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Article

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Reference: Qiu, Yahui/Fang, Jinqiang (2024). Application of knowledge sharing decision model based on computer-aided system in student education management platform. In: International journal of knowledge management 20 (1), S. 1 - 18.
https://www.igi-global.com/ViewTitle.aspx?TitleId=336549&isxn=9798369324608.
doi:10.4018/IJKM.336549.

International Journal of Knowledge Management
Volume 20 • Issue 1

Application of Knowledge Sharing Decision Model Based on Computer-Aided System in Student Education Management Platform

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ABSTRACT

The knowledge-sharing, decision-making model can not only combine the two processes but also improve the teaching quality and students' learning achievements. However, the existing knowledge-sharing, decision-making model has many shortcomings. Therefore, for this article the authors applied the computer-aided instruction (CAI) system to the knowledge-sharing decision model and compared it with the traditional knowledge-sharing decision model. They compared and analyzed the application effects of the two processes in the student education management platform, and the experimental comparison was made from the perspective of curriculum and students. When the authors used the traditional knowledge-sharing decision model, the average score of the five people in the course A exam was 78.2. After they used the knowledge-sharing decision model based on the computer-aided instruction system, the average score of the five people in the course A exam was 85.4. Obviously, the knowledge-sharing, decision-making model based on the CAI system can effectively improve students' academic performances.

KEYWORDS

Computer-Aided Instruction, Computer-Aided System, Knowledge-Sharing Decision Model, Student Education Management

INTRODUCTION

Education is the driving force of social progress. On one hand, China's education system has achieved all-round reform, social education ideas and educational methods have changed, and the new idea of people-oriented education reform has been adhered to, to find new ways for China's education work. On the other hand, China's education upgrading reform is inseparable from the universal dissemination of school education knowledge resources. Knowledge sharing plays an important role in schooling. In combination with the knowledge-sharing research of current student management, knowledge sharing seeks to expand channels in the field of Chinese school education and encourages the full implementation of current education upgrading. Knowledge sharing in student management is a part of current school education and an effective way to guide the upgrading of Chinese schools.

DOI: 10.4018/IJKM.336549
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The education management of students is related to the growth of students and the operation of schools. Therefore, solving its existing defects is crucial. Many researchers have conducted in-depth thinking on student education management. Among them, Bhaskar et al. (2021) carried out detailed research on the application of blockchain technology in the field of education, providing a basis for educational institutions to explore the implementation of blockchain technology in other fields. Marbun et al. (2020) surveyed 400 university teachers in Indonesia. The data collected revealed that the existence of universities played an important role in supply chain management through structural analysis formula modeling technology. In addition, university management as a regulating variable strengthened the relationship between supply chain education and supply chain management (Marbun et al., 2020). Connelly et al. (2019) analyzed and compared education management and education leadership. The conclusion was that education management needed to assume responsibility for the normal operation of the system in educational institutions where other people participate. Educational responsibility is an important concept and should play a more prominent role in the organizational analysis of educational institutions (Connolly et al., 2019). Supriyanto et al. (2022) understood entrepreneurship education by implementing Islamic professional ethics in the "patchwork"community of Pringsewu Regency. In the regent area of Prinseu, entrepreneurship education was carried out in "patchwork" communities based on Islamic professional ethics to improve social welfare. The quality of the products produced was maintained by adjusting the prices according to the market analysis carrying out promotional activities and by providing model services for customers (Supriyanto et al., 2022).

The knowledge-sharing decision model can be used to simplify complex problems using natural science. Although knowledge sharing can improve students' education management, many researchers have conducted in-depth research on how to apply knowledge sharing to various fields (Qiu, 2019). Among them, Islamy et al. (2020) studied the impact of organizational culture on job satisfaction through knowledge sharing. These authors found that organizational culture had a significant positive effect on knowledge sharing and that knowledge sharing had a significant positive effect on job satisfaction, thus finding that organizational culture has a direct or indirect positive effect on job satisfaction (Islamy et al., 2020). After exploring the relationship between individualism-collectivism, knowledge sharing, and innovative work behavior of Vietnamese higher education students, Nghia and Dong (2022) made contributions to the theory of knowledge sharing and innovative work behavior. Biranvand and Akbarnejad (2021) examined the impact of the use of virtual social networks and the dimensions of social capital theory on knowledge sharing and student interaction. These researchers found that the existence of virtual social networks promoted students' desire to share knowledge. The desire for knowledge sharing increases students' interaction in individual and group activities (Biranvand & Akbarnejad, 2021). Iqbal (2021) gathered data from 234 academics from Pakistani higher education institutions and used partial least squares structural formula modeling technology to examine it. The results showed that although knowledge-based culture also contributed to the quality of innovation, it did not affect the speed of innovation. In addition, the knowledge-sharing process mediated the impact of all these knowledge management promoters on the speed and quality of innovation (Iqbal, 2021). Although the use of a knowledge-sharing, decision-making model can effectively solve the defects in student education management, there are still some deficiencies.

Students are the flowers of the motherland and are crucial to their education and management. If the defects in student education management cannot be effectively solved, it affects the growth of these students. Using this premise, we used the knowledge-sharing, decision-making model in the computer-aided system to carry out the application and research of student education management.

All students have unique learning needs and characteristics. We studied how to apply knowledge-sharing, decision-making models to build personalized student management models that provide intelligent learning path planning, resource recommendation, and instructional feedback based on students' data and characteristics to help students develop and grow better.

The computer-assisted system-based knowledge-sharing, decision-making model studied in the dissertation can promote educational innovation and development. Through data analysis and model application, potential improvement points and innovation opportunities can be identified to promote continuous optimization and innovation in educational management practices. The knowledge-sharing decision model explored in this study can provide personalized and differentiated learning support for students. Through systematic data analysis and intelligent recommendations, suitable educational resources and learning paths can be provided according to academic needs and characteristics to enhance students' learning experiences and outcomes.

An educational management system based on a computer-assisted knowledge-sharing, decision-making model has limitations in terms of technology dependency, data quality and security, and human factors. Although the system can provide a large amount of data and analysis, the final decision still needs to be made by educational administrators and policymakers, and it needs to take into account human factors, such as the experience of teachers, the needs of students, and the opinions of parents. Therefore, when administrators are using such a system, they need to fully recognize its auxiliary role and make comprehensive decisions by combining human wisdom and experience to achieve more effective educational management.

Traditional teaching resources are relatively fixed, whereas computer-assisted teaching systems can realize the sharing of resources between teachers and students. In traditional teaching, it is difficult for teachers to understand the learning situation of each student in real time, whereas computer-assisted teaching systems can provide real-time feedback and personalized advice.

STUDENT EDUCATION MANAGEMENT PLATFORM

Overview of Student Education Management Platform

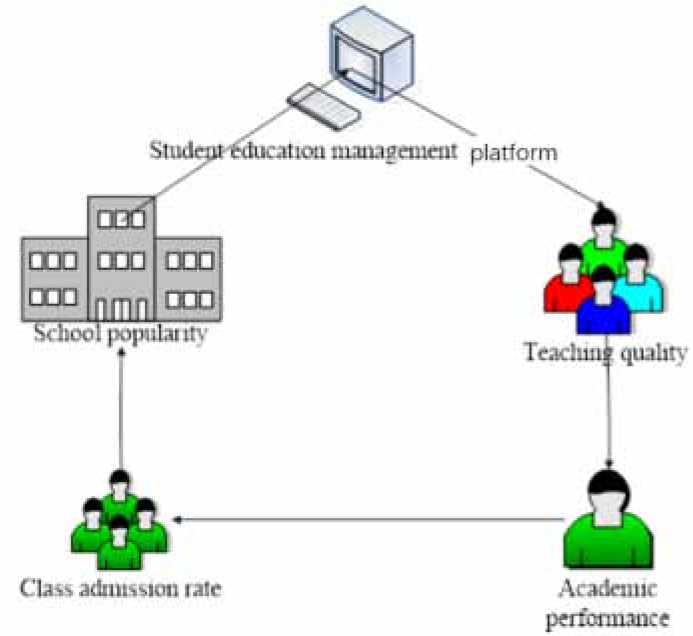
The student education management platform was developed for a large number of business processing work of the school educational administration office. It is mainly used for student education information management. The overall task is to realize the efficient and scientific student education information (Guo, 2020). The cultivation of a high-level student education team is the core of establishing an efficient student education management platform. Schools should arrange students to participate in various forms of training in a planned, step-by-step manner to continuously improve their psychological and physical quality. With the development of information technology, students' education management should also be constantly updated, starting from the ideological nature of online content and the update rate of information. At the same time, the connection with the parents of the students has been established so that the school can know the situation of the students at home, and the parents can know the performance of the children at school. The home and school can catch up with each other, and even can study the education methods specifically for their children.

The educational relationships between schools, students, and teachers are closely interwoven with the education management system to build an organized and coordinated education system. School management plans goals, formulates policies, and provides resources and support through the education management system; teachers are responsible for teaching and student guidance; and students are actively involved in learning, and together they contribute to the development and achievement of education.

The relationship diagram for the student education management platform is shown in Figure 1.

Figure 1 shows the relationship diagram involved in the student education management platform. The application of the student education management platform can improve the school teaching quality and students' learning enthusiasm. Students can timely complete the learning and dissemination of new knowledge in the platform. Moreover, the knowledge-sharing function on the platform makes students' learning needs not limited by subjects, thus helping students broaden their horizons and improve their learning performances, their horizons and patterns, and their class performances.

Figure 1. School education relationship



Improved achievement reflects the dedication and effectiveness of the school's faculty and educational system. When a school consistently produces high-achieving students, it gains a reputation for academic excellence. This positive reputation attracts more students and parents who value a quality education. When students achieve better grades and succeed academically, they are more likely to recommend the school to friends, relatives, and acquaintances. Good word-of-mouth communication can greatly increase a school's popularity and enrollment.

When grades improve in all classes, it shows that the school is focused on academic growth and student achievement. This achievement boosts parent and student confidence in the school's ability to provide a favorable learning environment. As a result, current students and potential applicants may be more inclined to choose this school, thereby increasing the school's enrollment. With the increase of popularity and new students, there are resources to continue to upgrade the student education management platform.

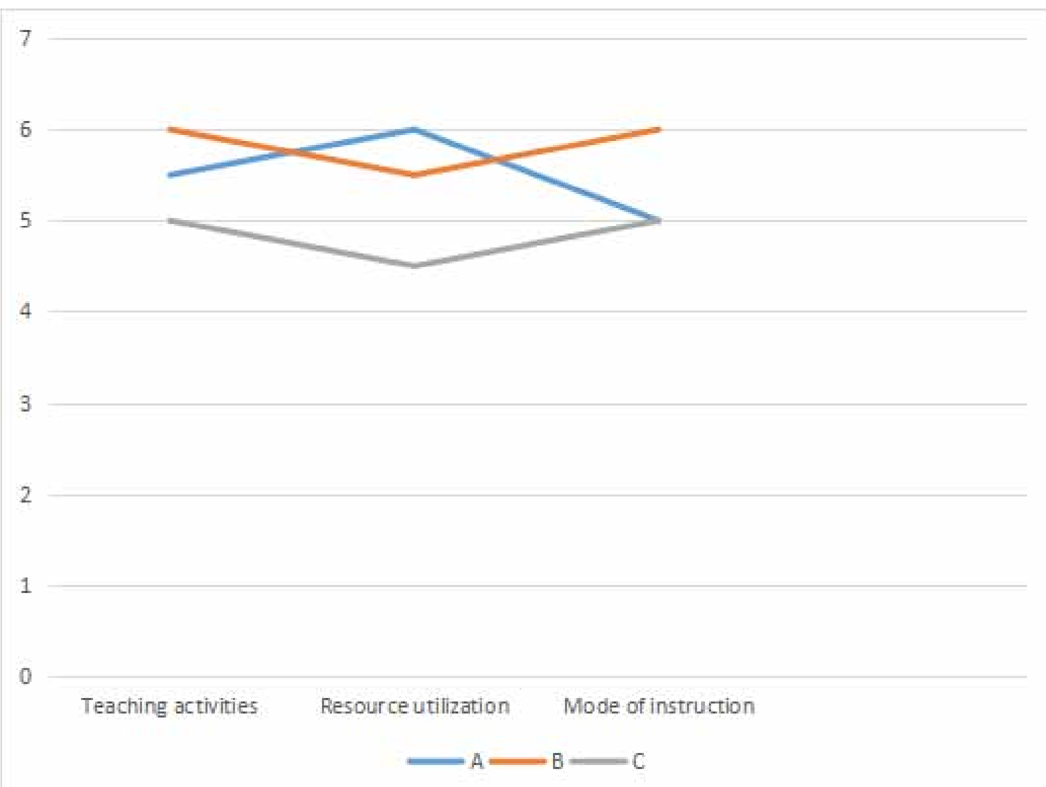
The current education management platform has many deficiencies. First, the role of teachers in the platform has not been well reflected because teaching activities are carried out in the internet, and there is a distance between teachers and students in time and space, leading to the lack of effective communication between the two. At the same time, it is difficult for teachers to grasp and control the situation of students. Second, the diagnostic evaluation of teaching is ignored. The learning of itself is a nonstatic development process, and scene creation is constantly changing with time. While in the internet, the data transmission of the internet should be fully utilized to diagnose and evaluate teaching in time. Third, most teachers can only support knowledge-based learning and lack student-centered and evaluation-centered models. Internet teaching platforms also need to be researched and developed in these two areas. Fourth, personalized services are rarely involved. Everyone has their own personality, and students are even more. If the environment is in line with their own characteristics and needs can be created on the platform, students' learning enthusiasm can be improved.

Knowledge-Sharing Decision Model

In the general knowledge-sharing, decision-making model, the relationship between A and B is shown as four types: cross relationship, A leading, B leading, and B priority. In consideration of long-term strategic objectives, the two often form a loose cooperative organization with shared resources, advantages, and risks. This form of cooperation emphasizes market development through technical cooperation, thereby making the dynamic knowledge link between the school and the students increasingly prominent (Lo & Tian, 2020). In the process of knowledge sharing, elements include participants, sharing platform, and income matrix. If the utility functions of the four decision relationships of A and B are expressed by V1, V2, V3 and V4 respectively, the corresponding matrix of the four decision combinations of both parties is shown in Figure 2.

The decision combination of the sharing parties is (sharing, sharing), (sharing, not sharing), (not sharing, sharing), (not sharing, not sharing), and the income combination is (V1, V1), (V2, V3), (V3, V2), (V4, V4), where V3 > V1 > V4 > V2. Because when the sharing party does not share knowledge and the other party shares it, the non-sharing party not only gains higher benefits than the sharing party but also seeks additional benefits in the process. However, in the management of student education, this model is obviously unreasonable because under normal circumstances, every school encourages knowledge sharing among students. Currently, the primary issue to be addressed is to improve the efficiency of knowledge sharing and the acceptance of knowledge by students. At present, the first problem to be solved is the efficiency of knowledge sharing and the acceptance of students.

Figure 2. Decision model matrix



Knowledge sharing in student management is a part of modern education and an effective channel to guide China's education reform. Knowledge sharing in student management is an effective way to create campus internal culture (Zhang, 2022). Excellent school knowledge sharing includes three factors: knowledge communicators, knowledge receivers, and shared knowledge. Among them, knowledge disseminators refer to school teachers and educational administrators and are the primary disseminators of current school knowledge-sharing information. The second is the knowledge receiver. The main body of school knowledge sharing is students. Through various ways, students can obtain campus shared knowledge and integrate their personalized information to realize the upgrading of shared knowledge, consolidate their ability to participate in campus life, and develop their abilities. The third is to share knowledge, which is the main factor to realize this process. The content of Chinese student management is linked and summarized, mainly including ideological and moral education, professional skill innovation, personal art ability training, and student entrepreneurship information. With the increasing popularity of current network applications, the communication channels of knowledge-sharing information in student management are more diversified. Mobile clients, microblogs, WeChat, and other platforms are all the communication channels for knowledge sharing in student management. However, the existing knowledge-sharing, decision-making model in schools still has some shortcomings: low communicators' information integration ability, low students' initiative, and inadequate communication content management.

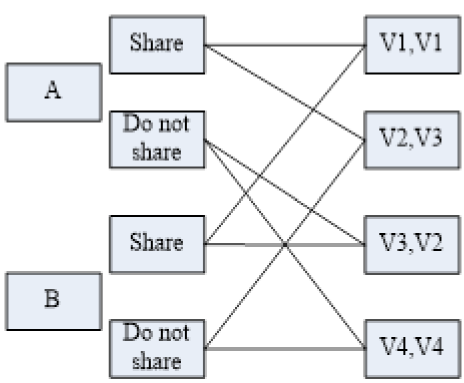
Therefore, these problems need to be solved through knowledge decision processing, as shown in Figure 3.

In Figure 3, both the communicator and the receiver transfer the knowledge, learning experience, and experience of the communicator to the party with learning needs by using knowledge transfer. Through knowledge integration, the knowledge obtained from the disseminators is absorbed into their own things. Knowledge integration is the key to improve students as individuals, and the integration of external language, text, graphics, and other teaching tools is transformed into a part of students' individual systems. The scattered knowledge is classified into models and modularized.

Knowledge blending is used to combine the integrated knowledge into personal knowledge; otherwise, there are problems such as rote memorization. In a group's knowledge sharing, care needs to be taken to incorporate understanding and reflection on individual learning and transform the potential information that is difficult to express into the information on the surface to promote the accumulation and precipitation of the knowledge of the whole system. At the same time, it is necessary to absorb the feelings of others and digest them into personal potential information.

In knowledge development, when the receiver is faced with complex learning situations, creativity is stimulated. The knowledge-sharing decision model provides such a stage for the receiver to cultivate creativity. While knowledge receivers upgrade their knowledge, they also strengthen their ability

Figure 3. Knowledge decision-processing model



to absorb the received content. The stronger the development ability of the receiver, the smaller the restriction of independent choice, and the greater the freedom of knowledge management and learning. The last is knowledge update, which is realized by spreading the developed results through the knowledge-sharing decision model. From the original receiver to the disseminator, the knowledge-sharing, decision-making model can continue to circulate in a virtuous circle.

Computer-Aided System

Computer-aided system is the general name of systems that use computers to complete different types of tasks. For example, a system that uses computer-aided industrial design is called computer-aided design, and a system that uses computer-aided translation is called computer-aided translation.

In addition to the two systems cited above, computer-aided systems also include computer-aided instruction (CAI), computer-aided engineering, computer-aided manufacturing, computer-aided test, computer integrated manufacturing systems, and other systems (Gong et al., 2020).

In the knowledge-sharing, decision-making model, CAI is mostly used. It is a variety of teaching activities carried out with the assistance of computers. It discusses the teaching content, arranges the teaching process, and carries out teaching training methods and techniques with students in the form of dialogue (Liu et al., 2021). CAI provides students with a good personalized learning environment. The comprehensive application of multimedia, hypertext, artificial intelligence, network communication, knowledge base, and other computer technologies has overcome the shortcomings of the traditional teaching situation in a single, one-sided way. Its use can effectively shorten learning time, improve teaching quality and efficiency, and achieve the optimal teaching objectives.

CAI can generally be divided into three parts: computer hardware, system software, and course software. System software includes an operating system, a language processing system, various tool software, and a writing system (Pandey et al., 2017). The system can automatically generate courseware as long as the teacher inputs the corresponding teaching content, the connection between each unit, questions and answers, according to the screen prompts (Xu & Zhai, 2022). Course software is a teaching application software developed by teachers or program designers using computer language or courseware writing systems according to teaching requirements. The courseware reflects the teaching content, teaching objectives, teaching strategies, and teaching experience. The development of courseware depends on teachers. If teachers have difficulties with hardware and technology, they can ask the audio-visual education center. The audio-visual education center can undertake technical work and complete the preparation of CAI courseware with teachers (Alic, 1993).

The conceptualization of school education is one of the main development directions of schools in the field of knowledge education in the future, and it is also the core of school education (Bin, 2021). Concept education is related to the school's grasp of knowledge theory, components, and teaching quality. Based on recombining and reusing resources and materials, school administrators can successfully analyze the new educational ideas of school education, making the CAI system the main technical support and the greatest guarantee of the school education model (Liang, 2021). In particular, the currently leading knowledge-sharing, decision-making model needs to be supported by computer technology to solve the problem of knowledge sharing and dissemination in the process of school education and to bring all-round optimization to knowledge education (Lilien & Rangaswamy, 2004).

The development process of global informatization has promoted the auxiliary role of computer technology in school education to a new stage, and the application of computers in knowledge education has gradually developed from a two-dimensional algorithm to a multidimensional algorithm (Lin & Luo, 2021). In this way, the school's knowledge education and knowledge sharing can be easily completed (Arsenijević et al., 2011). This teaching model enables students also to be successfully targeted by referring to the big data of the internet to achieve efficient and accurate education and operation (Klosterman, 1997).

The traditional process of education has been gradually eliminated by the current teaching mode (Li et al., 2012). At present, the field of education has been able to apply computer technology to establish a knowledge system and teaching staff system and complete the integration of school knowledge information and education process (Chen, 2022). In a series of intelligent reasoning and experiments, the optimization of knowledge education is realized to improve the effect of information analysis in the educational process and the teaching quality of the school.

The computer-assisted teaching system can help students learn more efficiently by providing personalized learning contents and paths according to their learning progress, interests and abilities.

Students can choose their own learning content and study time in the computer-assisted teaching system, thereby enhancing their learning initiative and self-discipline.

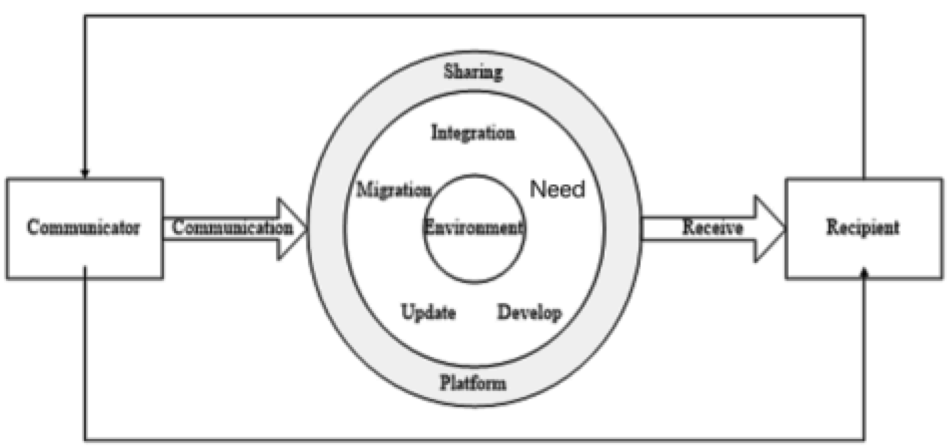
METHODS

The CAI utilizes a personalized recommendation system to effectively suggest high-quality learning resources. A recommendation system can collect, store, and modify learner personalized data and parameters in an all-encompassing manner. By conducting data analysis and mining, it can categorize and identify learners, thereby obtaining their characteristics and current status. In this paper, we used statistical machine learning-based classification method K nearest neighbor for recommendation object "classification," manual settings or marrying class generation to establish multiple recommendation object category labels, and categorized the recommendation object to the category to which it belongs. We also used the recommendation algorithm to achieve the recommendation of the same kind of learning resources to the personalized learning parameters of the matching learners.

The principle of collaborative filtering learning recommendation algorithm based on user learning characteristics adopted in this study is to calculate the most similar learners according to the "learner-learner" similarity matrix (two-dimensional table data). The columns of the table represent the learner objects, the horizontal columns represent the learner participation in the learning resources or learning paths scoring items, and the numbers in the table are the user ratings of the items. The calculation of similarity between different learners is equivalent to calculating the cosine angle of two vectors; for example, the rating scores in the second and fourth rows are used as the item preference feature vectors of learners Stu2 and Stu4, and their similarity is calculated to determine the learning nearest neighbors.

The similarity algorithm adopts Pearson's correlation coefficient, which is the more mainstream, relative cosine similarity and modified cosine similarity algorithm today. This algorithm narrows down the scope of the evaluated items to the learner's common set of items and improves the accuracy

Figure 4. User-Based collaborative filtering



of personalized learning recommendation. Assuming that the common set of rated items of learners Si and Sj is not Pi,j, the similarity formula of users Si and Sj is expressed as shown in equation (1):

$$sim\left(i,j\right)=\frac{\sum a\in P_{I,J}\left(G_{i,a}-\overline{G_{i}}\right)\left(G_{j,a}-\overline{G_{j}}\right)}{\sqrt{\sum a\in P_{i,j}\ G_{i,a}-\overline{G_{i}}^{\ 2}}\sqrt{\sum a\in P_{i,j}\ G_{j,a}-\overline{G_{j}}^{\ 2}}} \tag{1}$$

In equation (1), Pi,j represents the public set of rated items for users s_i and s_j, $G_{i,a}$ and $G_{j,a}$ are the evaluation scores of item a for s i and sj, respectively, and are the average scores of s_i and s_j in the items.

The learning resource or learning path recommendation process is to first obtain the various data of the learner model, and the learner data comes from the learner

model, including learner registration information, learner personalization parameters, and learner interaction data. Next, the Pearson correlation coefficient method is used to compute and compare the similarity of the ratings of the items between the target learners and their learning neighbors. The K learning nearest neighbors are also computed, and finally, with reference to the ratings of the learner's neighbors on the items of the learning resources or learning paths, a rating prediction formula is used to compute and predict the learner ratings. As an important basis for the recommendation results, the n resources or learning paths with the highest predicted ratings will be recommended to the target learners as a recommended sequence. The rating prediction formula is shown in equation (2):

$$G\left(S_{i},y\right)=\overline{r_{u_{i}}}+\frac{\sum j\in w\ \ sim\left(i,j\right)\left(r_{s_{j}}-\overline{r_{s_{j}}}\right)}{\sum uj\in x\,sim\left(si,sj\right)} \tag{2}$$

In equation (2), G (S_i,y) represents the predicted score, and it also represents the average score of s_i and s_j. sim(i,j) represents the user's similarity result, and $j\in x$ represents the learner s_i in the learner's nearest neighbor X.

When the user-based collaborative filtering algorithm for recommendation is used, the learner's online course learning is taken into account, and the learner's learning in general is transformed into the topic test scores, which in turn is transformed into the evaluation scores of the knowledge points. The scores are then expressed as the learner's mastery of the knowledge points of the course. The more similar the scores of the same knowledge points are among the learners, the more similar the learners are, and the more similar the learners are to each other. If learner A scores less than 60 on a knowledge point, then that knowledge point is identified as a knowledge gap for learner A, and its associated knowledge points are recommended less to learner A. In addition, for many different types of learning resources, such as teaching courseware, quizzes, and teaching microclasses, which do not have exactly the same characteristic attributes, to reflect the same learner's learning preferences for different resource types, it is necessary to design the to reflect the learning preferences of the same learner for different resource types. The "rating" is designed as a uniform feature representation for all resources.

Then, the test questions are analyzed through the difficulty factor (DF). Because the dynamic difficulty factor (DDF) is more valuable than the DF, DDF is still used for analysis, as shown in equations (3) and (4):

$$DF=x-\frac{y-\dfrac{DA\times y}{t}}{x} \tag{3}$$

$$DDF = DF \times \lambda_1 + \left(x - \frac{KA}{x} \right) \times \lambda_2 \tag{4}$$

In equation (3), x is the maximum difficulty coefficient, y is the standard score, and DA is the expected average score. In equation (4), K is the total number of shared knowledge, λ_1 and λ_2 are weights, and $\lambda_1 + \lambda_2 = 1.0$. KA is the average score of all candidates who have used this shared knowledge.

KNOWLEDGE-SHARING DECISION MODEL EXPERIMENT

The application of knowledge-sharing, decision-making models in student education management platforms reflects the trend and need to combine modern technology with education management. This means that education management is not limited to traditional manual operations, but rather, computer-assisted systems to achieve automation, intelligence, and personalization of education management to better meet the needs of students and improve learning outcomes.

We selected 300 teachers from a key high school to participate in a questionnaire. They were asked about the shortcomings of the current student education management platform. The results are shown in Table 1.

Table 1 describes the disadvantages of 300 teachers in a high school for the current student education management platform. Among them, 84 people thought that the platform's efficiency was poor, accounting for 28%, which was the highest percentage of respondents. Another 83 people believed that the concept was lagging, accounting for 27.7%, ranking second. Another 63 people believed that the viscosity was not strong, accounting for only 21%, which was the lowest percentage.

The participants were then asked how to solve these disadvantages. Among them, one person who believed that the concept lagged put forward a square matrix of "innovation is the soul, characteristics first, accuracy is the core, coupling is the key, and service is the purpose."

Then, we expanded the scope of the investigation by upgrading it to the provincial level, and putting hundreds of high schools and universities in a province into the questionnaire. The questionnaire mainly surveyed the satisfaction of the current student education management platform. The survey results are shown in Table 2.

Table 2 describes the satisfaction questionnaire of student education management platform of hundreds of high schools and universities in a province. Among them, 12.3% of students and teachers were very satisfied with the concept, and 23.5% of students and teachers were satisfied with the concept. Another 33.7% of students and teachers had a general attitude toward ideas, 24.8% were dissatisfied with the idea, and 5.7% were very dissatisfied with the idea. These results from the table reveal that although the current student education management platform has the shortcomings of lagging in concept, unclear in thinking, poor in efficiency, and weak in stickiness, the number of satisfied people is still more than the number of dissatisfied people for these four indicators.

Table 1. Statistical table of shortcomings of student education management platform

Object	Disadvantages	Number of people	Percentage
High school teachers	Concept lag	83	27.7%
	Unclear idea	70	23.3%
	Poor performance	84	28%
	Not sticky	63	21%

Table 2. Student education management platform satisfaction questionnaire

Evaluation criteria	Very satisfied	Satisfied	General	Dissatisfied	Very dissatisfied
Concept	12.3%	23.5%	33.7%	24.8%	5.7%
Idea	15.6%	21.3%	31.3%	23.9%	7.9%
Performance	16.8%	23.9%	28.7%	18.7%	11.9%
Sticky	23.8%	21.7%	25.6%	19.5%	9.4%

Finally, we carried out an experiment on the knowledge-sharing, decision-making model, and 200 teachers and students from a high school were asked what indicators could be improved by the model practice. Then, using this information, we conducted further experimental research. The survey results are shown in Table 3.

Table 3 describes the questionnaire of 200 teachers and students in a high school about which teaching indicators can be improved by model practice. Among them, 61 people believed that the students' performances had improved, accounting for 30.5% of the total. There were 53 people who believed that the class enrollment rate had improved, accounting for 26.5%, and 39 people who believed that the teaching quality had improved, accounting for at least 19.5%. Class enrollment rate was closely related to students' academic performances, and the total proportion of the two was 57%, more than half. Therefore, we concluded that the knowledge-sharing, decision-making model was the most effective for improving students' academic performances.

EXPERIMENTAL RESULTS OF KNOWLEDGE-SHARING DECISION MODEL

The data of the above investigation and experiment reveals that the use of the knowledge-sharing, decision-making model has a significant effect on the improvement of students' academic performances (Kansou et al., 2022). Therefore, we put the knowledge-sharing, decision-making model based on the computer-aided teaching system into the high school for experiment and then carried out the analysis and research respectively from the perspective of curriculum and students. The results are shown in Figures 5 to 7.

In Figure 5, the left figure is the exam score chart of course A after students used the knowledge-sharing, decision model based on a CAI system, and the right figure is the exam score chart of course A when students used the traditional knowledge-sharing decision model. In the left figure, student 1 had the highest score, reaching 95 points, and student 2 had 86 points. Student 5 had the lowest score, only 79 points. The average score of the five was 85.4. In the right figure, student 3 had the highest score, reaching 84 points. Student 2 had 82 points, and student 5 had the lowest score, only 73 points. The average score of the five was 78.2 points. Although student 5 scored fewer than 80 points after using the computer-assisted teaching knowledge- sharing, decision-making model, this

Table 3. Questionnaire of knowledge-sharing decision model

Object	Index	Number of people	Percentage
High school teachers and students	Student achievement	61	30.5%
	Class enrollment rate	53	26.5%
	Motivation to learn	47	23.5%
	Teaching quality	39	19.5%

Figure 5. Course A score chart

	Itel	Ite2	Ite3	Ite4	Ite5	Ite6
Stul	4	5	3	2	?	-
Stu2	2	?	?	5	4	3
Stu3	3	4	?	3	?	2
Stu4	4	5	?	3	?	2
Stu5	1	3	?	4	3	?

Calculate Learner Similarity

Figure 6. Course B score chart

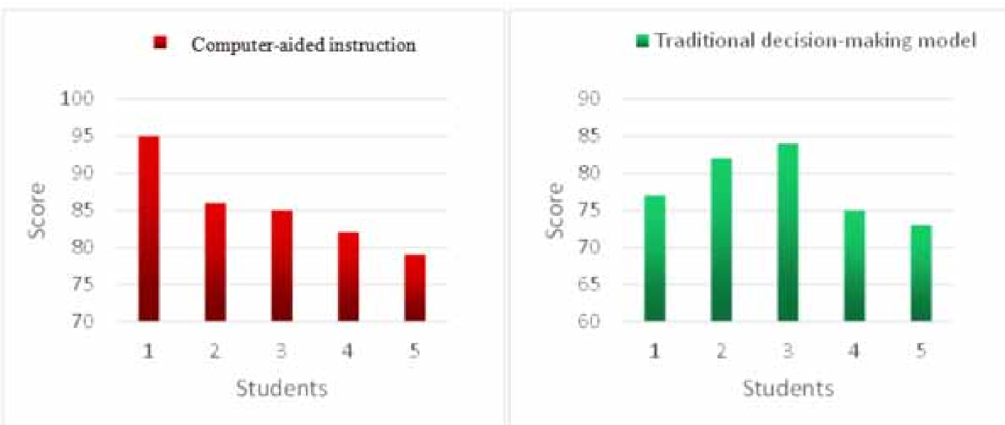
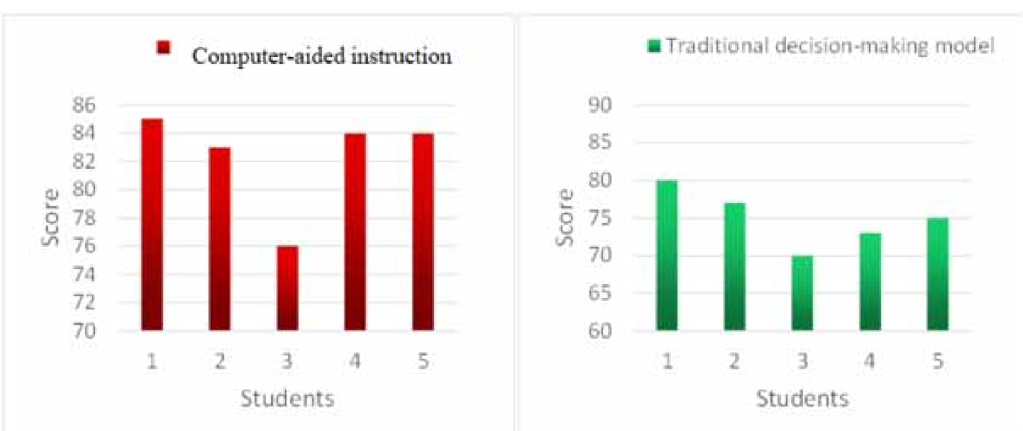


Figure 7. Distribution of Student A scores



score also significantly improved compared with the traditional knowledge sharing decision-making model. Therefore, these results show that the effect of course A is significantly higher than that of the traditional decision model after students used the computer-aided teaching knowledge-sharing decision model.

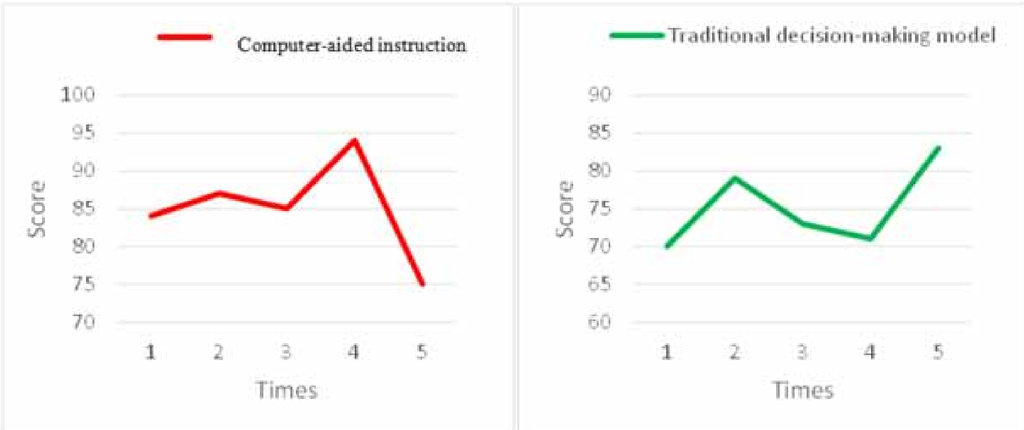
In Figure 6, the left figure is the exam score chart of course B after students used the knowledge-sharing decision model based on the CAI system, and the right figure is the score chart of a certain exam of course B when students used the traditional knowledge-sharing decision model. In the left figure, the highest score of student 1 was 85, student 2 was 83, and student 3 was the lowest, only 76. The average score of the five was 82.4. In the right figure, student 1 had the highest score, reaching 80 points. Student 2 had 77 points, and student 3 had the lowest score, only 70 points. The average score of the five was 75 points. Although student 3 scored fewer than 80 points after using the computer-assisted teaching knowledge-sharing, decision-making model, this score also significantly improved compared with the traditional knowledge-sharing, decision-making model. Therefore, these findings reveal that the effect of course B is significantly higher than that of the traditional decision model after students used the computer-aided teaching knowledge-sharing decision model.

Then, to verify the stability of the decision-making model for computer-assisted teaching knowledge sharing, students A and B were selected to make statistics on their scores of the next five exams and compare them with the scores of the five exams before they used the new model. The results are shown in Figures 7 and 8.

In Figure 7, the left figure shows the scores of student A's five consecutive exams after using the knowledge-sharing decision model based on the CAI system, and the right figure shows the scores of student A's five previous exams when using the traditional knowledge-sharing decision model. In the left figure, student A scored the highest score on the fourth exam, reaching 94 points. The score in the second exam was 87 points. The score in the fifth exam was the lowest, only 75 points. The average score of the five examinations was 85. In the right figure, student A scored the highest score on the fifth exam, reaching 83 points. The score of the second exam was 79 points. The first exam score was the lowest, only 70 points. The average score of the five examinations was 75.2 points. Student A scored only 75 points in the fifth exam after using the computer-assisted teaching knowledge-sharing, decision-making model, which was lower than the average score of the five exams in the traditional knowledge-sharing, decision-making model. However, the score after use was generally higher than that of the traditional knowledge-sharing decision model, and the average score after use was also higher than that of the traditional knowledge-sharing decision model. Therefore, we conclude that student A is effective in improving learning performance after using the computer-assisted teaching knowledge-sharing, decision-making model.

In Figure 8, the left figure shows the score chart of student B's five consecutive exams after using the knowledge-sharing, decision-making model based on the computer-assisted instruction system, and the right figure shows the score chart of student B's five previous exams when using the traditional knowledge-sharing, decision-making model. In the left figure, student B scored the highest score on the fifth exam, reaching 91 points. The score in the fourth exam was 89 points. The score in the second exam was the lowest, only 75 points. The average score of the five examinations was 84.6 points. In the right figure, student B scored the highest score on the fourth exam, reaching 85 points. The score on the fifth exam was 76 points. The score in the first exam was the lowest, only 70 points. The average score of the five examinations was 75.4. Student B scored only 75 points in the second exam after using the computer-aided teaching knowledge-sharing, decision-making model, which was lower than the average score of the five exams when using the traditional knowledge-sharing decision-making model. However, the score after use was generally higher than that of the traditional knowledge-sharing decision model, and the average score after use was also higher than that of the traditional knowledge-sharing decision model. Therefore, we conclude that student B is effective in improving learning performance after using the computer-assisted teaching knowledge-sharing, decision-making model.

Figure 8. Student B score distribution



Finally, the final conclusion of the experiment is that the application of the knowledge-sharing, decision-making model based on the CAI system in student education management is significant. Whether for a certain course or for a certain student, the use of the computer-assisted teaching knowledge-sharing, decision-making model has significantly improved the test results.

Through data collection and analysis, CAI systems can help teachers and school administrators understand student learning, teaching effectiveness, and resource utilization. These data provide valuable information for decision-makers to help them make scientific decisions, such as optimizing teaching content, improving teaching methods, and allocating resources. At the same time, knowledge sharing between teachers and students is also promoted. Teachers can share teaching resources and teaching experience, and students can share learning tips and learning resources among themselves.

EVALUATION OF TEACHERS

The use of CAI technology also allows students to evaluate teachers. The evaluation indicators include how the teachers plan their teaching activities while teaching, the use of teaching resources, and the teacher's mode of delivery. Three students, A, B, and C, were selected to evaluate the teachers. Figure 9 shows the three students' evaluations of teachers based on the traditional teaching model, and Figure 10 shows the three students' evaluations of teachers based on the CAI system's knowledge contribution model course. The students' evaluation of the teachers using the traditional teaching mode is relatively low, with a score of 6 out of 6. The evaluation scores of the three students are concentrated at 4.5, and only one student has a score of 6. As for the evaluation of the teacher of the course on knowledge modeling based on CAI system, the three students' evaluation scores were higher, concentrating on 5 to 6, which shows that the course on computer-assisted teaching of knowledge-sharing, decision-making model is more trusted by the students.

CONCLUSION

It is the key work of primary and secondary schools and colleges to improve the daily teaching management of students, which is also closely related to the development of China's modern education. The knowledge-sharing decision model based on the CAI system is cited as the education support system. Its main characteristics are strong universality, wide application range, and realized resource sharing in school education management. The operating system, computer network, and knowledge-

Figure 9. Student A, B, and C's ratings of three teachers in a traditional teaching model

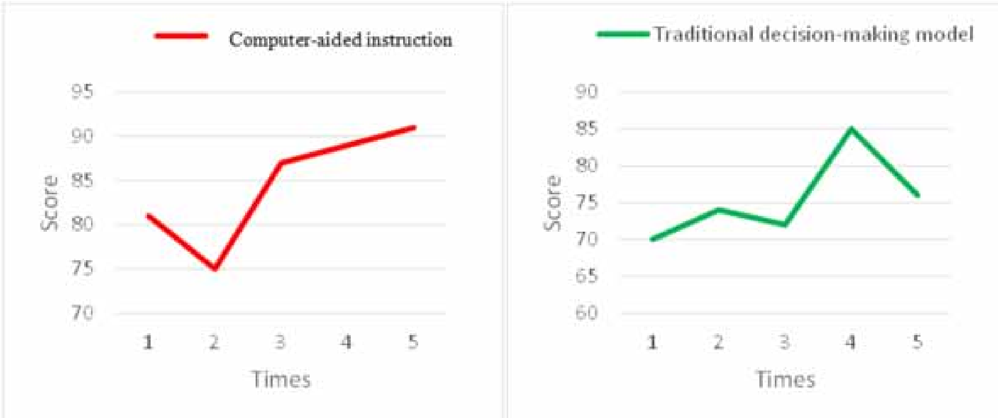
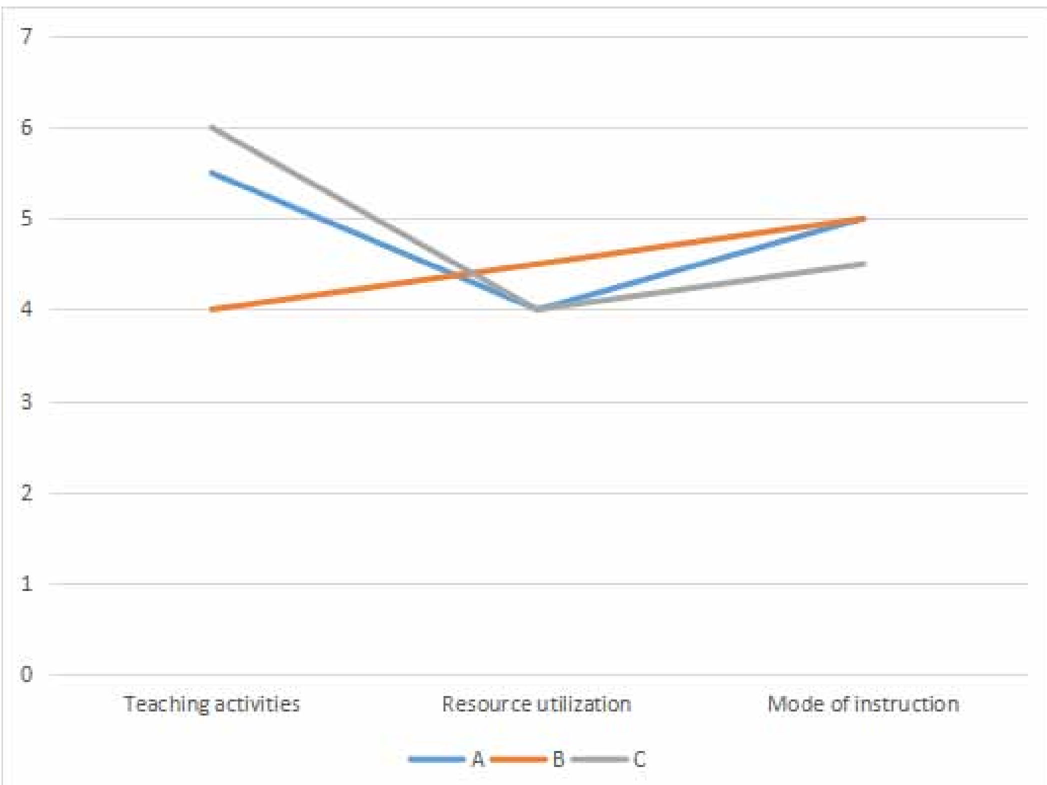


Figure 10. Student evaluations of course instructors under computer-assisted instruction



sharing teaching platform built using this model have improved the flexibility, convenience, and sustainability of vocational school education as a whole, greatly improving the quality of teacher teaching management, and improving student performance. These improvements have not only met the improvement of school enrollment rate and graduation rate but also met the expectations of students' parents. Therefore, it is necessary to extend this model to primary and secondary schools and universities across the country. However, in the comparative analysis of test scores for a certain course, the students selected to participate in the experiment are not enough, and the results analyzed are not representative. In future research, the problems in this paper should be improved.

But the quality and effectiveness of knowledge-sharing decision models are highly dependent on the quality and reliability of the input data. If the data source is inaccurate, incomplete, or contains bias, the model's decision results may be inaccurate or even lead to misleading conclusions.

To improve the quality and efficiency of real-life education, we recommend that the application of knowledge-sharing, decision-making models based on computer-assisted systems in student education management platforms be promoted in educational institutions. This includes enhancing the integration and sharing of educational resources, providing personalized learning support for students, using intelligent assessment and feedback to improve the learning process, and providing decision-making support for teachers and educational administrators, while focusing on continuous professional development. Through these initiatives, student needs can be better met, teaching effectiveness can be improved, and realistic education can be promoted in the direction of intelligence and personalization.

DATA AVAILABILITY

The figures and tables used to support the findings of this study are included in the article.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

FUNDING STATEMENT

This work was supported by Zhejiang province higher education "The 14th five-year plan" teaching reform research project: "AI+Interdisciplinary+Personalization" Research on the training mode of applied innovative talents in digital media specialty, No: jg20220620.

ACKNOWLEDGMENT

The authors would like to show sincere thanks to the developers of techniques that have contributed to this research.

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