

Retraction

Retracted: Comprehensive Evaluation System for Realizing the Ability of University Piano Teaching

Mobile Information Systems

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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) Peer-review manipulation

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

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

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

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

References

- [1] W. Ma, "Comprehensive Evaluation System for Realizing the Ability of University Piano Teaching," *Mobile Information Systems*, vol. 2022, Article ID 6895484, 8 pages, 2022.

Research Article

Comprehensive Evaluation System for Realizing the Ability of University Piano Teaching

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Students benefit from teacher's action during education in a variety of subjects. Identifying the need for a better understanding of the influence of various presentation types at different levels of student proficiency is extremely important. Moreover, these skills are also important to any technique of learning piano in a school environment. The significance of music in the school's curriculum, new concepts for teaching music in the school, and new ideas for teaching piano were among them. This study focuses on a teaching environment and piano learning in which beginning and advanced piano students study to produce a particular style of staccato in three types of group instruction scenarios. The musical difficulty is only demonstrated through audio and observation of the teacher's action performance. The comprehensive ability evaluation system for piano teaching can, to a certain extent, evaluate and sort the ability of college piano teaching. Therefore, this paper utilizes the attribute method in combination with instant analysis which provides seven attribute indicators. The approach is reasonable, and evaluating characteristics such as the level of the school's teaching plan set and related psychological weights may well be revised as necessary to address users' requirements. After completely integrating the qualities of the school and comprehensively examining various contributing factors, the students' learning quality in different grades or the same grade of colleges and universities may be determined. A comparison against the existing schemes can effectively represent the school's overall teaching level.

1. Introduction

When teachers demonstrate a convincing talent or method for students to realize, listen to, and learn approximately, they make a presentation. In piano and other instrumental music educational situations, performances are an important part of learning and teaching. In instrumental music contexts, popular demonstrations include clapping rhythmic patterns, humming, singing, and performance musical themes through emphasizing or specifying a key feature or features of the work [1]. It is the kind of movement or development that is required to get the correct sound quality. Teachers' demonstrations of the processes to be implemented in terms of direction, position, amplitude, strength, and the sound or tone quality required from such movement provide students with valuable knowledge. When the music needs to be embodied and physically performed, an understanding of the processes to be implemented in terms of direction, position, amplitude, strength, and the

sound or tone quality required from such movement is important [2]. Learning to play the piano, as well as defining and giving established rules for multilayer casting and piano skills to art teachers, is a part of the piano profession. These learning steps assist the art educators with their professional progress by designing and teaching higher accuracy for multilayer casting and piano skills. It is a comprehensive fitness guide that covers a wide range of topics, including pedagogy, aesthetics, musicology, psychology, and piano education, as well as new training approaches [3]. The piano has become the most popular exterior form of artistic expression in China, and its appropriateness level is also at the top of the nation, due to the powerful growth of our country's music artists. Art of the piano is a subset of piano compositions that have just recently been discovered scientifically. Frequent developments in the area of technology and science, as well as students, presented unique tests to the logical study of the art of piano in the last ten years [4]. Music colleges have long placed more importance on

production technology, despite a lack of scientific and in-depth study, as well as research techniques and in-depth research. An absence of enough study on teaching improvements has resulted in the emergence of piano art, which is mostly based on an ancient traditional teaching approach [5]. The educational spaces are infeasible for teaching techniques, and the evaluation plan is insufficient, obstructing the growth of piano peer art and art teacher training. Deconstructing the previous framework and improving teaching practice performance by addressing challenges in peer art education, increasing the interaction between practice and learning, and analyzing the earlier framework are important things to keep in mind [6].

This research aims to discover how to develop a piano-performing teaching system. According to the data, the use of AI (artificial intelligence) auxiliary technology in the piano performance training system and music automated notation algorithm has reached 56.81 percent and is rapidly expanding. We previously discovered that AI-assisted systems play a key role in piano performance and automatic music notation instruction systems [6]. The deep recurrent neural network approach is used to investigate a country's vocal music instruction classical in universities, colleges, and schools. The results indicate that the fuzzy evaluation technique can give a complete assessment of the innovation model and that the (DRNN) algorithm can evaluate the quality of the modernization model. Both are important for students' vocal music learning abilities [7]. In this study, the various factors that impact the quality of piano knowledge education were carefully investigated, and the enhanced backpropagation neural network technique was applied to evaluate and forecast piano information teaching quality. The backpropagation model structure is given and executed in MATLAB for evaluating and forecasting the quality of piano training information. The data imply that the assessment and prediction approach can overcome the subjective features of expert evaluation and deliver accurate results. It has a broader use than the traditional backpropagation neural method [8]. This paper discusses a strategy for implementing piano teaching software, computer piano teaching challenges, technology teaching into one information, and the communication breakdown. They used a neural network model to analyze piano performances as well as to imitate teachers guiding students through their activities. The presentation of the future system is analyzed using piano kinds of music from "Joy to ode," which varies from the neural network training samples and is played sometimes by a different piano instructor [9].

Currently, many schools do not use the passing amount of the piano grade exam as the root for evaluating the complete quality of education of the school. This is a misunderstanding; the result of this one-sided approach is as follows: (1) ranking schools by easy pass rate from the Ministry of Education makes it easier to compare schools and creates invisible and inappropriate pressure [10]. The conditions vary from school to school as well as the source of the students. (2) From a school perspective, the one-sided pursuit of pass rates in regular courses is to assign and improve pass rate indicators for specific education

departments. An indicator of school pass rate, whether passing College English Test Bands 4 and 6 is related to student abilities and whether to obtain a degree is linked to a diploma. In some places, it is just a pass, not an improvement [11]. This completely violates the laws of English education and easily diminishes the interest of students and teachers. Furthermore, the testing pass rate can only indicate the number of students who have achieved college English proficiency. The purpose of obtaining a certificate, from the perspective of a student, is not to improve the practicality of English, but to ignore one's improvement to obtain a certificate and ignore your language skills and the main objective of learning [12]. This is the equivalent of having a cart in front of a horse. To more accurately represent the education at the school level, they developed a comprehensive piano education ability evaluation system.

The following are some of the research contributions of this paper.

- (i) To propose to a certain extent that the comprehensive ability evaluation system for piano teaching can evaluate and sort the comprehensive ability base on the realization algorithm for school piano teaching.
- (ii) We proposed that the procedure is reasonable and that assessment limitations such as the measure of the school teaching plan usual and related psychological weights may be changed easily to meet user needs.
- (iii) This study demonstrates that as the field has proceeded, numerous theoretical approaches for system analysis and decision-making have emerged, including theoretical background, organizational theory, and professional decision-making theory.
- (iv) Finally, we propose that social and environmental aspects, learning natural environment factors, investment, and intellectual training are all part of a comprehensive piano ability evaluation approach that takes mutual constraints and interconnections into account.

The rest of this paper is arranged in a logical order: Section 2 represents the related work, Section 3 shows the analysis of the evaluation system, Section 4 represents the Application of attribute theory, and Section 5 represents the system process and result in the analysis. Finally, the research work is concluded in Section 6.

2. Related Work

The vocal music teaching site's performance varies based on the user, for vocal music teaching management personnel such as professional educators and academic staff leaders, as well as teaching and research directors. When it comes to controlling learning outcomes and educating the students and instructor to impart, the website may be used to achieve audio network teaching information modification, collecting, statistics, summary, and monitoring. Users can update their teaching content as well as their students' online

training and mentorship on the vocal music teaching website [13]. This paper addresses a strategy for implementing a piano teaching program, online piano teaching challenges, online teaching as one way of learning, and the breakdown in communication in computer teaching. The neural network model is utilized to assess the piano presentation and to emulate teachers in leading students via their activities. The proposed system's performance can be evaluated using piano music that is distinct from the neural network training models and is performed multimes by a different piano instructor [14]. Students can learn from songs and a lot of music online through the vocal music teaching website, which covers songs and works of music search and song effort analysis; dealing with arts is learned by listening to and analyzing the various singers' singing [15]. Enrollment for performances, training courses, examination schedules, a new program, and a multitude of events, as well as night and other data may all be provided. In the dynamic notification of the announcement, students and instructors will be able to keep up with the newest advancements in the school in a reasonable timeframe [16]. The previous articles addressed the combination of engineering, music, the arts, education, and technology. Music, art, and manufacturing have all been merged in a variety of studies. Because of the development of media such as applications, piano training and education in music schools, and programs to train young children, accessibility to piano-related resources has grown easier and faster. The research was developed within the framework of development, such as empirical music performance research in which musical performances were compared [17]. In addition, a (SVM) Support Vector Machine was employed to evaluate the quality excellence of cornet performance in the study. The test was split into two sections by the author. The first section classified the datasets into three categories: excellent, medium, and unacceptable. At the median rating, the second step divided the datasets into two classes: excellent and bad [18].

3. An Attribute Analysis of the Evaluation System

The piano education comprehensive ability assessment system is a complex system that includes various attributes and fundamentals. There are various complex causal relationships between the elements, so the piano comprehensive ability assessment system is a composite system [19]. As the field has progressed, various concepts of system analysis and decision-making, as well as approaches such as theoretical background and management science, have emerged. As a result of the creation of scientific decision-making theory, many decisions and assessments have been continuously made based on prior actual decisions. The use of computers in the scientific stage tool intelligent decision making has been included in the use of computers science stage tools intelligent decision making. Therefore, the comprehensive ability assessment of piano education uses logical decision theory and state-of-the-art decision support as much as possible to teach the piano. It can be scientific and modern [20].

Piano education's purpose is that the states of piano education in multiple schools are compared using a thorough ability evaluation approach that considers numerous external and internal elements of piano learning regardless of school grade and different grades. Universities with similar grade comparisons of educational quality can assist schools in reducing costs and improving their level of instruction by more accurately reflecting the school's overall level [21–23]. The attributes of piano instruction quality assessments between various schools are retrieved by the study. The qualities are external and internal. So, users cannot believe one attribute is important while ignoring the other. To completely comprehend something, it must be viewed from several perspectives. Internal factors, external factors, capital investment, specifically, learners, personal factors, paid prices, and environmental factors are all included in the piano education comprehensive ability evaluation system.

3.1. Internal Factors Learners' Personal Factors. Personality, intelligence, attitude, and motivation are some of the learner's characteristics.

3.1.1. Intellectual Mastery and the Ability to Use Various Learning Skills. Under normal circumstances, intelligent learners learn knowledge faster. Even in the best of circumstances, learning can be challenging, and less intelligent learners are unlikely to perform more miracles in learning than normal learners. In a complete skill assessment system for English education, intellectual factors refer to effort created by the university to improve the intellectual level of students and the degree to which they emphasize intellectual development [24].

3.1.2. Personality. Personality is divided into two types in psychology: extroverted and introverted. People used to believe that extroverted learners have a vibrant personality that opens the way for them. It is not true that playing and practicing the piano during the learning process improves the performance of introverted piano learners. When it comes to learning, learners with different personalities face a variety of challenges. In various tasks, different learning techniques are applied [25]. Positive stories provide extroverted students with more feedback and practical opportunities. Introverted students use their mild personalities to provide limited input, especially in contexts where language forms and rules are emphasized; they are helpful, but they frequently pay less attention to linguistic forms. More detailed and detailed formal analysis of a comprehensive ability assessment system for piano education and personality factors indicate whether a school aims to adopt a different personality on how to teach a piano.

3.1.3. Motivation and Attitude. Personal intents want, psychological conflicts, or objectives they are attempting to attain, as well as the mental state in which they commence and maintain their behaviors, are all variables that push

individuals to act. According to the online survey, it is compared with boys. Many females like learning to play the piano, and many female students showed an interest in learning the piano. This shows that these females have a much stronger motivation to learn English than males [26]. At the same time, Macbey and Czech Lin were recognized in gender difference psychology. The main feature of the obvious gender divide between boys and girls is that girls have superior language skills. Therefore, the ratio of boys to girls must also be considered. The first is the learner's attitude toward the piano and its culture, and the second is the language teacher's attitude and learning environment [27]. This factor considers the ratio of female and male students, learning attitudes, and educational attitudes of students and teachers in a comprehensive evaluation system for piano education.

3.2. Environmental and External Factors. Social environmental factors, learning environmental factors, and natural environmental factors are the three types of environmental factors.

3.2.1. Social and Environmental Factors. Social environmental factors can have a significant impact on learners' motivation and attitudes. International cultural exchanges are becoming more common as reforms deepen and open, and English has become more important as a communication tool. Environmental factors can be categorized into three parts: social environmental factors, learning environmental factors, and natural environmental factors. This stimulated the learner's interest in learning English. In some states and cities such as Zhejiang, Beijing, Shanghai, Guangzhou, and Shenzhen, there is a high demand for English talent, making it clearer for local college students to learn English. Students are influenced by their family's economic status, family environment, parents' role models, family structure, social behavior, and so on.

3.2.2. Learning Environment Factors. Elements of the learning environment include teachers, teaching methods, teaching materials, and more.

3.2.3. The Factors of Natural Environmental. We consider the humanistic environment and natural environment that surround the college and school; for instance, Gilin is a popular tourist destination. Therefore, there are several international visitors, and the atmosphere in which Gilin University students study English is greater than in some universities in other parts of the world.

3.3. Cost. Some schools promote students, reward instructors, offer various training classes, import foreign teachers, and engage in different strategies to increase pass rates in grades 4 and 6. We increase students' motivation in learning by performing activities. The amount of money involved in a cost fund has an impact on the value of English instruction;

then it is not a determining factor since the consequence is not equal to the amount of money invested.

4. Application of Attribute Theory

From the above analysis, we conclude that the attributes (elements) of the quality evaluation system for English education are the following:

- (1) Investment.
- (2) Intelligence training.
- (3) Personality targeting.
- (4) Motivation and attitude.
- (5) Social environment element.

Regarding the learning environment element, you can use the 7-dimensional attribute division model of natural environmental factors. That is, under specific scoring criteria, the university comprehensively considers seven attributes and calculates which schools have the highest overall quality of education through program calculations. This helps schools improve their education and achieve true progress in quality and effectiveness of education, reflecting a true education level assessment.

4.1. Convert the Multiple Methods for Each School into Attribute Scores. We analyze three crucial factors in our analysis to keep things simple: intellectual training, investment, and learning environment. Three schools compare the quality of piano education: school A has an investment of 800,000, school B has an investment of 400,000, school C has an investment of 600,000, school A has 0 points, and school B has 100 points. Using linear interpolation, the score of schools C is $(100 - 0)/(40 - 80) = (y - 0)/(60 - 80)$, $y = 50$ points, and the investment attributes of the above 3 schools are 100 points. It can be converted into a system. Similarly, among the three institutions, school A prioritizes cultivation and is placed first. School A provides intelligence training 100 points, whereas school C pays the least attention. School C earns a zero on a scale of one to one hundred. School B can receive points from professionals, and school A and school C can be compared. Compute the amount of the intelligence factor. Schools with a positive learning environment receive a high rating. Schools with a negative learning environment receive a low score.

4.2. Application to the Attribute Barycentric Model. To compare the same grades, individual school requirements should first be graded and then divided into multiple grades. There are two ways to score:

- (1) It is directly classified as piano education integration by the one-step filing method, that is, the evaluation level of the school ability system. Experts will be asked to score the seven piano education indicators of participating schools or conduct an online survey. Participate in the school's student evaluation, show the seven indicators of the school, and divide the

schools participating in the evaluation into 5- or 10-point files, depending on the level of the score.

- (2) Two-step archiving method: first the prestigious institution of the university classifies each rating school according to some scores and rankings (for example, the famous website Wangda ranks all schools first in the top 200 in the category, 200 to 400 in the second category, and from 400 to 600 in the third category); schools in different categories are so different that they are considered a rough classification. Second, the one-step archiving method applies to these three categories of schools. This is a subdivision. The following is a one-step archive method attribute central division model. I will give a detailed explanation.

In the Cartesian coordinate system, the attributes of each school are $C(s) = (C1(s), C2(s), C3(s))$. The 3D coordinate system has a unique coordinate point X . According to the principle of total score division for each university, if the total score difference $\Delta x = 5$ divisions, schools (that is, coordinate points) within the same division are sandwiched between parallel (hyper) planes separated by $\Delta x / \sqrt{n} = 5 / \sqrt{3} \approx 2.9$ minutes. Candidates of the same grade can be considered too at the same level because this distance is very small or the difference in average scores is very small. In fact, the purpose of classification is archiving, and the purpose of archiving is to put. After submission, the two total score planes are separated by $\Delta x / \sqrt{n}$ only and will be compressed into one (super) plane. Schools with a total score of 100 to 105 points are all considered compressed into one (super) plane. After this compression, schools with a total score between 100 and 105 are in a plane such as ΔABC by ignoring the mathematical manipulation of the difference in total scores.

Figure 1 is a model of the centroid of an attribute, which consists of three attributes to form a three-dimensional linear coordinate system. The barycentric coordinates ΔABC and ΔDEF are two-dimensional barycentric coordinates. ΔABC is a hyperplane with a 100-point total score. ΔDEF is a hyperplane with a 200-point total. The grade score is $\Delta x = 5$, and there are 105-, 110-, 115-, 200-, 205-, 295-, and 300-point hyperplanes, all parallel to ΔABC .

In Figures 1(b) and 1(c), y is the psychological weight distribution point of the decision-maker, and in ΔABC , the standard score of the evaluation criterion y is put in ΔABC , and the point $y = (\alpha, \beta, \gamma)$ called the psychological center of gravity point ΔABC is obtained.

Using the psychological focus y , the evaluator finds a reference point $y = (\alpha, \beta, \gamma)$ for assessing each school ΔABC . Obviously, the distance $r(x, y)$ between each school x and y can be used as a reference point for each school. Scientific evidence: the closer the x and y requirements are for a comprehensive assessment, the shorter the distance $r(x, y)$. That is, x meets the y standard. We assume the goodness of fit of x to the y standard. It is $C, (x, y) = f(r(x, y))$ and there is a functional relationship $C, (x, y) = f(r(x, y))$ between standard point y and school x .

As shown in Figure 1(a), from the most ideal point (100, 100, 100), according to the law of $\Delta x = 5$, there will be many equal-total planes, and each equal-total plane has a standard score point. These standard score points A line will be formed, and this line will be called the standard score line.

4.3. *How to Find the Standard Score.* Give some virtual school indications to the known total score plane, put them in the plane, and score, i.e., give satisfaction to these virtual schools based on the evaluator's criteria. Compute the standard score points off the hyperplane using the weighted average if the score is between 0 and 1. This approach may also be used to obtain some standard score points on the total score plane. In addition, standard scoring points are (100, 100, 100). Calculate the standard score line's 3D formula using pull-grange interpolation, such as two interpolations.

$$h(t) = h(h_1(t), h_2(t), h_3(t)). \quad (1)$$

For the standard score line, its intersection with other total score planes is the standard score point of the total score plane. Set the total score S and substitute the above formula. With $h(h_1(t), h_2(t), h_3(t))$, it is the standard score point of the plane.

4.4. *Determination of the Satisfaction Function of Schools in the Same File.* In the characteristic concept, the closeness formula connected to three-dimensional distances and human brain intelligence was used, set the score of a school in the i -th grade as $X(x_1, x_2, \dots, x_n)$, and its satisfaction is

$$C_s(X) = \exp \left[- \left[\frac{\sum_{i=1}^n w_i |x_i - y_i|}{\sum_{i=1}^n w_i \zeta} \right] \right]. \quad (2)$$

4.5. *Determination of the Satisfaction Function of Schools of Different Grades.* Satisfaction in the same grade is calculated by formula (2) of proximity, but since the reference point for satisfaction differs for each grade, the reference point for calculating satisfaction also differs. Current situation it is still difficult to compare calculated satisfaction with how well schools meet the criteria for different grades.

Adjust using the control factor λ before the grade satisfaction function to compare schools of different grades. That is, it adjusts the spatial satisfaction.

$$C_t(X) = \lambda C_s(X). \quad (3)$$

Among them, $C, (X)$ is the school's grade satisfaction X ; λ which is related to the school's overall grade $X, \lambda = f(\sum x_i), x_i$ are the i -th attribute scores of the school X . Here is λ :

$$\lambda = \left(\frac{\sum x_i}{100} \right)^\alpha, \alpha > 0. \quad (4)$$

The coefficient α can be adjusted according to the actual effect.

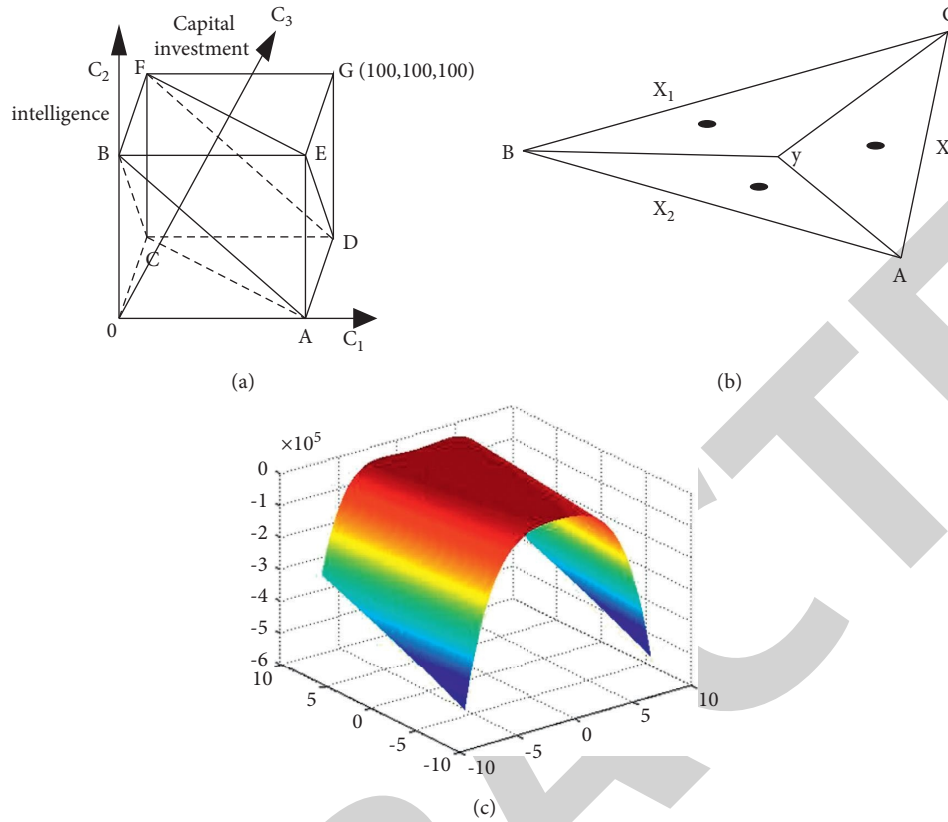


FIGURE 1: Model of attribute center in college English comprehensive evaluating system.

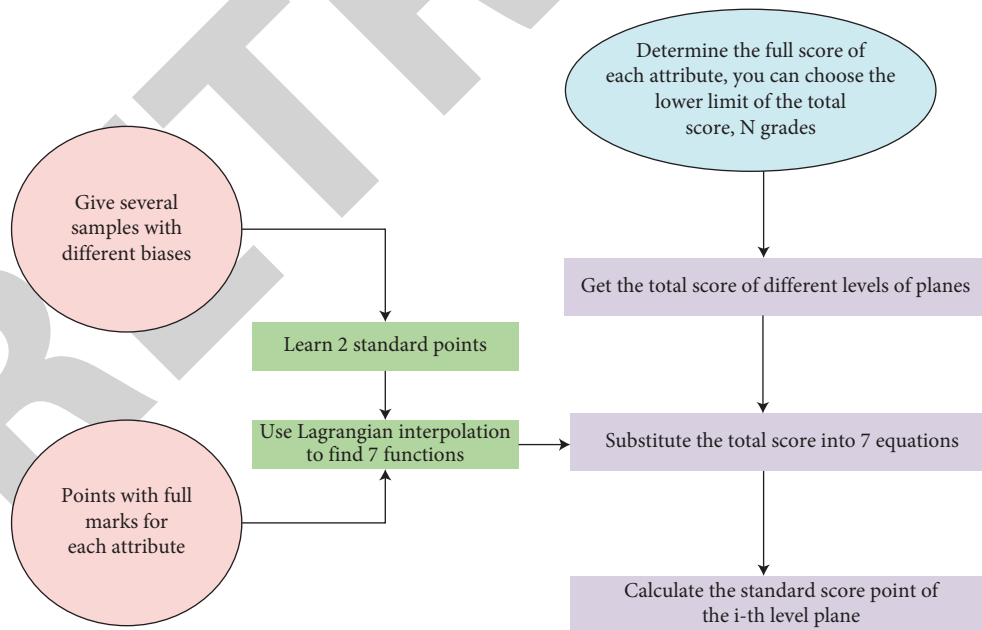


FIGURE 2: English comprehensive evaluating system diagram.

5. System Process and Result Analysis

Intelligence training, character-oriented teaching, motivation and attitude, social-environmental variables, learning

environmental factors, natural environmental factors, and capital investment are the seven aspects of the piano instruction comprehensive ability evaluation method. Figure 2 depicts the program flow.

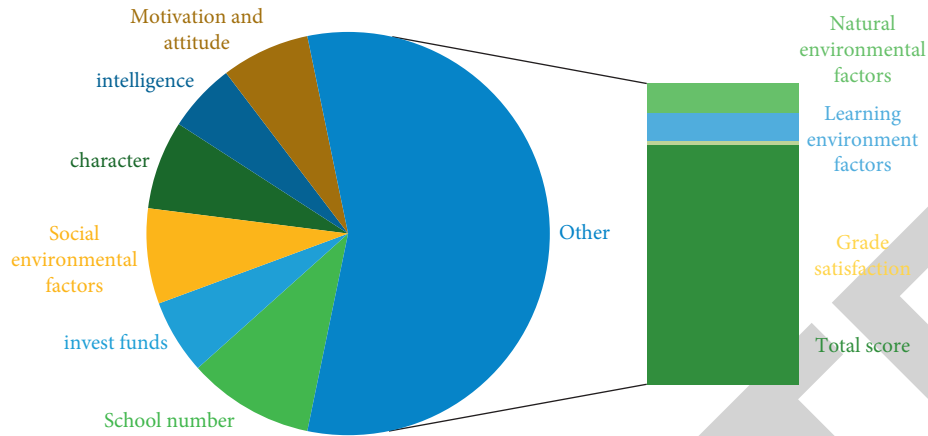


FIGURE 3: School score compression in English is comprehensive.

TABLE 1: English comprehensive evaluating system.

School number	139	46	9	182	10	96	147	110	114
Invest funds	83	88	78	90	79	89	89	94	95
Social environmental factors	99	90	88	80	90	98	90	87	85
Character	99	80	98	75	98	98	83	85	95
Intelligence	76	90	67	90	87	79	88	85	85
Motivation and attitude	97	84	99	90	87	79	85	85	74
Natural environmental factors	77	87	90	89	88	80	85	85	86
Learning environment factors	77	89	88	93	78	84	86	85	86
Grade satisfaction	0.76	0.919	0.749	0.86	0.829	0.808	0.918	0.875	0.759
Total score	608	608	608	607	607	607	606	606	606

5.1. *Experimental Data.* After scoring, the lowest score is points 520, the highest score is points 700, 30 levels, 6 points 1 level, using 200 universities for evaluation and considering the 7 attributes of the university. The first level is 610, which includes 12 schools with a total score of 605 to 610 points (15 levels, $520 + 15 \cdot 6 = 610$ points). Overall school score compression in English is comprehensive, as shown in Figure 3.

Table 1 shows the attribute scores, grade satisfaction, and spatial satisfaction. The psychological reference points for this file are 85.425, 93.896, 81.013, 86.866, 87.619, 83.750, and 91.898.

Table 1 illustrates that the nearer a school goes, the higher the grade satisfied is, and the larger the quality score point is, and, simultaneously, its spatial fulfillment is in schools 46 and 147, for example.

6. Conclusion

The piano teaching complete ability evaluation system is a complete evaluation model with many indicators, components, and characteristics. Its strategy is single and new, and the evaluation indicators, attributes, variable weight problem, and indicator weight change. The complete ability evaluation method for piano teaching that addresses mutual limits and interconnections is a system that includes social and environmental factors, according to the evaluation factors. Variables affecting learning, factors that affect

the natural environment, new investment, intellectual training, personality-oriented education, motivation, and attitude are all factors to consider. This is a multiattribute decision-making problem with many uncertainties and ambiguities. The system presented in this article can complete the assessment and ranking of piano education's overall ability. After analyzing various components of piano learning and general education, the system scale of the school program set is combined with the school grade, based on user needs and associated psychological weights, and other evaluation characteristics. It may be modified in a variety of ways so that users can compare the quality of schools in various or related courses to represent the school's overall excellence more objectively. Therefore, schools can consider capital investment, environment building, and teaching methods, and the level of education in schools can improve.

Data Availability

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The author declares no conflicts of interest.

Authors' Contributions

The conception of the paper and the data processing were completed by WeiNa Ma. WeiNa Ma also participated in the review of the paper.

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