Application Analysis of Data Mining Technology in Oil Painting Course Resource Management

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Abstract. This paper firstly puts forward some obvious disadvantages of traditional oil painting curriculum management in the course of selecting oil painting for several decades. After detailing and comparing the types of data mining technology, this paper puts forward two proven advantages of applying data mining technology in oil painting course management, one is to customize the course according to the students' own characteristics, the other is to promote the overall development of students' artistic literacy.

Keywords: Data Mining Technology, Oil Painting, Curriculum Resources

1. Introduction
At present, oil painting majors in colleges and universities in China generally use sketching-type teach, such courses have been used for many years, easy for the teaching staff[1]. Over the decades, our world has undergone earth-shaking changes that have also brought profound changes to our lives and to our art, prompting us to think deeply about whether our oil painting courses still meet the requirements of our time[2]. It is obvious that the old curriculum is formed in the era of relatively backward environmental conditions and scientific and technological conditions[3]. In the era when everything is new and everything is developing rapidly, it appears that the form is single, the content is scarce, and it is difficult to adapt to the requirements of art education in the new era. How to change this traditional teaching form and integrate more advanced teaching methods to make it a new type of comprehensive teaching mode which not only meets the requirements of the syllabus, but also can guide students to actively explore and innovate; how to help teachers and students to raise their subjective consciousness, broaden their thinking, enhance their learning and creative enthusiasm, improve students' comprehensive quality and improve their own ability has been paid more and more attention to by various art colleges and universities in China. With the continuous development of science and technology and people's understanding of it, our ability to use high-tech tools has also
been greatly improved. We benefit from the deep application of high technology in practice, and they have excellent ability in data acquisition, processing and analysis[4]. The development of data mining technology makes it possible and more convenient for us to obtain the more excellent optimized curriculum resources we need from the coming information storm[5]. Using data mining technology, we can get more abundant oil painting course resources, and go further and further on the road of teaching students according to their aptitude and comprehensive development of artistic literacy. The system structure framework is shown in figure 1.

![System structure framework diagram](image)

**Figure1.** System structure framework diagram

2. Types of data mining techniques

2.1. Interconnection analysis

Extracting association rules from relational databases is one of the main data mining methods. Mining association is by searching for everything in the system and finding a pattern with higher probability of occurrence conditions[6]. Association is actually the determination of correlation between data objects, using association to find out all the rules that can relate one set of data items to another. The establishment of this rule is not a definite relationship, but a possible value with a certain degree of confidence, that is, the probability of an event occurring. The association analysis method is intuitive and easy to understand, but it is not very effective in the case of low correlation degree or complex correlation.
2.2. Decision tree analysis

The branch of the tree is established according to the different values of the training data and the centralized data to form the decision tree. The biggest difference from the neuronal network is that the process of its decision making is visible and can explain how the results are produced. The decision tree generally produces intuitive, easy-to-understand rules, and classification does not require much computational time, which is suitable for the prediction of record classification or results, especially when the goal is to generate rules for easy-to-understand natural languages. Decision trees can also be used for clustering, classification, and sequence patterns. The hierarchy of the decision tree is shown in figure 2.

![Decision tree hierarchy](image)

**Figure 2.** The hierarchy of the decision tree

2.3. Replicability algorithm

Genetic algorithm can deal with many data types, at the same time, it can deal with all kinds of data in parallel, which is often used to optimize the neuron network to solve problems that are difficult to solve in other technologies, but the parameters are too many, the coding of many problems is difficult, and the general computation is large.

2.4. Cluster discovery

Aggregation is to divide the entire database into different groups. Its purpose is to make the difference between groups obvious, and the data between the same groups are as similar as possible. Unlike classification, you don't know how to divide the data into groups or how to divide it before starting aggregation. Therefore, after gathering, there should be a person who is familiar with the business to explain the meaning of such a group. In many cases, the clustering resulting from a single aggregation may not be good for a business, and then you need to delete or add variables to influence the clustering method, and after several repetitions you can finally get an ideal result.

2.5. Correlation analysis

Association analysis, that is, using association rules for data mining, the purpose of association analysis is to mine the relationship hidden between data. Sequence pattern analysis and association analysis are similar, but the emphasis is on analyzing the sequence relationship between data. The problem described by sequence pattern analysis is: in a given transaction sequence database, each sequence is a set of transactions arranged by transaction time. Mining sequence functions act on this transaction sequence database, returning the high-frequency sequences that appear in that database.
3. Application analysis of data mining technology in oil painting course resource management

3.1. Teaching students according to their aptitude and cultivating their artistic personality
Every student has his own ideas, has his own color feeling, there are differences between people, so teaching should pay attention to the cultivation of students' personality. Personality, is a person in thought, character, quality, will, emotion, attitude and other aspects of the characteristics of other people, it is the result of innate genetic and acquired environmental impact. It affects the ability of different individuals to use color. Teachers need to cultivate students' personality, adopt suitable teaching mode for each individual, and not let students blindly imitate a certain painter, so they should cultivate students to use color language with their own unique color feeling to form a new artistic style. Unlike other innovations, artistic innovation is more difficult. Not only requires the creator to have higher artistic ability and distinct personality, but also needs a good educational environment, so it needs the positive guidance of teachers. Artistic innovation requires courage, even if it is a little new, need to have extraordinary courage, and innovation is to break through the tradition, reflect the personality of students, therefore, oil painting teaching needs to pay attention to the cultivation of students' personal ability. The value of art is mainly reflected in innovation, and innovation is to break through the tradition, from a new perspective to understand the world, so as to promote the continuous development of art. That is to say, art teachers should teach students according to their aptitude, not only to learn the existing theory but also to have painting experience, and to promote the development of students' artistic personality on this basis. Each student has different forms of expression, which can only be guided by his particular form, rather than imposed on him by other forms, so as to improve efficiency and make the effort effective.

3.2. Comprehensive development, comprehensive cultivation of students' artistic literacy
There are differences in each person's living environment, so different people's perception of color is different, and the same color may have different meanings in different people's eyes. In the process of color training, students' thinking can be effectively developed and cultivated, the ability of association and creativity can be effectively strengthened, it can improve people's artistic literacy, help people form scientific and effective analysis and understanding methods, improve the control of color creation, and enhance the expressiveness of works. Oil painting is mainly composed of objective color and subjective color, the fusion and coordination of the two colors can be called perfect, so long ago people began to use the visual and psychological characteristics of color in life. Therefore, in color training, first of all, we should pay attention to the analysis and study of objective color, find a scientific and reasonable way to enhance its color performance ability; secondly, apply advanced natural knowledge to the study of color theory, especially with the help of the rapid development of optics in physics to further strengthen color research. With the development of the times, the aesthetic demand of painting is higher and higher, not only requires the work to have strong performance ability, but also needs the work itself to be creative, and the color language of the work can fully reflect the author's consciousness, which is also the ultimate goal of color training, we can take the previous creative experience as a reference, but we must not simply copy it, but should innovate on its basis. Only in this way can we really improve our artistic accomplishment and go further away from the artists. The coordination and integration of content and form is the ultimate goal of artistic pursuit,
so the relevant theories of oil painting should be paid attention to help students understand the characteristics of oil painting in depth.

4. Conclusions
This paper combines data mining technology with the management of oil painting course resources, establishes the bridge between modern high-tech information technology and traditional art, and uses new means to improve the efficiency of oil painting teaching course. After putting forward some problems that need to be paid attention to in oil painting teaching, the corresponding technology of data mining is used to solve them, which not only provides reference for the management of oil painting curriculum resources, but also for the connection of traditional and new technologies.

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