware environment is 8, the number of samples is 768, and the number of categories is 2; the number of features required by security requirements is 13, the number of samples is 178, and the number of

Table 1: Construction of the index system.

Target layer	Indicator layer
Quality diagnosis of teaching archives management from the perspective of collaborative education	Hardware environment Safety requirements System maintenance User interface Information flow Precision

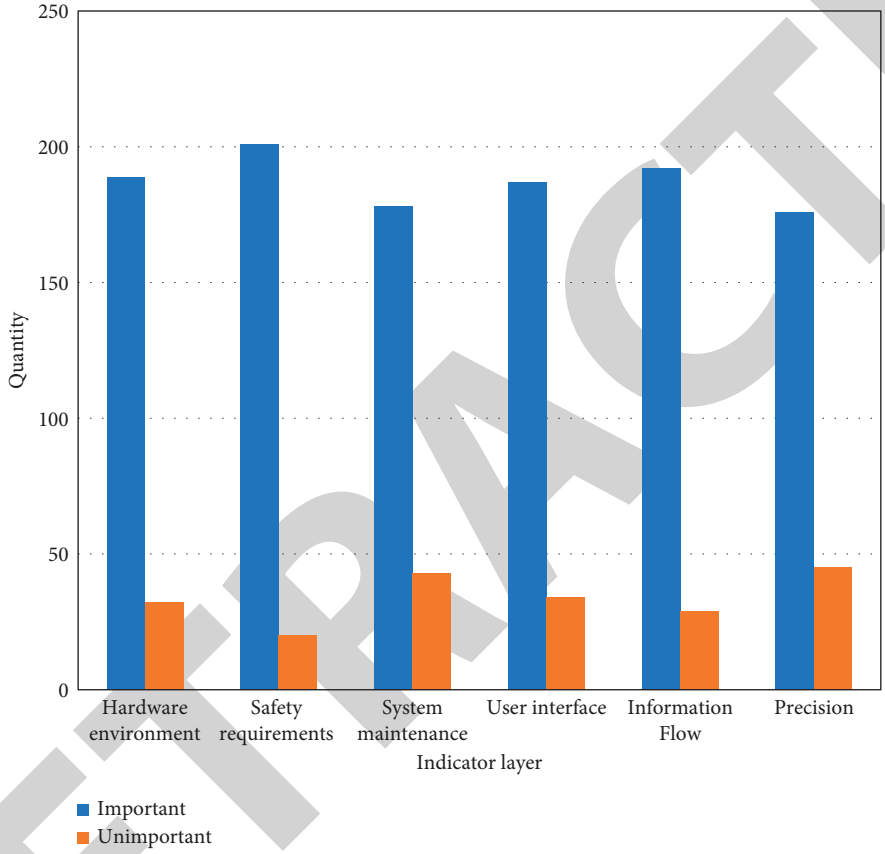

Figure 4: Importance of index layer.

Table 2: Datasets used in the experiments.

Indicator layer	Number of features	Number of samples	Number of categories
Hardware environment	8	768	2
Safety requirements	13	178	3
System maintenance	19	846	4
User interface	60	208	2
Information flow	34	351	2
Precision	4	150	3

categories is 3; the number of features required for system maintenance is 19, the number of samples is 846, and the category is 4; the number of features of the user interface is 60, the number of samples is 208, and the number of categories is 2; the number of features of the information flow is 34, the number of samples is 351, and the number of categories is 2; the number of accuracy is 150, the number of samples is 4, and the class is 3, as shown in Table 2.

It can be seen from the columns in Table 3 and Figure 5 that under the PsoKnn method, the quality diagnosis accuracy of the user interface is the lowest, with an accuracy of 64%; the accuracy of the quality diagnosis is the highest, with an accuracy of 96.67%; under the C4.5 method, the system maintenance. The accuracy of system maintenance quality diagnosis is the lowest, with an accuracy of 68.44%; the accuracy of quality diagnosis is the highest, with an accuracy of 96%; under the GGAKNN method, the quality diagnosis

Table 3: Comparison of experimental results of bionic methods.

	PsoKnn (%)	C4.5 (%)	GGAKNN (%)
Hardware environment	76.15	75	77.53
Safety requirements	94.12	93.82	98.95
System maintenance	74.52	68.44	76.82
User interface	64	73.56	94.29
Information flow	88	89.40	90.28
Precision	96.67	96	98.67

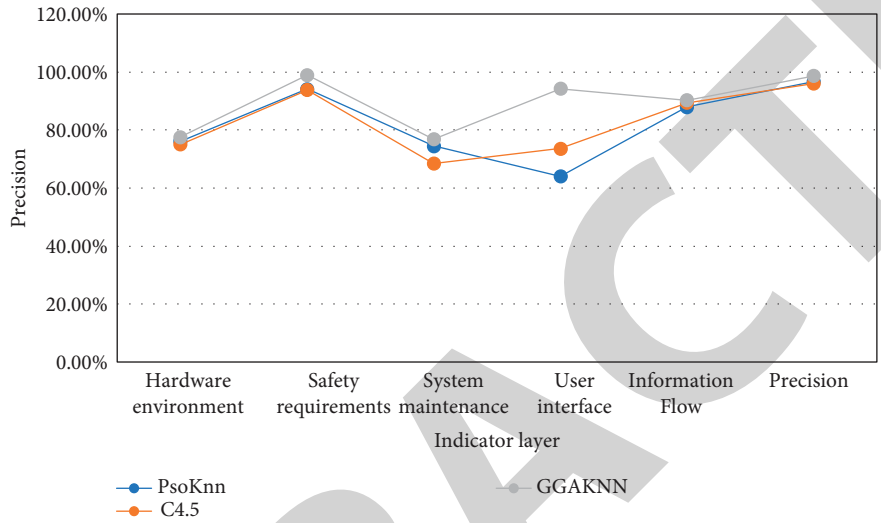

Figure 5: Accuracy comparison of bionic methods.

accuracy of the system maintenance is the lowest, with an accuracy of 76.82%. The accuracy is 98.95%; it can be seen from the line that in the hardware environment, the accuracy of the three bionic methods is about 75%; the accuracy of GGAKNN is the largest; the accuracy is 77.53%; the accuracy of C4.5 is the smallest; the accuracy is 75%. In the safety requirements, the accuracy of the three bionic methods is about 93%; the accuracy of GGAKNN is the largest; the accuracy is 98.95%; the accuracy of C4.5 is the smallest; the accuracy is 93.82%. In the system maintenance, the accuracy of the three bionic methods is all around 70%; GGAKNN has the highest accuracy with an accuracy of 76.82%, and C4.5 has the smallest accuracy with an accuracy of 68.44%. In the user interface, the accuracy of the three bionic methods differs significantly, and GGAKNN has the highest accuracy with an accuracy of 94.29%. PsoKnn has the smallest accuracy, with an accuracy of 64%. In the information flow, the accuracy of the three bionic methods is all around 89%. GGAKNN has the largest accuracy with an accuracy of 94.29%, and PsoKnn has the smallest accuracy with an accuracy of 88%. In terms of performance, the accuracy of the three bionic methods is around 97%. The accuracy of GGAKNN is the largest with an accuracy of 98.67%, and the accuracy of C4.5 is the smallest with an accuracy of 96%. As shown in Table 3 and Figure 5.

In the precision rate, the user interface is the highest, with a precision rate of 88.18%, followed by accuracy, security requirements, hardware environment, system maintenance, and information flow. Among the precision rates, security requirements are the highest, with a recall rate of 89.09%, followed by the hardware environment, accuracy, user interface, information flow, and system maintenance. In F1, the user interface is the highest at 89.05%, followed by the hardware environment, information flow, accuracy, security requirements, and system maintenance, as shown in Figure 6.

4.3. Particle Swarm Optimization Coverage Algorithm. Under the PSONCA method, the highest accuracy is the security requirements, with an accuracy rate of 96.11%; the lowest accuracy rate is the hardware environment, with an accuracy rate of 71.56%; followed by the user interface, information flow, accuracy, and system maintenance. The largest number of coverages is the system maintenance, covering 302 digits; the least is security requirements, covering 19 digits; followed by hardware environment, information flow, user interface, and accuracy. The largest number of rejected samples is in the hardware environment, with 28. The least is security requirement number 1, followed by system maintenance, accuracy, information flow, and user interface. The most correct number of rejection samples is in the hardware environment, followed by system maintenance, information flow, accuracy, user interface, and security requirements, As shown in Table 4.

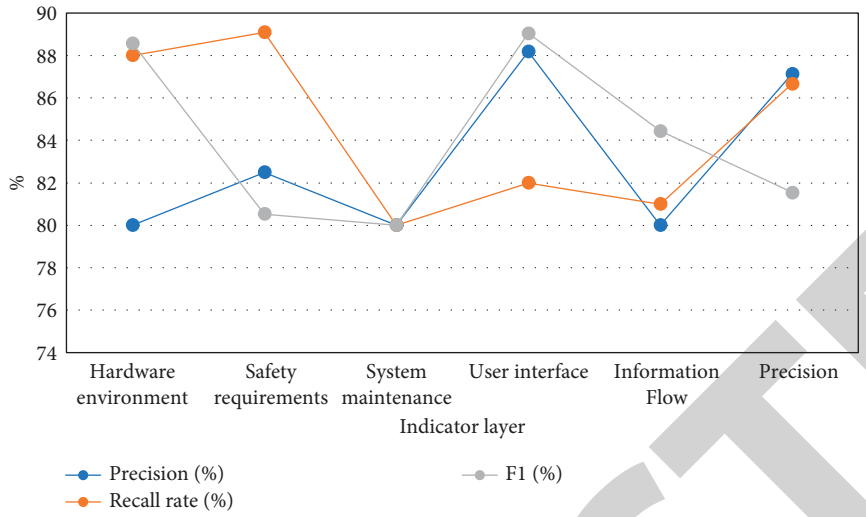

Figure 6: Data experimental results.

Table 4: Experimental results of PSONCA.

	Hardware environment	Safety requirements	System maintenance	User interface	Information flow	Precision
Accuracy (%)	71.56	96.11	81.18	95.24	92.22	90.12
Coverage	205	19	302	53	76	26
Number of rejected samples	28	1	15	3	6	10
Rejection sample identification correct number	17	1	8	2	6	5

Table 5: Experimental results of NCA.

	Hardware environment	Safety requirements	System maintenance	User interface	Information flow	Precision
Accuracy (%)	70.26	95	78.82	95.24	90.83	89.62
Coverage	308	23	254	63	89	69
Number of rejected samples	7	2	30	6	10	9
Rejection sample identification correct number	4	1	15	4	8	6

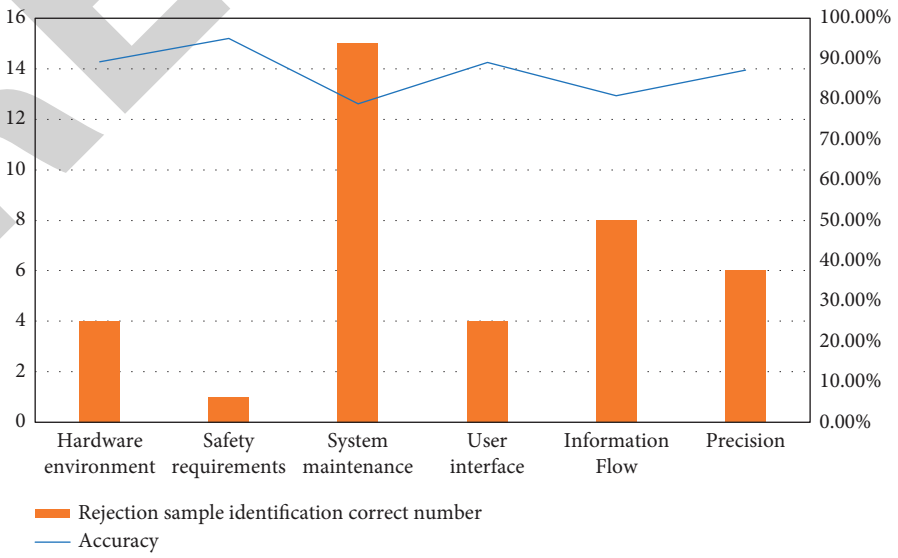

Figure 7: Indicator accuracy rate.

Under the NCA method, the user interface has the highest accuracy rate, with an accuracy rate of 95.24%; the hardware environment has the lowest accuracy rate, with an accuracy rate of 71.56%; followed by security requirements, information flow, accuracy, and system maintenance. The most covered is the hardware environment, covering 308 digits; the least covered is security requirements, covering 23 digits; followed by system maintenance, information flow, user interface, and accuracy. The largest category of rejection samples is system maintenance, with 30; the least is security requirements, with 2; followed by accuracy, information flow, and user interface. The highest number of correct identifications of rejection samples is in system maintenance, followed by information flow, accuracy, user interface, and security requirements, as shown in Table 5.

As can be seen from the figure below, the more correctly the number of rejected samples is identified, the lower the accuracy of the indicator. The number of correct identifications of rejection samples maintained by the system is the most, and its accuracy is the smallest index, with an accuracy rate of 78.82%; the number of correct identifications of rejection samples in the information flow is 8, and the accuracy rate is 80.83%. The accurate identification of rejection samples is correct. The number is 6, and the accuracy rate is 87.1%; the number of correct identifications of rejection samples in the user interface is 4, and the accuracy rate is 89.1%; the number of correct identifications of rejection samples in the hardware environment is 4, and the accuracy rate is 89.26%. The number of correct sample recognitions is 1, and the accuracy rate is 95%, as shown in Figure 7.

5. Conclusion

In today's rapid development of social informatization, the application of computerized management technology continues to penetrate into all fields of social life. Managing information from students' educational files is a concrete manifestation of the application of information management technology, which brings great convenience to teachers. Therefore, more and more people begin to develop more practical case management systems in student education, and more and more developers begin to develop file management systems for specific scenarios. On the one hand, it can provide a policy basis for school administrators, and on the other hand, it can greatly improve the work efficiency of staff so that system users can conveniently and quickly search and count student information and other related work. Analyze the data that needs to be processed by each function of the system, and propose the direction of improving the management of educational archives. The indicators are analyzed by bionic methods. Under one method, the quality diagnosis accuracy of system maintenance is the lowest, with an accuracy of 68.44%; the accuracy of quality diagnosis is the highest, with an accuracy of 96%. The system's maintenance can be upgraded and improved. Under the PSONCA method, the highest accuracy is the security requirement, and the lowest accuracy is the hardware environment, so the hardware environment needs to be improved.

Data Availability

The experimental 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.

Acknowledgments

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