

## Retraction

# Retracted: Research on the Path and Effect Evaluation of Students' Quality Improvement in Private Colleges

### Complexity

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

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] Y. Qiu, X. Zhu, Z. Li, and J. Lu, "Research on the Path and Effect Evaluation of Students' Quality Improvement in Private Colleges," *Complexity*, vol. 2021, Article ID 2377037, 13 pages, 2021.

## Research Article

# Research on the Path and Effect Evaluation of Students' Quality Improvement in Private Colleges

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Entering the 21st century, the development momentum of holistic education in China's higher education can be described as rapid progress. General Secretary Xi Jinping emphasized at the National Education Conference that efforts should be made to enhance comprehensive quality and educate and guide students to cultivate comprehensive ability and cultivate innovative thinking. The Outline of the 13th Five-Year Plan clearly states that the training system of academic and applied talents classification, holistic education, and professional education combination shall be implemented. Holistic education is becoming more and more prominent in the cultivation of high-quality interdisciplinary talents in colleges and universities, and its importance in educational reform has been recognized. However, there are still some problems in holistic education, such as unbalanced development among core modules, separation of theory and practice in the actual teaching process, single classroom mode and low interest of students, and lack of relevant teacher resources. This paper introduces the experience of holistic education curriculum exploration in Sanquan College of Xinxiang Medical University. In the construction of the core modules of the curriculum, the content of the modules is clear, and the cross-module is emphasized; in the curriculum design, a multidimensional combination of theory and practice is required; the construction of the teaching staff is based on the long-term perspective, and the classroom assessment is scientific and objective. The research aims to provide a certain reference for the construction of holistic education courses.

## 1. Introduction

The term general education was originated in ancient Greece's free education. As early as the 1930s, Mei Yiqi, a Chinese scholar, proposed that general knowledge is the foundation and specialized knowledge is the end. However, since the liberation of China, higher education in China has mainly cultivated professional talents with major in engineering and technology, and the cultural quality education has been neglected unprecedentedly. General education was gradually forgotten. Later, the disadvantages of overtraining professional and practical talents gradually attracted the attention of scholars. In the 1980s, scholars began to think about the issues related to general education and quality-oriented education and began to discuss the best way to set up university courses. General education in modern universities originated in the United States [1], and the

important task of core courses of Harvard education is to transmit common values to students from different backgrounds [2]. With the continuous development and evolution of new ideas of general education, universities represented by American universities are constantly influencing the development of general education in universities around the world. Although Chinese scholars have given different explanations for the connotation of general education from different perspectives, the core of general education remains unchanged, that is, they believe that general education is proposed relative to professional education. Now, holistic education is the direction of general education reform; it is an education that focuses on the overall development of people's body and mind, intelligence, morality, personality, aesthetics, sense of responsibility, spiritual value, etc. [3–5]. Its essence and spiritual connotation should also be advocated by liberal arts education, starting from the

body of human life, exploring the soul, and liberating the spirit [6], and most college students can realize the importance of holistic education [7–9].

General Secretary Xi Jinping stressed that we should deepen education reform, promote quality-oriented education, innovate educational methods, improve the quality of personnel training, and strive to form an educational environment conducive to the growth of innovative talents. Private colleges and universities are an important part of China's education system. The development of private colleges and universities bears the important task of higher education. Among them, private medical colleges and universities are the foundation of cultivating medical talents for society. The characteristics of the medical profession determine that it contains two attributes: social science and natural science that makes medical college education consider the intersection of humanities and science, which should not only attach importance to the doctor's professional responsibility but also should pay attention to the patients' medical humanistic feelings of sympathy and understanding. In addition, medical students have a heavy academic task, besides a large amount of theoretical knowledge to learn, and in terms of skill cultivation, they also need to have enough clinical training experience [10, 11]. Therefore, it is necessary and necessary to carry out holistic education in medical colleges. The significance of holistic education for medical education lies in bringing humanity back to medicine. In addition, students can also gain a broader and cutting-edge vision through holistic education, enabling them to use a variety of methods to explore and solve the problems related to human survival and development and medical development. Holistic education in colleges and universities in China has been carried out for many years, but medical holistic education courses are still in the exploratory and experimental stage [12]. Therefore, it is an inevitable trend to explore holistic education reform and improve the level of holistic education courses in colleges and universities. Taking Sanquan College of Xinxiang Medical University as an example, this study analyzes both the impact that holistic education curriculum construction in private colleges throws to the improvement of students' comprehensive quality and the effects of different methods of evaluation, thus providing new references and insights for the further construction of students' quality in private colleges.

## 2. The Core Factors Affecting Students' Quality

"Quality" is a classic concept of physiology and psychology and also a concept widely used in school educational activities. The general explanation refers to the innate essence and acquired qualities. In the 21st century, social development has reached a new stage—the era of the knowledge economy, where talents are the basis and guarantee of competitive edge. To win in fierce competitions, we must obtain high-quality talents, which depend on the quality of talents. The core factors affecting the quality of students usually include the following points.

*2.1. Environmental Factors.* The environment includes the environment of teaching, campus, and society. When learning knowledge and skills, the speed and depth of mastery are varied. Each student has his own unique capability, experience base, and learning style, so it is difficult to synchronize the two students in improving their quality. Therefore, it is necessary to pay attention to the different personalities and characteristics of each student. Only when we create a more relaxed and open teaching environment to ensure that different students can learn according to their own speed and depth of understanding can it be possible to cultivate and strengthen the quality of college students effectively and give full play to the wisdom and potential of students. The campus environment and the social environment have a subtle effect on students. Their life pursuits, value orientation, and ideological character will be affected. Strengthening the construction of campus natural and cultural environment and creating a good social environment can become an important way to cultivate a good quality of college students.

*2.2. Teacher Factors.* In the process of improving the quality of students, the teacher's quality, exemplary role, and professionalism are not to be underestimated. The level of teacher's quality has a profound and unforgettable impact on students. Teachers should not only teach students' basic skills and theories but also practice what he preaches. A teacher who lacks high quality can never realize the importance of quality, much less likely to actively and consciously cultivate students' selfless spirit. As the saying goes, "the best way to learn is to learn from the best." In the process of teaching activities, teachers' influence on students is multifaceted, including political views, life values, moral values, ideals and ambitions, character, attitude toward life and lifestyle, thinking dispositions, thinking methods, etc., that is, an example is better than percept.

*2.3. Student Factors.* Teaching activities are student-oriented, and students' intellectual factors and the exercise of operational abilities need to be grasped by themselves. In the process of improving moral qualities and physical and psychological qualities, self-cultivation will play an important role. From a philosophical perspective, internal factors are the basis, while external factors are the conditions for the development of things. External factors work through internal factors. To cultivate and improve the quality of students, it is necessary to insist on the combination of internal and external factors, create all favorable conditions, give full play to the subjective initiative of students, and inject fresh blood for social development.

## 3. Statement of the Problem

*3.1. Unbalanced Development of Core Modules of Holistic Education.* The core curriculum of holistic education in colleges and universities is to organically integrate the connotation of holistic education with the professional knowledge that needs to be imparted [13], so that students

can learn other contents while learning knowledge, thereby improving students' cognitive ability, shaping students' healthy personality, enabling them to master the abilities of reading, thinking, reflection, innovation, and expression, and cultivating outstanding talents who understand China, understand the world, understand themselves, and understand society [14]. Balanced module development is not only conducive to the cultivation of students' moral quality and physical and psychological quality but also enhancing the effect of education, improving educational quality, and completing the mission that quality education entrusted with. Institutes of higher learning have set up relevant courses for the core modules, and colleges are equipped with relevant teaching staff. However, in actual teaching, due to the different positioning and course goals of each module, the teacher strength is not balanced, and the average level of the modules is different, which has an adverse effect on the courses of different modules [15]. For example, for medical school students, the physical and mental health and teamwork module has higher practical application value than the innovation, entrepreneurship, and career planning module because the content taught is related to the major of the teacher. The former is better than the latter in terms of the content of the teacher's teaching and the state of the student's classroom. This unbalanced development between modules is contrary to the core modules of holistic education construction [16].

*3.2. The Separation of Holistic Education and Professional Education.* From the perspective of the purpose of education, holistic education pays attention to the whole of people and respects personal values, including human rationality and sensibility, soul, and morality. The goal of holistic education is to provide the educated people with the current knowledge and values throughout all the groups of people in modern society. Strengthening holistic education is an urgent demand to cope with the conflicts between multiple cultures and a practical demand to deepen the reform of education and teaching. It pursues freedom of development, and its essence is to obtain outstanding intellectual and spiritual all-around development. The purpose of professional education is to enable students to acquire and master the knowledge of a certain profession, and its core is specialization [17]. In actual teaching, there are still contradictions between the educational goals of holistic education and professional education. The limited holistic education courses often become the embellishment of professional education, and the combination of the two still needs to be explored.

*3.3. The Separation between Holistic Education Theory and Practice and the Singleness of Classroom Model.* Practice is the only criterion for testing truth, which means that only in the testing of educational practice can the role of educational theory in the development of educational activities be determined [18]. However, the holistic education courses in private colleges in our country are still based on theoretical indoctrination, and the main teaching method is the lecture

method [19]. The teaching content focuses more on discussing theories and on letting students master certain teaching content, which leads to a relatively single theory of students and does not really grasp the essence of humanistic spirit, which limits students' personality and imagination to a certain extent. In the actual teaching process, interactive discussion and heuristic teaching have not been effectively applied. Students lack practical operation and training, as well as social practice, and most of the assessment methods are closed-book examinations. Moreover, most holistic education courses are offered in the lower grades, and there is a lack of courses in the upper grades.

*3.4. Lack of Faculty Resources for Holistic Education.* For holistic education, teacher resources are becoming a limiting factor for the development of holistic education. The balanced development of the teaching staff is a foundational prerequisite for the balanced development of education. In particular, high-quality and high-level teachers are the cornerstone for the development and improvement of all types of education in our country. At present, college teachers generally lack the enthusiasm to carry out holistic education courses, and their willingness to participate in holistic education is relatively low [20]. Firstly, teachers often think that engaging in holistic education work outside of their professional fields will not only take up the time that teachers could spend in researching professional topics and publishing professional papers but also have little significance for their promotion. Secondly, teachers' ability to carry out holistic education is still relatively lacking. Holistic education emphasizes the ability and methods for students to master multidisciplinary and multiperspective analysis and problem-solving. This requires teachers to adopt diversified and novel teaching methods in the teaching process and change the traditional teaching model. However, in the actual teaching process, the lecture method still occupies an absolute advantage. Finally, full-time teachers currently constitute the main force to promote the development of holistic education, but the exploration of the role of part-time teachers is still in its infancy. How to improve the teaching level of part-time teachers, further improve students' learning initiative and unsatisfactory teaching quality [21, 22], and improve the efficiency and quality of holistic education and teaching management for teachers is the problem that needs to be solved to promote the development of holistic education and teaching.

*3.5. Lack of Education and Teaching Quality Evaluation System.* The teaching quality of colleges and universities affects the level of talent training to a large extent. Under the background of vigorously developing higher education, how to construct a perfect assurance and evaluation system that can be applied in teaching quality of higher education is one of the important tasks of colleges and universities. A sound teaching quality assurance and evaluation system can promote the sustainable and health development of higher education. At present, most colleges and universities still adopt the evaluation methods and indicators of professional

courses for the evaluation system of holistic education, and there is no evaluation standard for holistic education. Some colleges have specific evaluation standards for holistic education, but there are still some problems such as being subjective, general evaluation standards, and lack of theoretical support. Therefore, a scientific and reasonable holistic education quality evaluation index and the system can clarify the purpose of holistic education and strengthen the quality of holistic education.

## 4. Materials and Methods

**4.1. Questionnaire Design.** This study population included a random sample of 2016-2017 and 2019-2020 two school year students. The response rates of the two questionnaires (feedback of holistic education courses and feedback of course evaluation) in each school year are shown hereinafter. The study process was completely anonymous, and no personal identifiers were used in the study.

**4.2. Item-Based Collaborative Filtering Recommendation Algorithm.** Calculating the interest of a certain object  $a$ , the Pearson correlation coefficient is generally used to calculate the closeness of the relationship between two fixed distance variables, and its value is between  $[-1, +1]$ .

$$p(x, y) = \frac{\sum x_i y_i - n\bar{x}\bar{y}}{(n-1)s_x s_y} = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n \sum x_i^2 - (\sum x_i)^2} \sqrt{n \sum y_i^2 - (\sum y_i)^2}} \quad (1)$$

## 5. Results and Discussion

**5.1. The Main Measures of Curriculum Reform: The Construction of the Seven Core Modules of Holistic Education in the Sanquan College of Xinxiang Medical University.** The goal of holistic education in the school lies in five dimensions: belief, attitude, thinking, humanities, and ability, in order to comprehensively improve students' ability to adapt to social needs and self-improvement. The construction goal of holistic education is to name the courses according to the method of courses, offer compulsory courses and elective courses, and combine the different curriculum forms of holistic education: theory courses, practical courses, and theory and practical courses to make all courses' content fall into the category of seven major modules. For the construction of the holistic education curriculum system of Sanquan College, we compare the effects of holistic education courses with the educational goals to judge the results of the holistic education curriculum development and give feedback on the holistic education curriculum construction and optimize the education goals. In the course of school curriculum construction, the holistic education curriculum

Among them,  $s_x$  and  $s_y$  are the sample standard deviations of  $x$  and  $y$ .

**4.3. K-Means Clustering Algorithm.** Calculation formula: the Euclidean distance in space is

$$d(X_j, X_k) = \sqrt{\sum (X_j^w - X_k^w)^2}, \quad (2)$$

among them,  $j = 1, 2, \dots, n$ ;  $k = 1, 2, \dots, n$ ;  $w = 1, 2, \dots, n$ . The sum of squares of clustering error is

$$E = \sum_{j=1}^i \sum_{k=1}^m |X_{jk} - V_j|^2. \quad (3)$$

Among them,  $X_{jk}$  is the  $k$ th object of the  $j$ th cluster, and  $V_j$  is the center of the  $j$ th cluster.

**4.4. Gray Relational Degree Algorithm.** The gray relational degree algorithm is a kind of gray system analysis method, which is based on the degree of similarity or difference between the development trends of various factors, that is, the gray relational degree, as a method to measure the degree of relevance between factors. The calculation formula is as follows:

$$\zeta_{ik} = \frac{\min_i \min_k |X_{0k} - X_{ik}| + \rho \max_i \max_k |X_{0k} - X_{ik}|}{|X_{0k} - X_{ik}| + \rho \max_i \max_k |X_{0k} - X_{ik}|} \quad (i = 1, 2, \dots, m; k = 1, 2, \dots, n). \quad (4)$$

system is located in the entire cycle of planning, implementation, evaluation, and implementation to ensure the vitality and flexibility of the curriculum system, thereby achieving the holistic education goals of Sanquan College (see Figure 1).

Sanquan College builds a core curriculum system for holistic education from the following seven modules, each of which includes core holistic education courses and holistic education courses.

- (1) *Patriotism and Value Ideals.* The aim is to enhance students' understanding of the core values of socialism, help students establish a sense of integrity, legal system, and morality, adhere to the spirit of fairness and justice, closely integrate with national unity and national defense awareness, increase the sense of responsibility for individuals, the country, and society, and cultivate a spirit of cooperation and competition [23]
- (2) *World Cultural and Historical Heritage.* It aims to allow students to absorb excellent Chinese and foreign traditional culture and history, understand

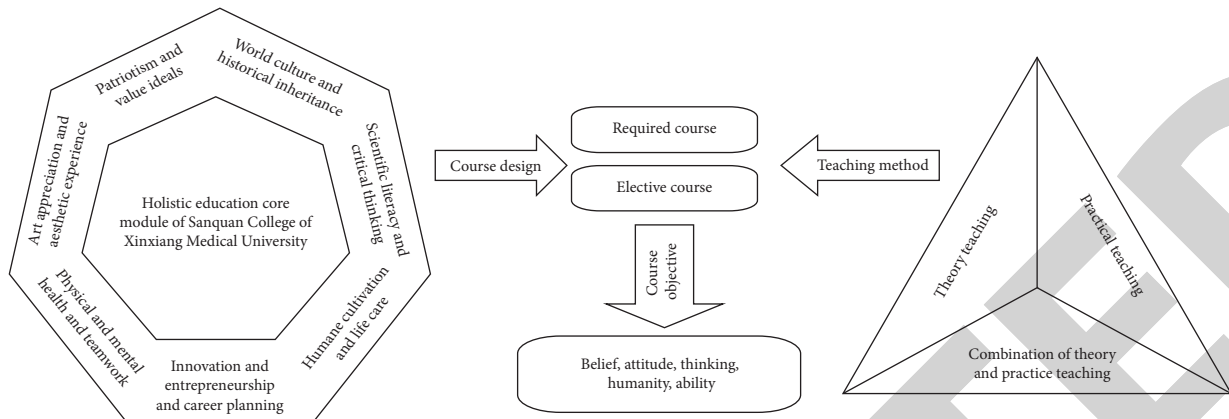


FIGURE 1: Holistic education curriculum construction system of Sanquan College of Xinxiang Medical University.

the development and evolution of Chinese and Western culture, absorb the wisdom and critical ability of predecessors, and establish a scientific and objective view of history and culture

- (3) *Scientific Literacy and Critical Thinking*. It aims to enable students to master the basic knowledge of natural sciences, establish a sound knowledge structure and scientific and cultural literacy, and help them improve their thinking and problem-solving abilities in real and professional lives
- (4) *Humane Cultivation and Life Care*. It aims to create a good environment for humanistic education and cultivate the humanistic spirit of college students. Holistic education should integrate life education into the curriculum, teach students humanistic care and bioethics, permeate the awareness of self-protection and protection of others, understand the responsibility and value of life, and establish correct and positive life values for college students [7]
- (5) *Art Appreciation and Aesthetic Experience*. It aims to cultivate students' artistic aesthetic ability and understanding of cultural expressions, guide students elevate their ability to feel, understand, and create beautiful things from simple and expressive impressions or sensory enjoyment to the appreciation of rich and profound beautiful artistic conceptions, and finally sublimate to the noble state of spiritual beauty
- (6) *Physical and Mental Health and Teamwork*. It aims to enhance students' physical fitness, improve their psychological quality, cultivate students' healthy life emotions, develop nonintellectual factors so that students can maintain their best physical, psychological, and social conditions, and adapt to society in terms of cognition, emotion, and behavior, face life effectively, and establish a sense of win-win change from an individual learner to a team player
- (7) *Innovation and Entrepreneurship and Career Planning*. The aim is to enhance students' innovation awareness and ability, through systematic and professional innovation and entrepreneurship education

and innovation and entrepreneurship practice, to train students' innovative thinking, to gradually master the knowledge of innovation and entrepreneurship, and to guide students to form an innovative and entrepreneurial spirit that dares to pioneer. Through the employment education model of theory and practice, students have the ability to design and apply career planning

5.2. *Refining the Curriculum Design of Core Modules and Strengthening the Cross Integration of Different Modules*. Based on the five objective dimensions and seven core modules, the design of the curriculum should consider the teaching of basic knowledge and the level of understanding of the students. Because holistic education is influenced by different philosophical theories such as externalism, essentialism, and progressivism, holistic education has basically formed four curriculum models: compulsory, core curriculum, masterpiece curriculum, and free elective [24]. Holistic education adopts the idea of coexisting multiple modes in the development of courses and adopts the common compulsory mode among the core courses for holistic education compulsory courses, that is, courses that all students must learn. For holistic education elective courses, a combination of multiple modes is adopted. The elective courses are included in seven modules for students to choose from, and the most basic requirements are made for the knowledge areas of the elective courses and the credits that need to be completed. Among the seven modules of the holistic education course, each module is innovatively divided into 3 to 4 subunits according to the training objectives, the specific content of the course, and study requirements. Each subunit offers 1 to 2 core courses, which integrate different fields, giving students a certain degree of freedom to choose, instead of allowing students to choose freely (see Figure 2). For example, among the seven modules of holistic education, the Chinese Literature and History Classics subunit of the World Culture and History Inheritance module will adopt the classics curriculum, and the teaching will be carried out by reading the classics of literature and history. Each theoretical course of each holistic

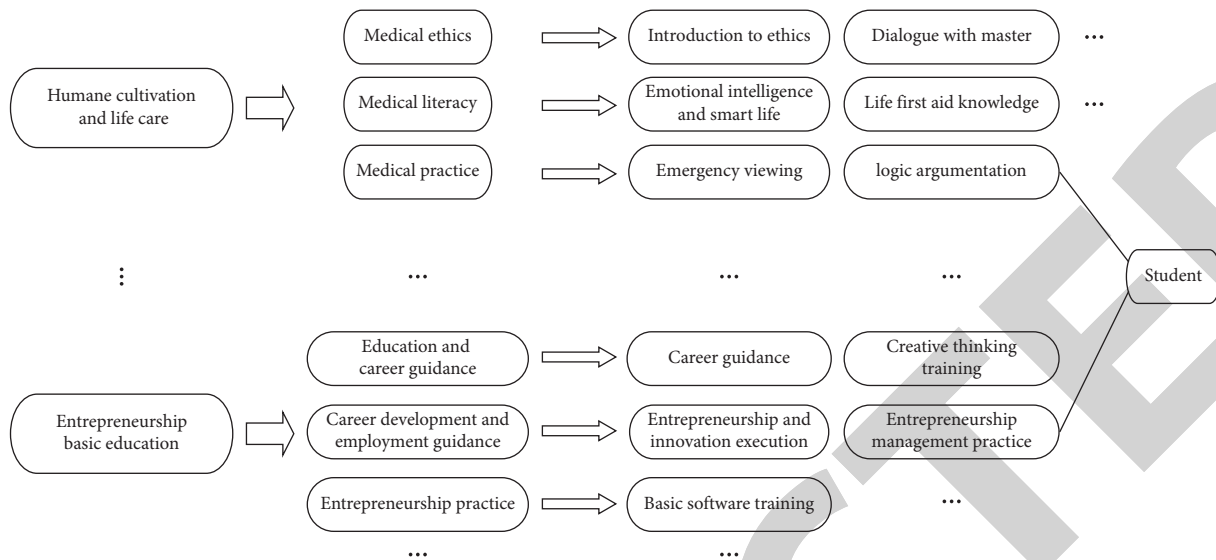


FIGURE 2: Design ideas for holistic education elective courses.

education module is 1 credit. The elective method is that all students in the school take different credits according to different levels. It is necessary to cross the modules as the prerequisite to select courses in the core modules and complete the credit requirements before graduation. The practical courses of each module are based on different levels of students, and the study requirements of each academic year are different. It is required to complete the practical course hours required by the four levels of the college, academy, school student union, and clubs in the academic year according to the credit management method.

**5.3. High-Quality Curriculum Design, Multidimensional Combination of Theory and Practice.** Based on the actual situation of the school, the curriculum development should not blindly pursue the number of courses. It is necessary to emphasize the quality of the courses, provide high-quality holistic education courses, improve the educational effects of holistic education courses, and give full play to the actual role of course credits [25–28]. The school has established a theoretical curriculum for holistic education courses, providing 1-2 high-quality core courses for each of the 7 core modules, and these courses usually contain more clear and comprehensive educational goals and strict management elective system in order to achieve holistic education training plan. In the development of holistic education courses, although classroom theory education is one of the main models, the actual effect is not satisfactory [29]. The students cannot always guarantee efficient listening efficiency in the classroom, and this main problem also restricts the development of holistic education. Regarding this problem, the school innovatively proposed the teaching form of holistic education practice courses, making the courses active, and striving to create a good campus cultural environment, so that students can get out of textbooks and classrooms and participate in rich second classrooms. For example, management and entrepreneurship course

strengthen students' innovative thinking, change the way students think, increase students' thinking width, and break limitations, and this innovative awareness can make students more flexible in their future career development; in addition, the subunits of the classics of Chinese literature and history in the core module World Culture and History Inheritance adopt the masterpiece curriculum type, through reading the classics of literature and history to start teaching, to combine the promotion of excellent traditional culture with the development of real culture and to practice General Secretary Xi Jinping's traditional cultural outlook [30].

In addition, the number and quality of elective courses are constantly enriched and improved. In the 2015-2016 school year, the school has a total of 151 general elective courses, including nationalism and value ideal (15 courses), world culture and historical inheritance (29 courses), scientific literacy and critical thinking (46 courses), and humane cultivation and life care (7 courses), innovation and entrepreneurship and career planning (25 courses), physical and mental health and teamwork (12 courses), art appreciation and aesthetic experience (18 courses), and 20 courses taught by online resources; in the 2016-2017 school year, there are a total of 245 general elective courses, of which 171 are courses taught by network resources. The total number of courses has increased by 62.25%, and the total number of online courses has increased by 88%, which basically meets the needs of students for elective courses (see Figure 3).

**5.4. Adopting Item-Based Collaborative Filtering Recommendation Algorithm to Recommend Holistic Education Materials to Students.** Through the school library, network center, and other departments, it is very easy to collect useful data sources, such as students' Internet browsing data [31] and book borrowing data, etc., and use intelligent recommendation algorithms to select holistic education materials that students are interested in and meet students' wishes to recommend precise and high-efficiency culture.

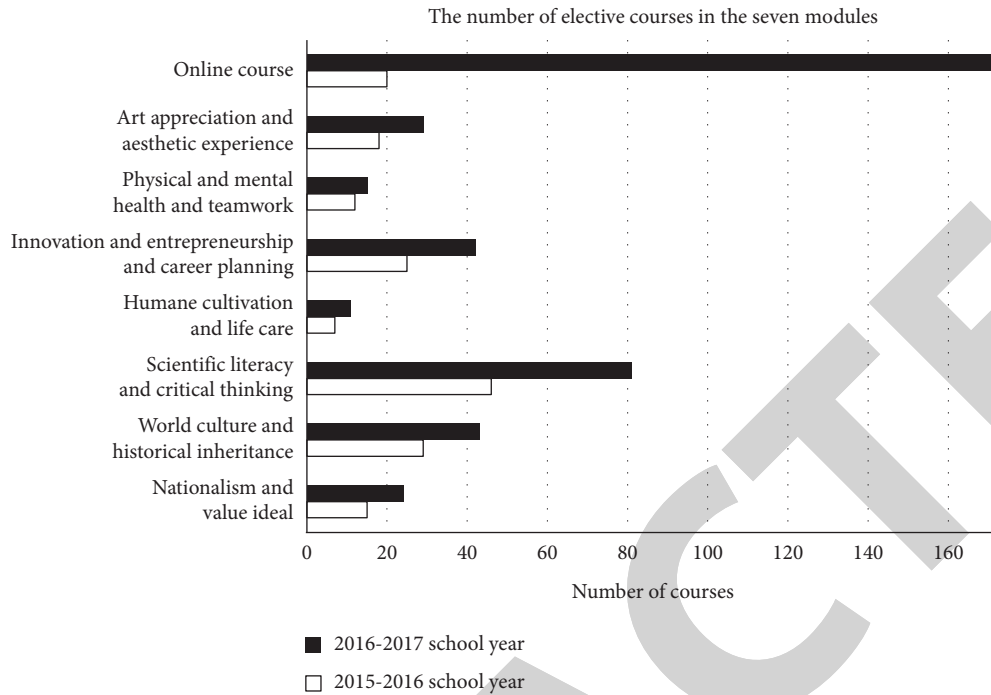


FIGURE 3: Changes in the number of elective courses.

We use an item-based collaborative filtering item algorithm to recommend qualified holistic education materials. The item algorithm is mainly based on the principle of similarity of items, based on the items of interest to the user. It recommends items with higher similarity to the user, which are mainly divided into the following steps:

(1) Calculating similarity

If there are many students who are interested in these two types of data at the same time, then these two types of data are likely to belong to common areas and have a large degree of similarity

With reference to the content of Figure 4, we analyze as follows:

The data that user 1 is interested in are data 1, data 3, and data 4

The data that user 2 is interested in are data 1, data 2, and data 3

The data that user 3 is interested in are data 1 and 3

Based on this, it is inferred that there is a high degree of similarity between data 1 and data 3. If a student is interested in data 1, he will usually be interested in data 3.

(2) Using Pearson’s correlation coefficient to recommend general course learning materials to students:

Pearson’s correlation evaluation is another method of calculating the relationship between users. It is more complicated than the calculation of the Euclidean distance evaluation, but when the scoring data is not standardized, Pearson’s correlation evaluation can give better results. The data we use here is shown in the following table:

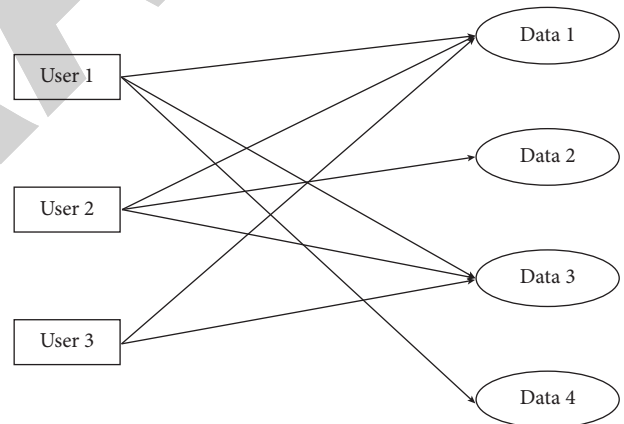


FIGURE 4: Similarity analysis.

student1–student5 represent five students, A–F represents learning materials for six holistic education courses, and the table shows the students’ scores on the learning materials, with a full score of 5 points. Through Pearson’s relevance evaluation, we push to student5 the learning materials of holistic education courses that he may be interested in (see Table 1).

The calculation formula of Pearson’s correlation coefficient has been introduced above, and the result is a coefficient between  $-1$  and  $1$ , which is used to illustrate the strength of the correlation between two students. If we need to recommend general course learning materials to Student5, then we need to calculate the Pearson correlation coefficient between Student5 and Student1–4. The calculation results are shown in Table 2.



TABLE 1: Holistic education study materials student scoring form.

	Data A	Data B	Data C	Data D	Data E	Data F
Student1	3	4	3	5	1	4
Student2	2	4	4	5	3	2
Student3	3	5	4	5	2	1
Student4	2	2	3	4	3	2
Student5	4	4	4	5	1	0

TABLE 2: Pearson's correlation coefficient statistics table.

Correlation coefficient	Student1	Student2	Student3	Student4
Student5	0.439	0.661	0.918	0.367

Through calculation, we found that the Pearson correlation coefficient between Student5 and Student3 is the highest. Then, when recommending general course learning materials to student5, we can refer to the learning materials that Student3 is interested in, so that you can get a more appropriate recommendation effect.

In the real teaching process, through the above algorithm, we found that textbooks like "Career Guidance and Career Planning," "Speech and Eloquence," and "A Brief History of World Civilization" are the most popular among students. By recommending the above textbooks and equipping corresponding courses, we have made a fruitful effect on students' acceptance of holistic education courses.

*5.5. Adopting K-Means Clustering Algorithm to Accurately Improve Students' Mastery of Holistic Education.* Schools usually use average test scores to evaluate students' mastery of general courses, but because the difficulty of each test is different, only the score cannot accurately reflect the mastery of each student. The K-means clustering algorithm eliminates the shortcomings of the traditional method. It uses the students' general course scores as the data source. Using this algorithm, students with similar learning levels can be reasonably grouped into one category, which is convenient for teachers to give more accurate guidance.

First, the distance between each data was obtained by using the formula, and then  $n$  objects were selected from the distance matrix to be included in the set I of the initial cluster center; then, the first clustering is performed from the set I, the smallest sum of the distances within the cluster is selected, the sample is used as the temporary center of the cluster, then each sample is divided into corresponding clusters according to the minimum distance, the above process is repeated until the function of the square of the clustering error and  $E$  converges, and finally, the clustering is completed. In the teaching process, through the K-means clustering algorithm, we found that students in courses such as "Applied English" generally had limited mastery of what they had learned. After targeted enhancements, the average score of this subject has increased by 9.32.

*5.6. Perfect Construction of the Teaching Staff and Scientific and Objective Classroom Assessment.* Teachers are one of the

components of the construction of holistic education courses. The quality of teachers themselves determines the quality of holistic education courses [32, 33]. Therefore, system support is needed at the level of teacher protection [34]. The construction of the teaching staff is the core of the discipline construction. The school strives to build a high-quality holistic education teacher team, absorbs holistic education talents from academies, departments, and administrative staff, and establishes a three-pronged, professional-cum-combination team. In this system, part-time teachers play an important role to make up for the lack of energy of college counselors and ensure the intensity and quality of teaching. At present, Sanquan College has 92 full-time teachers affiliated with the holistic education Teaching and Research Section, including 75 teachers with a master's degree and 30 with the title of lecturer. A vigorous faculty with a high level of education, a reasonable professional structure, has begun to take shape. In addition to the holistic education curriculum, the school also attaches importance to the development of potential teachers, regularly launches holistic education lectures throughout the school, continues to recruit social talents with related education experience, and promotes the sustainable development of the teaching team.

Based on the teaching goals, the assessment mechanism formulates scientific standards and uses correct evaluation methods to evaluate and analyze the teacher-student behavior, teacher-student interaction, and teaching resources in the entire teaching activity [35]. The school's holistic education curriculum strictly implements the school's teaching management systems and formulates related supporting rules for the holistic education curriculum. In addition to focusing on the effects and gains of the student experience, holistic education assessment should also focus on the science and standardization of the assessment, the validity and distinction, and the sense of integrity. In terms of the examination format, diversified evaluation methods are adopted, and the process evaluation is incorporated into the examination system [36]. Group discussions, reading reports, course essays, practical experience, and other methods are adopted to comprehensively evaluate students' general course performance. The course teaching team should provide students with a catalog of reference materials and put forward the necessary extracurricular reading and practice requirements for students. It is also necessary to test the quality and quantity of students' learning through discussion and writing reports, essays, etc. It is advisable not to have less than two major assignments for each course [37].

An analysis of the overall results of the school's holistic education courses in the 2017-2018 school year and the 2019-2020 school year found that with the continuous development of holistic education in the school, the proportion of students who were assessed as excellent at the end of the course accounted for 16% of the 2017-2018 school year. It has increased to 25% in the 2019-2020 school year, the proportion of good students has increased from 31% in the 2017-2018 school year to 40% in the 2019-2020 school year, and the proportion of unqualified students has dropped from 11% to 5%. This result indicates that the results of the

school's holistic education curriculum development have been significantly improved (see Figure 5).

For the school year 2017-2018 (200 copies, effective recovery rate of 87%, boys accounted for 27.2%, girls accounted for 72.8%) and the school year 2019-2020 (200 copies, effective recovery rate of 91%, boys accounted for 28.5%, girls accounted for 71.5%), result analysis of after-school questionnaire survey found that, in the 2017-2018 school year, 146 students were willing to learn and give evaluations of holistic education courses, and by the 2019-2020 school year, the number increased to 171 people (see Table 3). It can be seen that the satisfaction of the students with holistic education courses is continuously increasing. In the 2017-2018 school year, there were 163 people who were very satisfied and relatively satisfied with the evaluation of teachers' teaching methods and styles. By the 2019-2020 school year, the number of evaluations increased to 178. In addition, for the evaluation of teachers' ideological and moral realm and professional theoretical foundation, the satisfaction of the 2019-2020 school year is higher than that of the 2017-2018 school year.

**5.7. Education and Teaching Quality Evaluation System Construction.** The evaluation of teaching quality of holistic education should be based on the goals of holistic education, make value judgments on the teaching process and results, and provide references for future teaching design. The main body of evaluation should be teachers and students, and the evaluation should be multidimensional, including holistic education teaching objectives, teaching content, teaching methods, and teaching effects. The inspection elements should be designed around the characteristics of holistic education and holistic education goals [38]. In view of the basic characteristics and educational goals of holistic education, the design of the evaluation index system of holistic education teaching quality in schools is as follows.

Curriculum evaluation objectives should consider the extent to which the actual curriculum, classroom content, classroom teaching methods, and methods of holistic education support the core sections of holistic education; the objects of curriculum evaluation should include teachers (whether the teaching objectives are completed) and students (whether they achieve holistic education purpose) [39]; evaluation methods should include classroom examinations, practical examinations, questionnaire surveys, self-evaluation and employer evaluations, and other multidimensional evaluation methods (see Figure 6).

From the constructed holistic education teaching quality evaluation system, we further improve the student-centered evaluation system. This system evaluates the comprehensive ability of students from multiple dimensions, including the contribution of the course to the improvement of students' interest, the contribution of the course to the improvement of students' professional psychological quality, the contribution of the course to the shaping and reform of student value, the contribution of the course to the formation of student quality, and the contribution of the curriculum to the improvement of

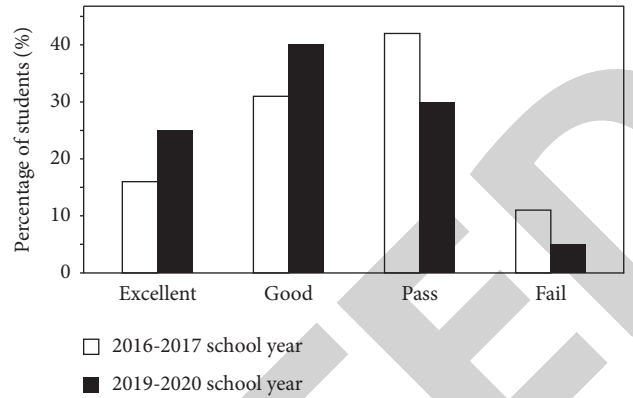


FIGURE 5: Final course grade statistics.

students' professional practice ability. Judged from the evaluation results of the school's curriculum evaluation system for the 2016-2017 school year and the 2019-2020 school year, after the school launched the holistic education curriculum, the students' ability to withstand career choices, employment psychology, and unemployment psychology has improved from 75.43%, 79.44%, and 60.13% in the 2017 school year to 81.33%, 85.20%, and 74.50% in the 2019-2020 school year. The curriculum has also significantly improved the values and overall quality of students, all of which have been improved to varying degrees (see Figure 7).

**5.8. Construction of Holistic Education Curriculum Evaluation System Based on Gray Relational Degree Algorithm.** Curriculum evaluation is an important part of the holistic education system. With the development of teaching activities, a complete and scientific curriculum evaluation system can make full use of feedback information to discover problems, continuously optimize the content of teaching courses, and improve teaching quality and pave the way for the growth of students [40].

Assuming that there are three holistic education courses A, B, and C, the average scores of students are shown in Table 4.

First, we used the averaging method to non-dimensionalize the data, that is, make the ratio of the value of each column to the average value of this column, used formula  $\bar{X} = NX_{ij} / \sum_{j=1}^N X_{ij}$ , and get the results shown in Table 5.

Then, we used the gray correlation formula

$$\zeta_{ik} = \frac{\min_i \min_k |X_{0k} - X_{ik}| + \rho \max_i \max_k |X_{0k} - X_{ik}|}{|X_{0k} - X_{ik}| + \rho \max_i \max_k |X_{0k} - X_{ik}|}, \quad (5)$$

to find the correlation coefficient,  $\rho = 0.5$ , and the results are shown in Table 6.

Finally, we found the average of each column using formula  $\gamma = (1/N) \sum_{j=1}^N K_{ij}$ , which is the degree of relevance, and the results are shown in Table 7.

Through comparison, we found that the order of relevance is evaluation element 3 > evaluation element 2 > evaluation element 1. Therefore, the total evaluation

TABLE 3: Questionnaire feedback from students of holistic education courses.

Number	Investigation items	2016-2017 school year				2019-2020 school year			
		A (%)	B (%)	C (%)	D (%)	A (%)	B (%)	C (%)	D (%)
1	Overall evaluation of holistic education courses: A: be willing to learn and be rewarding; B: quite satisfied; C: not interested; D: poor course quality	84	10	4	2	94	3	2	1
2	Does the curriculum achieve the goal: A: achieves the goal better; B: achieves the goal poorly; C: fails to achieve the goal; D: academic burden	70	4	20	6	84	1	10	5
3	Course attendance rate: A: never absent from work; B: determined by the teacher's roll call; C: do not go when there are special circumstances; D: never go	83	12	4	1	92	7	1	0
4	Whether to support the opening of holistic education courses in our school: A: support; B: oppose; C: does not matter	73	15	12	0	89	4	7	0
5	Evaluation of teachers' teaching style: A: very satisfied; B: relatively satisfied; C: dissatisfied; D: hope to strengthen	79	15	4	2	86	12	1	1
6	Evaluation of teachers' ideological and moral realm: A: very satisfied; B: relatively satisfied; C: dissatisfied; D: hope to strengthen	74	17	3	6	82	12	1	5
7	Evaluation of teachers' professional theoretical skills: A: very satisfied; B: relatively satisfied; C: not satisfied; D: hope to strengthen	82	16	0	2	86	14	0	0
8	Overall evaluation of teachers of holistic education courses: A: excellent; B: good; C: qualified; D: unqualified	81	17	2	0	88	11	1	0
9	Have you gained something from holistic education courses: A: gained more; B: gained; C: general; D: no gain	77	19	3	1	83	15	2	0
10	Overall evaluation of online courses: A: excellent; B: good; C: qualified; D: unqualified	69	23	5	3	77	18	5	0

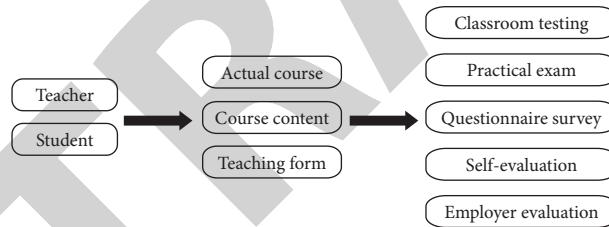


FIGURE 6: Holistic education teaching quality evaluation system.

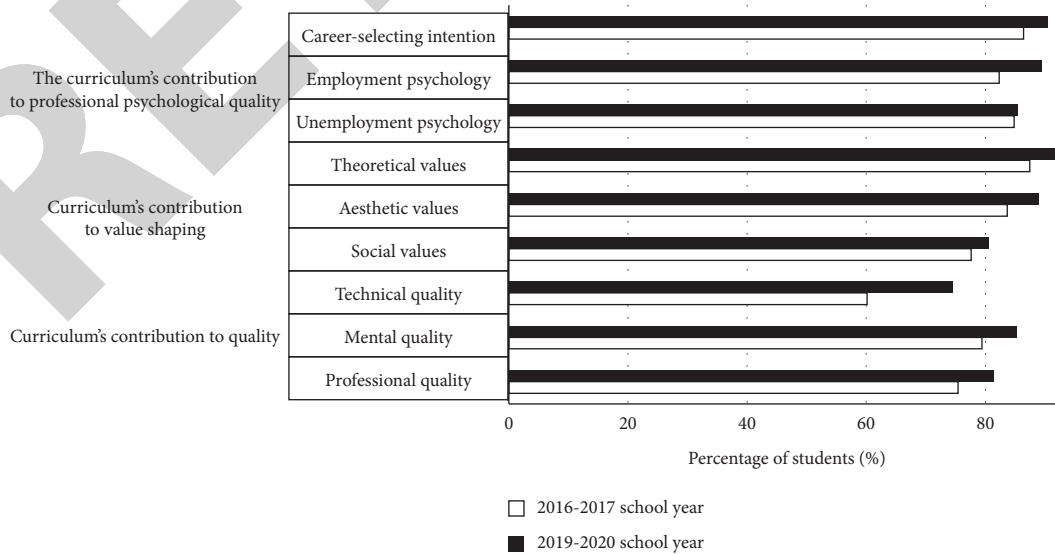


FIGURE 7: Statistics of satisfaction and good above multidimensional curriculum evaluation system.

TABLE 4: Scoring table from students of holistic education courses.

Course	Total evaluation scores	Evaluation element 1	Evaluation element 2	Evaluation element 3
Course A	198.8	38.6	83.9	76.3
Course B	206.1	40.8	84.6	80.8
Course C	233.5	42.2	96.1	95.3

TABLE 5: Scoring table after processing.

Course	Total evaluation scores	Evaluation element 1	Evaluation element 2	Evaluation element 3
Course A	0.7320	0.8361	0.6828	0.7439
Course B	0.7588	0.8838	0.6885	0.7878
Course C	0.8597	0.9141	0.7812	0.9292

TABLE 6: Correlation coefficient statistics table.

Course	Evaluation element 1	Evaluation element 2	Evaluation element 3
Course A	0.4751	0.6591	0.8933
Course B	0.4299	0.5739	0.7681
Course C	0.6358	0.5485	0.7681

TABLE 7: Relevance statistics table.

Course	Evaluation element 1	Evaluation element 2	Evaluation element 3
Course A	0.4751	0.6591	0.8933
Course B	0.4299	0.5739	0.7681
Course C	0.6358	0.5485	0.7681
Correlation	0.5088	0.6248	0.7577

scores of holistic education courses are most affected by evaluation element 3. We should focus on improving evaluation element 3.

In the real teaching process, through the gray correlation algorithm, we found that when students evaluate a certain course, "whether there are practical examples" is the most influential factor. Our school has focused on strengthening this and incorporating more practical examples in the related courses of general education, and we have achieved considerable results.

## 6. Conclusion

The school conducts research on the construction of the holistic education curriculum system based on theory and practice, which has important reference and promotion significance for the training of talents in private colleges. In the process of exploring the construction of holistic education in the school, we fully realized the following. First, the construction and development of holistic education must be closely linked to the school's goal of running a school, and it must serve the development of the school. The curriculum module design conforms to the core concept of subject development, integrates the superior and high-quality resources of universities, and strengthens the integration of different curriculum modules in the curriculum design; second, the school should optimize and expand the content

of the curriculum, use advanced scientific and technological tools and techniques in teaching methods, enrich teaching methods and teaching models, and should not be limited to theory. Teaching requires a multidimensional combination of theory and practice; third, reform measures such as the teaching evaluation system need to be further improved, to observe the problems found in the course construction with a dynamic development eye, and then to solve the problems in the teaching process of holistic education courses; fourth, the subjective initiative of students' learning and scientific research should be brought into play, so that students become masters in the learning process. The assessment of students should focus on not only the theoretical level but also the evaluation of learning results from multiple angles and dimensions such as emotion and ability; fifth, in terms of personnel training, a team of teachers with high academic qualifications, high abilities, reasonable structure, and full of vitality should be created. Teachers can follow the trend of higher education development and have an active learning awareness in order to cultivate technical and research talents in related fields. In view of the important position of private colleges and universities in my country's education system, the development of holistic education in private colleges should be based on the needs of national development, conform to the trend of national development, and pay attention to the inheritance and education of mainstream Chinese values. At the time, when the great changes are

taking place in a century, to lay a solid foundation for the realization of the Chinese dream of the great rejuvenation of the Chinese nation, we hope that our school's exploratory experience will provide experience for the construction of holistic education courses in private colleges and promote the holistic education and make more contributions.

### Data Availability

All relevant data are included in the manuscript. The raw data can be obtained from the corresponding author upon request.

### Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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