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Retraction

Retracted: Evaluation of the Effect of Aesthetic Education Practice in Children's Picture Books Based on Data Mining Technology

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] S. Yang and J. H. Kwon, "Evaluation of the Effect of Aesthetic Education Practice in Children's Picture Books Based on Data Mining Technology," *Advances in Multimedia*, vol. 2022, Article ID 2009838, 10 pages, 2022.

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Research Article

Evaluation of the Effect of Aesthetic Education Practice in Children's Picture Books Based on Data Mining Technology

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In order to explore the effect of aesthetic education practice in children's picture books, this study combines data mining technology to evaluate the effect of aesthetic education practice in children's picture books and builds a corresponding model. The model is based on the Storm platform. The definition of the basic model of the Storm platform lays a theoretical foundation for the energy-saving strategy of the memory voltage threshold regulation of the Storm platform. Moreover, this study establishes a time overhead model for computing the data processed by the Storm platform, and a threshold selection model for the memory voltage of the working node, which provides help for the energy consumption of the aesthetic education practice effect evaluation system in children's picture books. In addition, through the evaluation of the effect of aesthetic education practice in children's picture books based on data mining technology, it is found that the effect of aesthetic education practice in children's picture books is very good.

1. Introduction

Art is closely related to pre-schoolers. While developing language skills, children try to express themselves to the outside world through lines and colors. Although the beauty of children's paintings is different from the beauty of art in our general sense, "the beauty of children's paintings expresses their health, vitality, strength, softness, inner and vividness. This is closely related to the mental and physical development of the child, and this development is a prerequisite for a viable and whole person [1]. Because of the natural connection between pre-school children and art, art education occupies an important position in the education of pre-school children. Literature [2] believes that for pre-school children, in addition to conforming to children's development, art education should also have a track that integrates children's development into the value given to art education by society, and effectively promotes children's development. At the same time, it is necessary to pursue order and formal beauty in the grasp of the visible and tactile appearance, so as to cause emotional rhythm, enjoy the beauty and cultivate the taste. It can be seen that children's art education can be divided into three levels [3]: the technical level, the appreciation level, and the aesthetic education level. The picture book is an art form that combines words and pictures. It deeply attracts pre-school children with its rich interest and high artistry. Moreover, many preschoolers are exposed to classic works of art for the first time through picture books. The characteristics of the picture book itself make it meet the needs of different levels of children's art education, and it is a good medium for art education for pre-school children.

The most fundamental purpose of aesthetic education is to cultivate people's aesthetic taste and create a sound and complete personality. Some people think that imparting knowledge and skills of appreciating and creating beauty, and developing people's aesthetic ability is aesthetic education. In fact, this is a wrong understanding formed in the context of scientific rational worship since modern times. Since modern times, natural disciplines such as physics and chemistry have developed by leaps and bounds. Encouraged by the great achievements and power of scientific development, human beings cannot help thinking that knowledge and technology are omnipotent and that all problems can be solved by resorting to natural science [4]. The expansion and arrogance of reason have obscured people's spiritual value and the meaning of existence, resulting in serious opposition between society and people, human life sensibility and rationality, reality and ideals, the disappearance of human integrity and totality, and the emergence of human beings. "One-dimensional beings,' people's spiritual world is alienated" [5]. In this case, the sculptor becomes the anatomist, the musician becomes the acoustician, and the artist becomes the geometer. Education takes "knowledge" as the highest criterion, takes it as its mission to teach students to conquer and transform nature, and cultivate students into rational tools for transforming nature and society [6]. In fact, unlike the scientific world which operates mechanically and obeys a fixed order, the human world is a world of meaning. The meaning of knowledge and technology needs to be explained from the perspective of human existence. Otherwise, it is just an inanimate thing. The fanatical pursuit of knowledge and technology can only lead to human alienation. "Only by understanding aesthetics as a category that is directly related to human survival and development and individual life activities, can it truly reveal the true meaning of aesthetic education and return to the essence of aesthetic education" [7]. It is precisely because he is dissatisfied with the arrogance of reason that Kant draws a boundary for knowledge to prevent knowledge from interfering with people's spiritual world, making morality, beauty, and freedom possible. Like Kant, Schiller saw the division of man under scientific reason. "State and Church, law and custom; enjoyment and work, means and ends, toil and reward [8]. Man is forever bound to the individual fragment of the whole, and cultivates himself only into a fragment; The monotonous noise of the little wheel that he is constantly driving is always in his ears, never reaching his essential harmony, failing to express the humanity of his nature, but only as his activity and The imprint of knowledge." Faced with the fragmented survival schema of man, Schiller placed high hopes on aesthetics, "Man and beauty should play games, and man should only play with beauty. In a word, man can only play with beauty when he is He only plays when he is fully human, and only when he is playing is he completely human" [9]. For aesthetics, Schiller described it as a "game". The game nature of aesthetics transcends utility and interests and plays the role of integrating material, sensory and spiritual, so that people can get rid of the fragmented tragic fate and become a complete humanity people [10].

In the appreciation of picture books, first of all, the educational functions of picture book skills and aesthetics are realized in the form of games. Children appreciate picture books, first of all, they get the pleasure of games. They are attracted by the pictures and stories in picture books, and then by the beauty. There is no definite purpose in this process, nor does it involve any stakes. It is purely in the form of a game to play with the art. However, although this process does not have a definite purpose, it has a natural purpose. Stimulated by picture books, children begin to create with their pens and start talking about works of art, which means that children have a deeper understanding of the world. "This awareness of the environment is an important part of intellectual growth [11]." At the same time, According to Ronfield, in the creative process, children's perceptual growth is stimulated by the creative process, and they feel the urge to coordinate their hands and vision. When children feel that words are not enough to express their joy, sadness, and fear, they will use painting to express, so that artistic expression becomes a part of their life as a whole, rather than something outside of life [12]. In addition, picture books are a special art form. The pictures in picture books are not the decoration of words. Together with words, they have a narrative function, which means that the pictures in picture books are always associated with meaning, conveying the knowledge and experience of the world. When children enjoy a good story, they will pursue something beyond the story [13]. Faced with a text with multiple layers, they will think about the symbolic meaning of the picture or the deep meaning formed by the interweaving of the picture and the text [14]. Picture books are not only a world of art, but also a world of meaning, which expands the scope of children's experience and prepares children to be involved in the real world. When children encounter the same thing in reality, they know how to deal with it [15]. In pre-school art education, blindly emphasizing art techniques and the rules of appreciation will make lively art education a monotonous knowledge transfer, which will damage children's imagination and creativity, and lead to children becoming bored with art. But on the other hand, blindly emphasizing the aesthetic education function of art without guiding children to find the expression language and form of art and improving children's art appreciation ability may make art education only a process without results [16].

The characters in children's picture books are mostly children and skeuomorphic images, which make young readers feel intimate and immersive when reading. Among them, the anthropomorphic characters have their own characteristics and are easy to identify such as the cognition of family title, mother, father, grandfather, grandma, etc.

The actions of the characters in the picture book reflect the theme of the picture book. The colors in the design of children's picture books are mostly solid colors and less complex colors. The use of solid color blocks alternately makes the division of the picture area and the difference between the characters obvious, which is convenient for children to identify the difference between characters and objects according to the color characteristics, and cultivate the ability to distinguish and remember [17]. Children's wisdom and emotional quotient can be improved by feeling color, building aesthetic interest, and imperceptibly improving artistic accomplishment. The pictures in children's picture books have bright colors and strong contrast, such as red-green, yellow-purple, blue-orange, jumping in color, attracting children's attention, stimulating curiosity and desire to explore, and facilitating the development of points of interest [18].

This study combines data mining technology to evaluate the effect of aesthetic education practice in children's picture books, builds a corresponding model, and provides a reference for the subsequent creation of children's picture books and children's aesthetic education.

2. Intelligent Picture Book Aesthetic Education Data Mining Algorithm

2.1. Storm's Related Models. In the process of data processing, DVTR-Storm determines whether the system working node is located on the critical path of topology execution according to the number of tuples processed and transmitted per unit time, and determines the value range of the memory voltage of the working node based on the resource occupancy of the system. Under the condition of satisfying the constraints of system data processing and transmission, the threshold value of its working node is determined by the data transmission volume and CPU usage of the system working node, and the memory voltage of the system working node is dynamically adjusted to reduce the useless power consumption of the original system due to high voltage when processing data, and then the system energy consumption is lowered. Thus, a directed acyclic graph model can be established to represent the relationship between Storm cluster data processing and worker nodes.

Definition 1. (a directed acyclic graph). A directed acyclic graph $G_p = (C_p, B_p)$ is defined, $C_p = \{c_1, c_2, \ldots, c_{|p|}\}$ is a set of vertices of the directed acyclic graph, and each element represents a component (Bolt or Spout). $B_p = \{b_{1,2}, b_{1,3}, \ldots, c_{|p|-i,|p|}\}$ is a set of directed edges in a directed acyclic graph, and each element represents the data flow passed between components. If there is $\exists b_{i,j} \in B_p$ and $i \neq j$, $c_i \Delta c_j \in N_p$ means that data is sent from c, and received by c,. All of Figure 1 is a directed acyclic graph of data processing, among them, $\{c_a, c_b, \ldots, c_j\}$ is a component set and $\{b_{a,c}, b_{a,d}, \ldots, b_{g,j}\}$ is a data flow set. c_a and c_b are the data source programming unit Spout, that is, read the external data source and send it to the Storm cluster for processing. The rest of the components are the data processing programming unit Bolt. The data source programming unit c_a transmit data through the topology links b_{ap} and b_{aa}, and the data source programming unit c transmits data through the topology links b_{sp} and b_{syal}. Then, the data processing programming unit c receives the data transmitted by the data source programming unit c_a. By analogy, the entire topology calculation is completed. In addition, it is assumed that the data stream processed and transmitted by the original system within a period of time is $\{A_1, A_2, \ldots, A_n\}$, and there is a data stream A_1 that satisfies $A_1 \subset \{A_1, A_2, \ldots, A_n\}$, $i \in \{1, 2, \ldots, n\}$.

Definition 2. (instance parallelism). According to Definition 1, data exists in the form of streams in the entire topology. In order to improve the parallelism of system topology calculation and improve the efficiency of Spout/Bolt data processing, each Spout/Bolt can run multiple threads at the same time. That is, for $\forall c_j \in C_p, \exists E_p = \{e_{j1}, e_{j2}, \ldots, e_{j|C_p|}\}$, among them, e_{ji} means that component c_j runs the i-th thread. In particular, when the number of threads of component c is 1, $E = \{en\} = ej$ is defined. Figure 2 shows an example parallelism diagram.

Definition 3. (task resource allocations). A Storm cluster consists of a series of worker nodes $N_p = \{n_1, n_2, \ldots, n_p\}$, and each node has several slots s_t for the allocation of system resources. For $\forall n_i \in N_p$, there is $St_i = \{st_{i1}, st_{i2}, \ldots, st_{i|st_i|}\}$, among them, st_{ij} indicates that the j-th slot exists at the i-th node. According to Definition 1, for any topology of the system, the user will set the number of processes required for its operation and the number of threads of each component in the code. The set of processes in the system is set to $\mathrm{Pr}_i = \{pr_{i1}, pr_{i2}, \ldots, pr_{i|pr_i|}\}$, among them, pr_{ij} represents the j-th process running in the i-th node. From the relationship between the slot and the work process. If the j-th thread running by component c is e, it is allocated to the m-th node, denoted $f(e_{ij}) = n_m$. If the j-th thread running by component c is eq, it is allocated to the nth slot of the m-th node, and it is denoted as $g(e_{ij}) = st_{mn}$. Among them, f and g are distribution functions. The task resource allocation model is shown in Figure 3, which is a detailed explanation of the parallelism model of the example in Figure 2, among them, the rectangles represent work nodes. Figure 3 has 13 threads distributed among 3 processes. e_{d1} is used as an example, there is $f(e_{d1}) = n_2$ and $g(e_{d1}) = st_{21}$.

2.2. Topological Critical Path and Total Cost of Topological Critical Path

Definition 4. (critical paths). A path $p(e_{ij}, e_{mn})$ is defined, where vertex eq and vertex e_{mn} indicate that the path starts at vertex e and ends at vertex e_{mn}. The topological thread set is set to $E_p = \{e_{j1}, e_{j2}, \ldots, e_{jp}\}$, and the vertices e_w and e_m are both sub-threads. If there is a subset of paths where $D(p(e_{ij}, e_{mn}))$ is a path, for $\exists k \Delta d_{j,k} \in p(e_{ji}, e_{mn})$ and $\exists k \Delta d_{k,j} \in p(e_{ji}, e_{mn})$, any directed edge $d_{j,i}$ belonging to $p(e_{ij}, e_{mn})$ exists. If there is $k \neq j$, there is $\exists m \Delta d_{k,m} \in p(e_{ji}, e_{mn})$. If there is $i \neq j$, there is $\exists m \Delta d_{m,j} \in p(e_{ji}, e_{mn})$.

Path $l_p(e_{ji}, e_{mn})$ represents the sum of the costs of all vertices and directed edges from vertex e_{ji} to vertex e_{mn}, then there is:

$$l_p(e_{ji}, e_{mn}) = \sum_{e_{ji} \in E(p(e_{ji}, e_{mn}))} w_{e_{ji}} + \sum_{d_{ji} \in D(p(e_{ji}, e_{mn}))} w_{d_{j,i}}, w_{d_{j,i}} \geq 0. \tag{1}$$

Among them, $w_{e_{ji}}$ is the computational cost of vertex e_{ji}, and $w_{d_{j,i}}$ is the communication cost of edge $d_{j,i}$. According to Definitions 1 and 2, if there are m paths in total between vertex ex and vertex e_{mn}, the topological critical path $l(G_p)$ is:

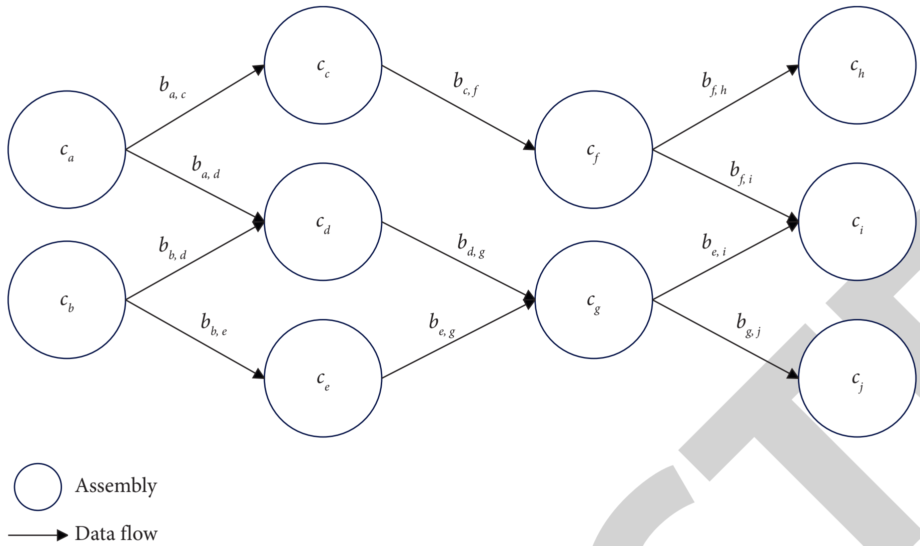

Figure 1: Data processing directed acyclic graph.

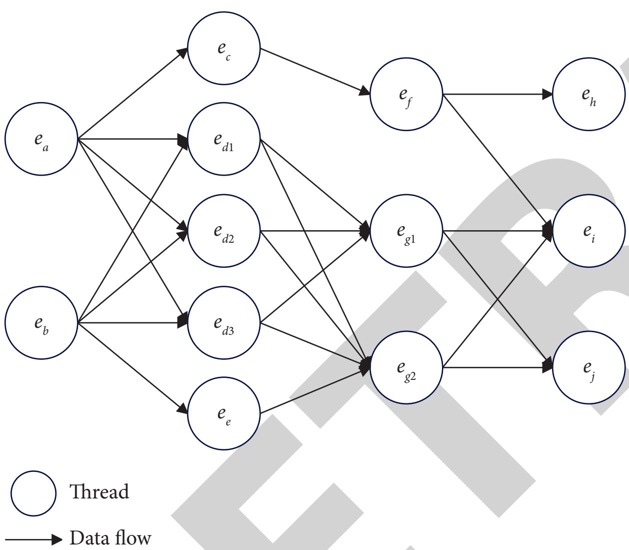

Figure 2: Schematic illustration of the parallelism of the instance.

$$l(G_p) = \max\{l_{p_1}(e_{ji}, e_{mn}), l_{p_2}(e_{ji}, e_{mn}), \ldots, l_{p_m}(e_{ji}, e_{mn})\}. \tag{2}$$

Formulas (1) is substituted into (2) to obtain:

$$l(G_p) = \max\left\{\begin{array}{l} \sum\limits_{e_{ji}\in E(p_1(e_{ji},e_{mn}))} w_{e_{ji}} + \sum\limits_{d_{ji}\in D(p_1(e_{ji},e_{mn}))} w_{d_{j,i}} \\ \sum\limits_{e_{ji}\in E(p_2(e_{ji},e_{mn}))} w_{e_{ji}} + \sum\limits_{d_{ji}\in D(p_2(e_{ji},e_{mn}))} w_{d_{j,i}} \\ \cdots \\ \sum\limits_{e_{ji}\in E(p_m(e_{ji},e_{mn}))} w_{e_{ji}} + \sum\limits_{d_{ji}\in D(p_m(e_{ji},e_{mn}))} w_{d_{j,i}} \end{array}\right\}. \tag{3}$$

The earliest start time of tuple ax transmission is set to $ae(k)$, its topologically earliest completion time is $a(k)$, and tuple a is on the topologically directed edge <*ba ba*->. Therefore, $ae(k) + a(k)$ is the length of the longest path from thread en to thread e, that is:

$$ae(k) + a(k) = Ae(i). \tag{4}$$

The latest start time of tuple a_k transmission is set to $a(k)$, and the latest topological completion time of tuple is $a(k)$. The latest start time $al(k)$ can be calculated by traversing the directed acyclic graph but in the opposite direction, and there is the earliest start time equal to the latest start time, that is:

$$ae(k) = al(k). \tag{5}$$

Under the premise of not causing the time delay of the topological critical path, the latest start time of tuple a transmission is:

$$al(k) = Al(i) - \mathrm{dut}\langle 1, n\rangle - a(k). \tag{6}$$

Among them, dut<1, p> is the time required to complete the transmission of tuple a, which starts from $Ae(i) = 0$ and advances forward. Then we can mention the equation as:

$$\begin{gathered} Ae(i) = \max\{Ae(i) + a(k) + \mathrm{dut}\langle 1, n\rangle\} \\ \langle 1, n\rangle \in S_1, \quad i = 1, 2, \ldots, n-1. \end{gathered} \tag{7}$$

Among them, S_1 is the set of directed edges <1, n> originating from the data stream A passes through.

If it starts at $Al(n-1) = Ae(n-1)$, advance in reverse. Then:

$$\begin{gathered} Al(i) = \min\{Al(i) - a(k) - \mathrm{dut}\langle 1, n\rangle\} \\ \langle 1, n\rangle \in S_2, \quad i = n-2, n-3, \ldots, 0. \end{gathered} \tag{8}$$

Among them, S_2 is the set of directed edges <1, n> that point to the data stream A_i.

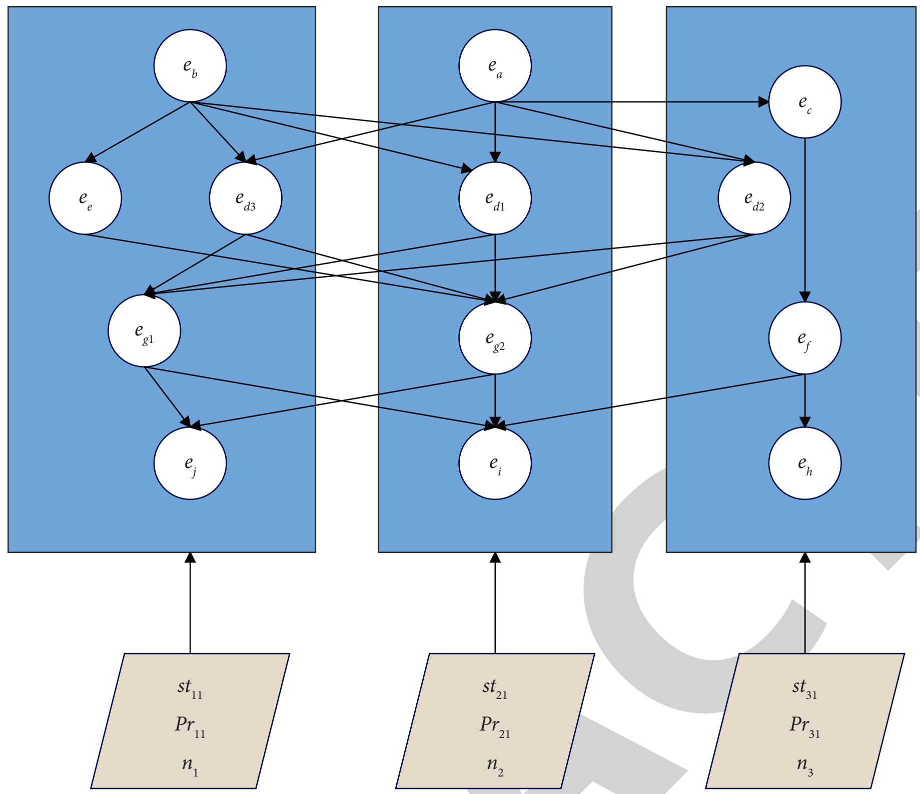

Figure 3: Task resource allocation model.

Definition 3 is taken as an example, a critical path of topology execution is defined as $e_b \longrightarrow e_{d1} \longrightarrow e_{g1} \longrightarrow e_i$, then m and n are determined as working nodes located on the critical path of topology execution. nm is the worker node located on the non-critical path of the topology. Figure 4 shows the data transmission and processing of the critical path of topology execution.

In order to calculate the total cost of the topology critical path, it is necessary to select a thread e_g from the thread set $E_p = \{e_{j1}, e_{j2}, \ldots, e_{jp}\}$ according to Definition 4, and the computational cost of thread e is set to $w_{e_{ji}}$. Thread e is defined, the time complexity of data processing is t_c, (which represents the number of millions of instructions of the thread), the input rate of thread en executing task data is ir, (which represents how much data information is input per second), and the CPU processing capacity of the worker node n where the thread en is located is pu (which indicates how much information is processed per second). Therefore, the computational cost w. of thread en is expressed as:

$$w_{e_{ji}} = F_{e_{ji}}\left(tc_{e_{ji}}, ir_{e_{ji}}, p_{n_i}\right). \tag{9}$$

For a single tuple, the input rate $ir_{e_{ji}}$ of thread e_{ji} execution task data is not considered, so the computational cost $w_{e_{ji}}$ of thread e_{ji} is expressed as:

$$w_{e_{ji}} = \frac{tc_{e_{ji}}}{p_{n_i}}. \tag{10}$$

The data transmission rate between two threads on the path is r, y, then the communication cost between thread e_y and e_{mm} is:

$$w_{b_{ji,mn}} = F_{b_{ji,mn}}\left(l_{b_{ji,mn}}, s_{b_{ji,mn}}, r_{b_{ji,mn}}\right). \tag{11}$$

For a single tuple, the communication cost $w_{b_{ji,mn}}$ between threads e_{ji} and e_{mn} is expressed as:

$$w_{b_{ji,mn}} = \begin{cases} 0, & \text{if } e_{ji} \text{ and } e_{mn} \text{ run on the same work node,} \\ s_{b_{ji,mn}}/r_{b_{ji,mn}}, & \text{otherwise.} \end{cases} \tag{12}$$

From the thread computation cost and the inter-thread communication cost, the total cost of the topology is the total cost of the critical path of the topology. The set of all threads on the topology critical path is set to $E_{cp} = \{e_{c1}, e_{c2}, \ldots, e_{cp}\}$, and the total communication cost between threads is $B_{cp} = \{b_{c1}, b_{c2}, \ldots, b_{c(p-1),cp}\}, b_{ci,cj} \in B_{cp}$, then the total topology critical path cost W_s is:

$$W_s = F_s\left(W_{e_{ci}}, W_{b_{ci,cj}}\right). \tag{13}$$

All thread computation costs and inter-thread communication costs are substituted into formula (12) to obtain the total cost W_s of the topology critical path as:

$$W_s = W_{e_{c1}} + W_{b_{c1,c2}} + W_{e_{c2}} + \cdots + W_{b_{c(p-1),cp}} + W_{e_{cp}}. \tag{14}$$

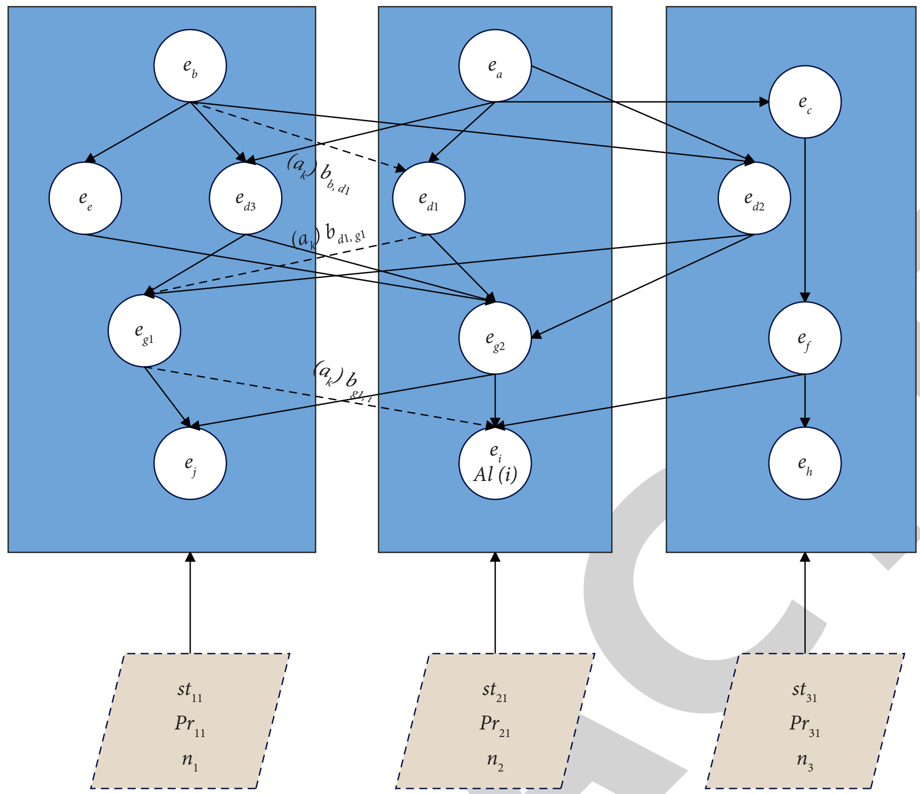

Figure 4: Data transmission and processing of the critical path of topology execution.

For a single tuple, formulas (9) and (11) are substituted into formula (13), and the total topological critical path cost W_s is:

$$W_s = \sum_{e_{ci}\in E_{cp}} \frac{tc_{e_{ci}}}{p_{e_{ci}}} + \sum_{e_{ci}\in E_{cp}} \frac{s_{b_{cj,ci}}}{r_{b_{cj,ci}}}, \exists W_{b_{ji,mn}} = 0. \quad (15)$$

2.3. Topological Noncritical Path Working Node Memory Voltage Regulation Model. In order to calculate the value range of the memory voltage of the working node of the topology non-critical path, the working node of the topology noncritical path is determined. There are two constraints for regulating the memory voltage of the topological non-critical path working node N', which are the memory voltage in different situations and the processing and transmission time of the tuple on the topological execution critical path, that is, the working node N_i' is:

$$N_i' = F_{N_i'}(t, vo). \quad (16)$$

Among them, vo is the memory voltage of the working node of the topology non-critical path, and t is the processing and transmission time of the tuple on the critical path of topology execution. When the topology critical path does not change, the topology non-critical path working node $N_{i'}'$ is determined as:

$$N_{i'}' = F_{N_{i'}'}(t, vo - \varepsilon). \quad (17)$$

Among them, ε is the amount of system memory voltage change. When the topology critical path does not change, the memory voltage of the topology non-critical path working node gradually decreases with ε as the step size. When the topological critical path changes, the memory voltage of the topological non-critical path working node gradually increases with ε as the step size. From this, we can know the lowest value of the memory voltage of the topological non-critical path working node $N_{i'}'$, and define the rated constant voltage of the system memory as the highest value of the memory voltage, so the value range of the topological non-critical path working node memory voltage is determined. Since the critical path of the topology does not change, and the total time for data processing does not change, the system performance is not affected.

In addition, through the DVRNP algorithm, according to the sampling results of system processing and transmission data within 5 minutes, it is determined whether the working node is on the non-critical path of topology execution, and the value range of the memory voltage of all the non-critical paths of topology execution is calculated.

Definition 5. (system data processing and transmission constraints). In order to calculate the CPU usage and data transfer thresholds of the working nodes, it is necessary to determine the minimum and maximum values of the system memory voltage according to the range of the working node memory voltage of the topology non-critical path. On the premise of Definition 5, the thresholds of CPU usage and data transfer volume of system worker nodes are analyzed.

2.4. Topological Critical Path Working Node Memory Voltage Regulation Model. The energy-saving algorithm is based on the premise of not changing the performance of the Storm cluster, and the performance of the Storm cluster is mainly reflected in the processing and transmission time of tuples on the critical path of topology execution. Therefore, the implementation of energy-saving algorithms in a Storm cluster must not affect the processing and transmission time of tuples on the critical path of topology execution.

Definition 6. (sex consumption ratio). The processing and transmission time of the tuple on the key path of topology execution is t (unit is s), and the total energy consumption of data processing is E (unit is J), then the property consumption ratio model is established, that is, the processing and transmission time of the tuple on the critical path of topology execution and the reciprocal of the total energy consumption of the system (unit is (s·J′)). In addition, the larger the power consumption ratio, the higher the practical value of the system. The calculation formula is

$$R = \frac{1}{tE}. \tag{18}$$

Theorem 1. *In a Storm cluster, the ratio R of the processing and transmission time of tuples on the critical path of topology execution and the total energy consumption of the system is*

%
$$R = \frac{C}{E\sum_{i=1}^{n-1}\left(\sum_{e_{ci}\in E_{cp}} tc_{e_{ci}}/p_{e_{ci}} + \sum_{e_{ci}\in E_{cp}} s_{b_{cj,ci}}/r_{b_{cj,ci}}\right)}, \exists W_{b_{ji,mn}} = 0. \tag{19}$$

Among them, C is the sex ratio error parameter obtained by multiple experiments and verification, and there is a range of values.

Proof. According to Definition 6, if the ratio of data processing and transmission time to energy consumption per unit time is $R = 1/tE$, there is $1/R = tER$. If the total time is divided into $[t_0, t_1, \ldots, t_{n-1}]$, the equation is

$$\begin{aligned} \frac{1}{R} &= \int_{t_0}^{t_{n-1}} E\mathrm{d}t, \\ \frac{1}{R} &= E\left(t_{n-1} - t_0\right). \end{aligned} \tag{20}$$

Therefore,

$$R = \frac{1}{\left(t_{n-1} - t_0\right)E}. \tag{21}$$

The latest start time of data processing is equal to the earliest start time, and the processing and transmission time of the data. When the time interval is divided into n equal parts $[t_0, t_1, \ldots, t_{n-1}]$, and t_i represents the time interval, formula (19) is obtained. At this point, the certificate is completed.

In order to calculate the value range of the memory voltage of the working node of the topology critical path, the set of working nodes of the topology critical path is defined as $N_p'' = \{n_1'', n_2'', \ldots, n_{|p|}''\}$. Among them, N_i'' is a subset of N_p''. From Definition 6, it can be known that the memory voltage of the working node of the topology critical path is related to the performance and consumption ratio under the premise of satisfying the performance and consumption ratio. Therefore, the topological critical path worker node N_i'' is

$$N_i'' = F_{N_i''}\left(R', vo' - \varepsilon\right). \tag{22}$$

Among them, vo' is the memory voltage of the working node of the topology critical path, and R is the power consumption ratio of the original system. Under the premise of satisfying Definition 6, the topological critical path working node $N_{i'}''$ is

$$N_{i'}'' = F_{N_{i'}''}\left(R', vo' - \varepsilon\right). \tag{23}$$

Among them, ε is the voltage change of the system memory, R' is the performance and consumption ratio of tuple processing and transmission time and energy consumption on the critical path of topology execution after the algorithm is implemented. When the systematic power consumption ratio is higher than the original systematic power consumption ratio, the memory voltage of the topological critical path working node gradually decreases with ε as the step size. When the systematic power consumption ratio is lower than the original systematic power consumption ratio, the memory voltage of the topological critical path working node gradually increases with ε as the step size. From this, we can know the lowest value of the memory voltage of the working node $N_{i'}''$ of the topology critical path, and define the rated constant voltage of the system memory as the highest value of the memory voltage, so as to determine the value range of the memory voltage of the topology non-critical path working node. □

3. Evaluation of the Effect of Aesthetic Education in Children's Picture Books

The binary file is a project file generated by saving all the primitive objects in the drawing in a serialized manner, so as to ensure that when the file is reopened, all the primitive objects can be accurately restored to the drawing in a deserialized manner. Graphics files include graphics files in PDF format and SVG format. The primitive objects are rendered to the drawing device through the functions that come with Q_t, so as to realize the export of drawings. The report file includes the cable detail table and the cable core wire table. The drawing information is mainly saved in the form of table text, and the storage uses the XML format. The main functions and algorithm diagram of the system are shown in Figure 5.

The network architecture topology diagram of this children's picture book system, as shown in Figure 6.

The system adopts the operating environment of Tulip Framework, which provides various components for rapid drawing deployment and the operating environment of the post-drawing evaluation system, as shown in Figure 7.

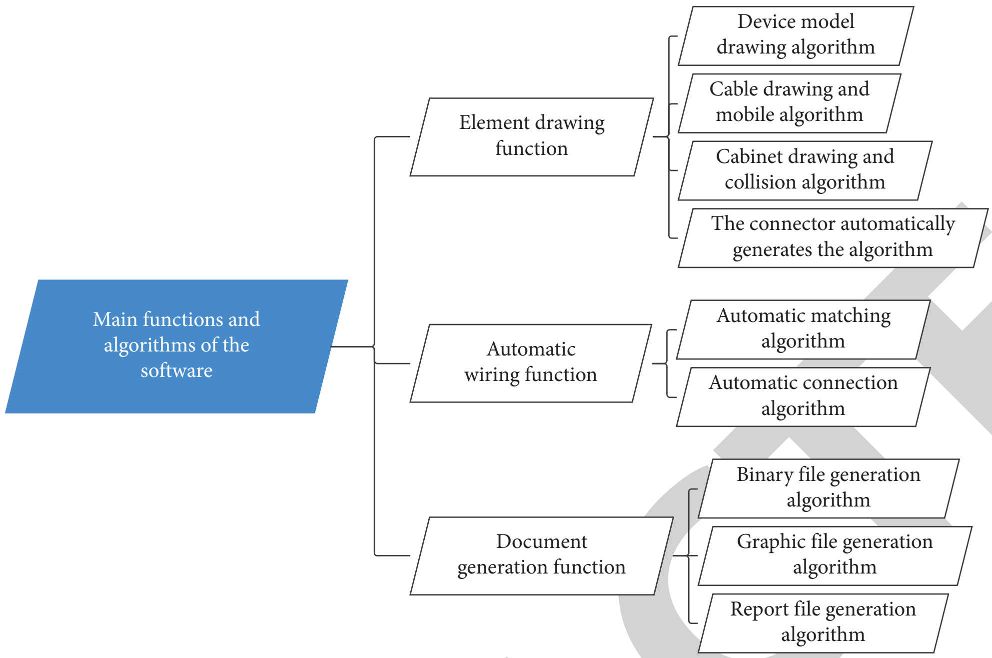

Figure 5: Schematic diagram of the main functions and algorithms of the system.

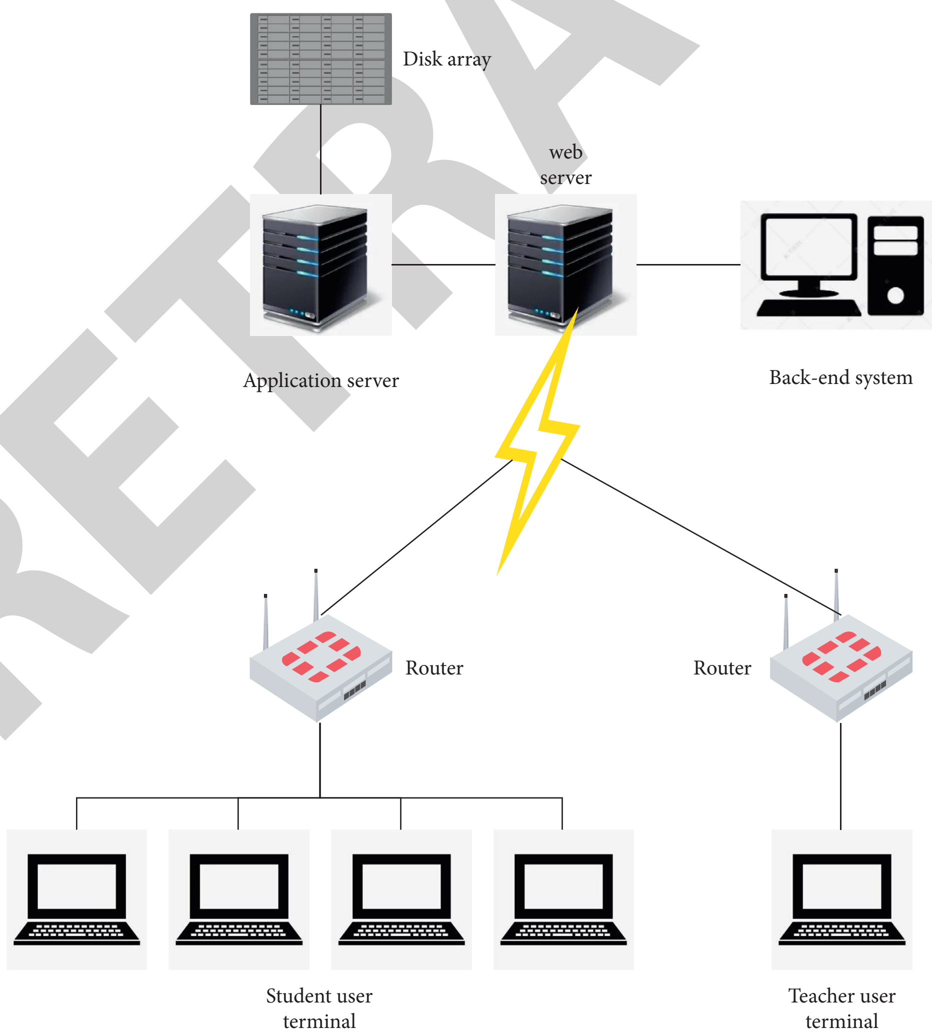

Figure 6: System network architecture topology.

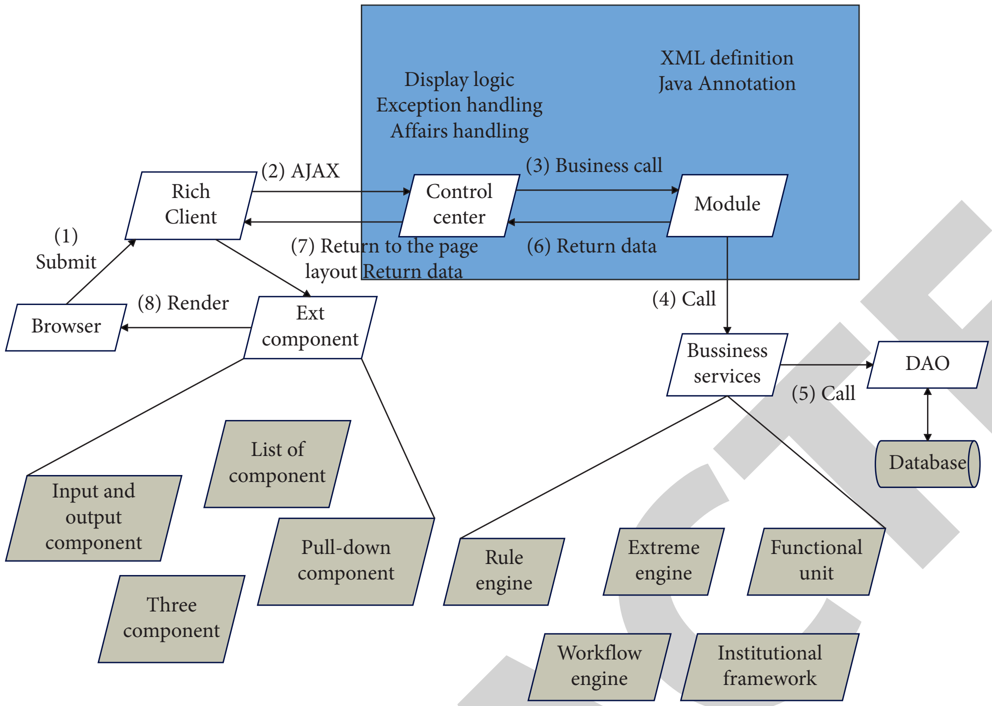

Figure 7: Schematic diagram of the technical architecture of the system.

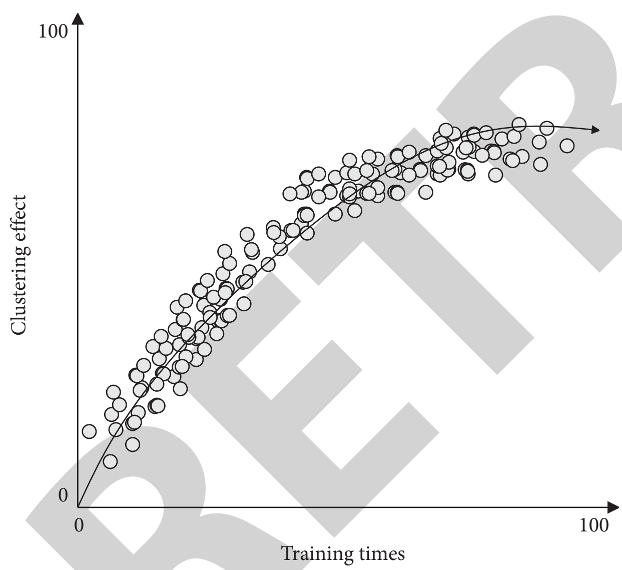

Figure 8: Evaluation of the effect of aesthetic education practice in children's picture books based on data mining technology.

Combined with the algorithm in the second part and the big data algorithm, the effect of aesthetic education practice in children's picture books is evaluated, and the statistical clustering effect is shown in Figure 8.

From the above research, we can see that the effect of aesthetic education practice in children's picture books is very good through the evaluation of aesthetic education practice in children's picture books based on data mining technology.

4. Conclusion

At present, quality education advocates the idea of cultivating students' creative thinking and improving their comprehensive quality. Although creativity involves various professional fields, it has different characteristics in terms of expression. The reason is that different people have different personality characteristics, and the creative personality subordinate to him will also reflect unique characteristics. The basic art education for children is only for education, but if the purpose of art education is to cultivate all children into artists, it is fundamentally against the individual development of children. Therefore, education should be the cultivation of innovative qualities, it should start from the foundation, and reserve energy for the future development of children. This study combines data mining technology to evaluate the effect of aesthetic education practice in children's picture books and builds a corresponding model. In addition, through the evaluation of the effect of aesthetic education practice in children's picture books based on data mining technology, it is found that the effect of aesthetic education practice in children's picture books is very good.

Data Availability

The labeled dataset used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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References

[1] A. Cekaite and P. Björk-Willén, "Enchantment in storytelling: co-operation and participation in children's aesthetic experience," *Linguistics and Education*, vol. 48, no. 2, pp. 52–60, 2018.

[2] F. Serafini, D. Kachorsky, and S. Reid, "Revisiting the multimodal nature of children's literature," *Language Arts*, vol. 95, no. 5, pp. 311–321, 2018.

[3] Y. H. Shih, "Life education for young children in Taiwanese preschools: meaning, aspects and teaching methods," *Universal Journal of Educational Research*, vol. 8, no. 4, pp. 1246–1251, 2020.

[4] T. Husband, "Using multicultural picture books to promote racial justice in urban early childhood literacy classrooms," *Urban Education*, vol. 54, no. 8, pp. 1058–1084, 2019.

[5] T. Aho and G. Alter, "Just like me, just like you": narrative erasure as disability normalization in children's picture books," *Journal of Literary & Cultural Disability Studies*, vol. 12, no. 3, pp. 303–319, 2018.

[6] J. E. McAdam, "Narratives of change: the role of storytelling, artefacts and children's literature in building communities of inquiry that care," *Cambridge Journal of Education*, vol. 49, no. 3, pp. 293–307, 2019.

[7] L. Collins, "Autonomy and Authorship: storytelling in children's picture books," *Hypatia*, vol. 25, no. 1, pp. 174–195, 2010.

[8] S. Pantaleo, "Elementary students consider the "what" and "how" of typography in picturebooks," *New Review of Children's Literature and Librarianship*, vol. 20, no. 2, pp. 144–166, 2014.

[9] S. J. Mourão, "Picturebooks in the primary EFL classroom," *Children's Literature in language Education journal (CLELEjournal)*, vol. 4, no. 1, pp. 25–43, 2016.

[10] E. Ünlüer and R. Zembat, "Examining the effects of aesthetic education program on aesthetic judgment development of five-year-old children," *Asian Journal of Education and Training*, vol. 5, no. 1, pp. 44–49, 2018.

[11] J. P. Kremenitzer, "An emotional intelligence/aesthetic education program using the Diary of a Young Girl by Anne Frank," *Childhood Education*, vol. 90, no. 6, pp. 446–452, 2014.

[12] N. Donnelly, "Stumbling on aesthetic experience: a factual account of the accidental discovery of aesthetic education in an Irish context," *Studies in Art Education*, vol. 31, no. 3, pp. 141–148, 1990.

[13] J. Emmerson, Q. Fu, A. Lendsay, and B. Brenna, "Picture book characters with disabilities: patterns and trends in a context of Radical Change," *Bookbird: A Journal of International Children's Literature*, vol. 52, no. 4, pp. 12–22, 2014.

[14] L. Ho, "Children's literature in adult education," *Children's Literature in Education*, vol. 31, no. 4, pp. 259–271, 2000.

[15] D. Hainsworth, "Theory of aesthetic education in USSR," *Irish Educational Studies*, vol. 8, no. 1, pp. 129–145, 1989.

[16] V. A. Riazanova, O. T. Zayats, and A. A. Ignatolia, "Ukrainian tale: moral and aesthetic paradigm of folklore and literature," *Precarpathian Bulletin of the Shevchenko Scientific Society Word*, vol. 3, no. 55, pp. 480–490, 2019.

[17] R. S. Gainer, "Beyond illustration: information about art in children's picture books," *Art Education*, vol. 35, no. 2, pp. 16–19, 1982.

[18] H. H. Ewers and J. D. J. D. Stahl, "The limits of literary criticism of children's and young adult literature," *The Lion and the Unicorn*, vol. 19, no. 1, pp. 77–94, 1995.