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Infiltration Approach of Green Environmental Protection Education in the View of Sustainable Development

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Abstract: In today's world, global ecological environment problems are increasingly serious, and human beings have gradually realized the importance of protecting the ecological environment. With the continuous deepening of the concept of sustainable development, the concept of green education has also aroused great attention in the education sector; moreover, its concept has gradually been applied to education and teaching. However, there are many problems in the application of green education. For example, the current green education system is not sound, the importance of green education in schools is not obvious, and there is no effective green teacher training program. In order to improve the current application of green education, this paper proposes to integrate the concept of sustainable development into the teaching of green environmental protection education. Through the construction of a sound green education system and green education classrooms, green ecological ideas would thus be infiltrated into many aspects of education and teaching. Due to the uneven distribution of educational resources in many regions, the quality of education in these regions is also uneven. In order to improve this situation, this paper also constructs an educational resource distribution model. Furthermore, this paper also analyzes the educational resource allocation model by using a differential evolution algorithm. From the experimental results, under the algorithm in this paper, the average student–teacher ratio of each county was 4.93, and the average number of books per student was 38.92. The average running time of teacher resources and book resources allocated by the model was found to be 1.47 s and 1.39 s, respectively. Under the traditional algorithm, the average student–teacher ratio in each county was 5.93, and the average number of books per student in each county was 31.8. The average running time of teacher resources and book resources allocated by the model was 2.36 s and 2.58 s, respectively. It can be seen from the above data that the algorithm in this paper can effectively optimize the allocation rationality of the educational resource allocation model and shorten the running time of resource allocation.

Keywords: sustainable development; green education; green education classroom; educational resource allocation model; differential evolution algorithm

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1. Introduction

From the perspective of sustainable development, education is also developing in the direction of green environmental protection. In addition, green environmental protection education is also gradually being proposed. Compared with traditional education, green education is a new type of education model, which integrates the concept of sustainable development and ecological environmental protection, as well as integrates people, nature, and society into a whole, which is conducive to cultivating students who represent the values of harmonious coexistence between man and nature. The concept of sustainable development is integrated into green environmental protection education. The full penetration of green education into education and teaching would help promote the development of green education in an all-encompassing manner.

Developing green environmental protection education also has certain practical significance. By carrying out green education, students' awareness of green environmental

protection can be enhanced, so as to achieve the goal of sustainable development. At the same time, students' quality education can be vigorously promoted, so as to cultivate more specialized talents for the development of the new era.

In recent years, education has aroused widespread concern in the academic community, and scholars have carried out research on it. Raudah Raudah advised that environmental protection education in Indonesia must be considered by all parties, and it has been reviewed in more than 100 international publications. These publications discussed environmental security issues by applying them to school education in various contexts, thereby becoming a model for the application of religious schools in Indonesia [1]. Harring Niklas, through conducting research using the unique vertical dataset of seven Swedish universities and colleges, found that higher education in the social sciences would not produce stronger democratic or environmental norms, at least not in terms of environmental protection. The reasons for this situation were further discussed, and the results of the study were further improved by observing factors at the individual level, such as in terms of gender and ideology [2]. Yachina Nadezhda P. aimed to study the formation and development process of the regional teachers' continuing environmental education system. They adopted a set of complex research methods to study the environmental education training and education programs for preschool children, students in general education institutions, and college students. The study found that the ecological education and training models developed for preschool children, students of general education institutions, and university students will play an important role in determining the theory, method, and curriculum basis for the establishment. This is in addition to also realizing the sustainable development of environmental education [3]. Heidari Sorshjani Rasoul's research explored the implementation of environmental education projects outside the classroom, as well as in the transplant behavior of Tehran students and nature itself. The research adopted a single-group design method, conducted a questionnaire interview with 74 high school students, and used SPSS19 software to analyze the research data. The experimental results show that the approach of environmental education can change the relationship between students and the natural environment [4]. Butakova Marina M. aimed to develop the method of "food quality management" in the context of the green education project, as well as proposed the analytical method of normative legal documents, and of analytical, scientific, and other material methods. In addition, they proposed to add environmental factors to the results of the formation of graduates' ability regarding the "quality management in food production methods" education project [5]. In order to verify whether environmental education can guide the reuse of reclaimed water among individuals, Fu Hanliang established a structural formula model on the impact of knowledge on the acceptability of reclaimed water—which proved that environmental education plays an important role in guiding the use of reclaimed water by individuals [6]. These scholars have studied education from different aspects, broadening the content of education research to a certain extent, and providing a certain reference basis for research in the field of education. However, their research on education was not comprehensive enough. Therefore, if based on sustainable development, the research on education can play a better role.

The research on sustainable development is very popular in all walks of life, and there are also relevant research reports on education. O'Flaherty Joanne mainly reviewed the impact of intentional development education, sustainable development education, and global citizenship education. Through the review of 243 abstracts, it was found that 26 of them focus on the theme of education to promote sustainable development or environmental education. A total of 12 of them focused on the global content through development education or on global citizenship. Furthermore, 6 of them were cross-cultural education interventions [7]. Shulla Kalterina noted that education for sustainable development is a concept that has evolved with emerging sustainability issues. In the context of the regional expertise center for education for sustainable development as a global multi stakeholder network, she discussed the impact of specific goals on the 17 sustainable development goals [8]. In general, there are not many studies on sustainable development

and education. In order to improve the relevant research on green environmental protection education, as well as to integrate the sustainable development idea, it is necessary to study the penetration approach of green environmental protection education.

In view of the current situation regarding the application of green education, this paper combines the concept of sustainable development in order to build a green education system and a green education classroom. By improving the green education system, carrying out green learning activities, and building a green learning classroom, the overall construction of green education can be promoted, the reform of green education can be deepened, and the green awareness of students can be enhanced. This is important so as to cultivate high-quality talents for sustainable development and to make a contribution to the sustainable development of humankind. Therefore, it is of practical and social significance to apply the concept of sustainable development to green environmental protection education.

2. Research Method

2.1. Sustainable Development

Sustainability covers the meaning of maintenance, application, and provision. Sustainable development has a systematic and comprehensive social development concept, adhering to the concept of multi-dimensional and harmonious development. The theory of sustainable development incorporates the theories of social economics, ecology, population carrying mechanics, etc. [9]. In the theory of social economics, it is not in the mainstream to promote social development with the help of scientific and technological innovation. Knowledge economy is the focus of sustainable human development in the future. Ecological theory emphasizes that human development should conform to the principle of high efficiency, direct attention to the efficient use of resources and energy, and also conform to the principle of harmony. It also promotes the harmonious development of various factors in the system, as well as complies with the principle of self-regulation, such that the internal structure can have the function of self-regulation. The theory of population carrying capacity considers the scope of its own resilience. The resources and environment of the earth system have a very limited bearing capacity for the population, such that the total population must be strictly controlled. It is not difficult to see that the formation and development of the above theories have promoted the birth and development of the theory of sustainable development.

Generally speaking, sustainable development includes "needs" and "constraints", which further constrain human production activities on the premise of meeting basic human needs. Therefore, the theory of sustainable development has been widely applied in many aspects such as nature, economy, and society.

2.2. Green Education

2.2.1. Green Education Concept

The birth of the concept of green education stems from a high attention to nature and due to desiring a better maintenance of the surrounding environment. Therefore, the initial green education is often considered as "environmental protection education" [9]. With the evolution of the times, human beings have gradually realized that the prerequisite for the realization of green development in nature is that human beings themselves can achieve green development. The sustainable development of harmonious coexistence between people and nature is not only the foothold of green development, but also the overall goal of green development. Thus, the meaning of green education has also been extended. Under the premise of "environmental protection education", green education with the theme of "attaching importance to life, caring for life, and promoting students' sustainable development" has emerged [10].

The core attributes of green education include five aspects, as shown in Figure 1. Green education should not only face the problem of green ecological development in nature, but also the problem regarding the sustainable development of humans, nature, and society [11]. Furthermore, it not only cultivates the concept of sustainable development, but

also enables human beings to master the ability of ecological governance and regulation. At the same time in deepening the concept of green development, effective governance and regulation of the ecological environment through a variety of methods can better promote the sustainable development of ecology. In addition, green education is actually about guiding education back to this original purpose. When implementing green education, we should be good at directing attention to the physical and mental development of students, to care for their life and health, and to strive to create a high-quality green education where everyone is considered equal.

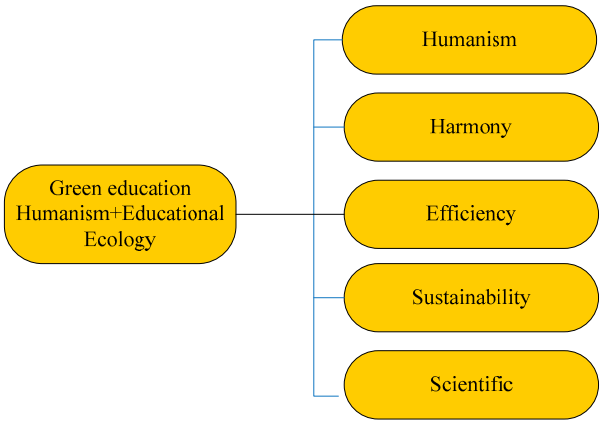

Figure 1. Core attributes of green education.

2.2.2. Laws of Education

Green education is an education of sustainable development. Its educational purpose is embodied in the concept of fully integrating sustainable development, and it is committed to solving the problems of sustainable development at different levels, so as to achieve the lasting coexistence of man and nature [12]. By adopting different educational methods, students can participate in green learning, exercise their high-level thinking abilities, and effectively promote the development of lifelong learning.

2.3. Green Education in Colleges and Universities

2.3.1. Construction of Green Education System

To implement green education in colleges and universities, educators should not only provide professional knowledge, skills, advanced ecological concepts, as well as vigorously cultivate professional talents for sustainable development, but also improve the teaching level of green education itself [13]. Green education would be added to the quality education curriculum. At the same time, a set of perfect green education system guidelines should be constructed from various aspects.

(1) Improving green education teaching resources

The classification of green education teaching resources is shown in Figure 2. Education and teaching resources are composed of three parts. With the help of teaching resources, students can better achieve the corresponding learning goals. On the basis of green education, to build educational and teaching resources, there would be a need to adhere to the student-centered principle, to choose teaching materials that are suitable for students' individual development, to establish a teaching environment with the concept of green education development, and to provide students with a teaching support system for green education.

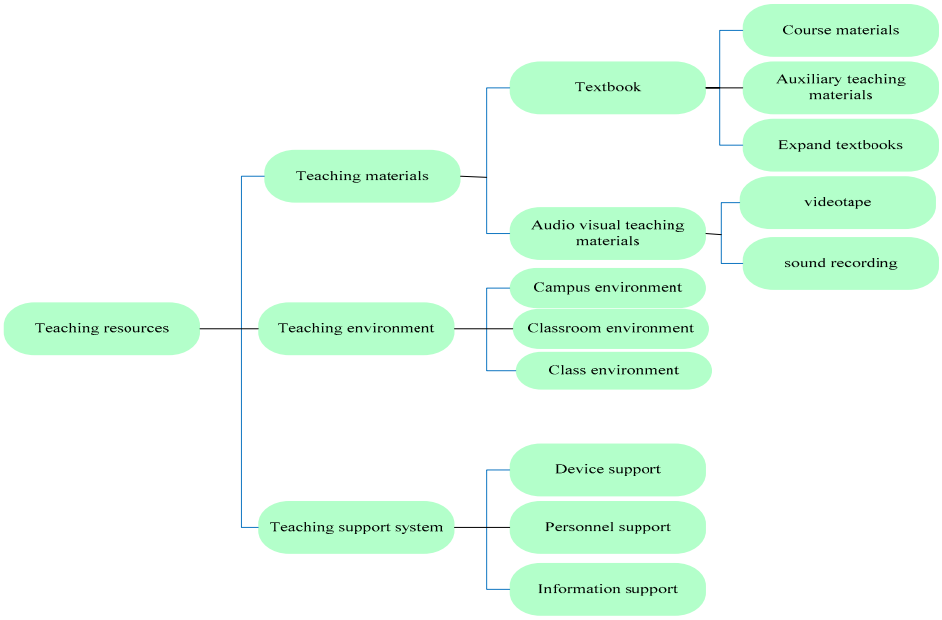

Figure 2. Classification of green education teaching resources.

(2) Professional education and training

At this stage, the global population continues to increase. Energy continues to be poor, and the ecological environment continues to deteriorate. Colleges and universities must actively carry out professional education in environmental science to provide professional talents for green manufacturing, energy conservation, consumption reduction, and green environmental protection in various fields. In order to promote the development of low-carbon green environmental protection and to accelerate the construction of a green ecological civilization, colleges and universities should improve the professional research system, improve the relevant regulatory mechanisms, and establish a professional regulatory agency for regional economic development. They should also commit to providing high-quality and satisfactory services for the development of regional green economy, as well as cultivate more outstanding talents for the green production of regional industries.

(3) Green quality education for all staff

The key to the implementation of green education is to integrate the concept of green education into the quality education curriculum, to build a sound green education system, and to develop a mechanism for cultivating outstanding talents. The green education system covers knowledge, emotion, and behavior. In terms of knowledge, green education courses are mainly set up for students to learn the relevant knowledge of green education, which fully reflects the concept of sustainable development [14]. The emotional aspect is mainly expressed through stimulating students' inner environmental protection concepts, through helping them to form correct values and natural outlooks, as well as regarding low-carbon environmental protection as an important value orientation. The behavior part should focus on the environmental protection of life, on green classroom teaching, on the concept of a green campus, as well as on publicity planning and other aspects. Creating good practice opportunities for students can enable them to use green knowledge and professional skills in practice, so as to cultivate their good habits.

2.3.2. Construction of Green Education Classroom

According to the actual situation of school education, green education can be roughly composed of five basic elements, thereby integrating the five core attributes of green education in order to build a green education system, as shown in Figure 3.

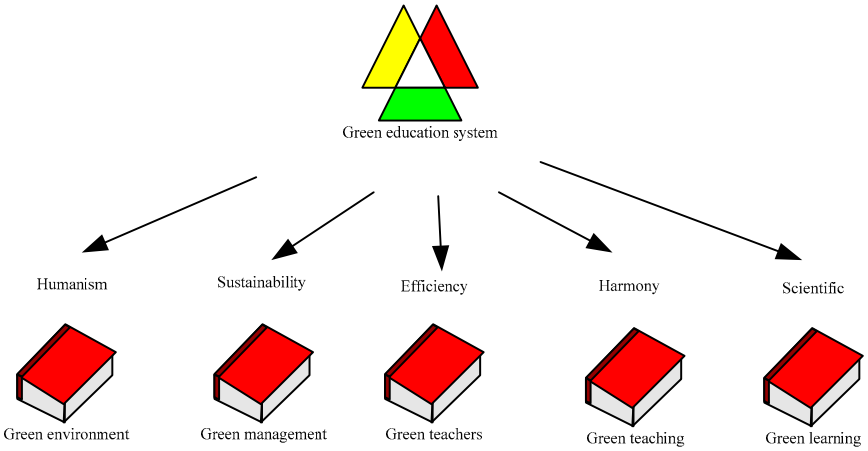

Figure 3. Green education system.

It is necessary to integrate the green education system, carry out green campus activities, and to create a green class environment. There is also a need to improve the recruitment of more green teachers, to carry out green teaching activities, and to promote the coordinated development of students' green learning [15]. In combination with the green education system, green classroom teaching can be constructed from the following aspects: First, teachers should move away from unilateral teaching to multilateral cooperation and should also adjust their interaction between teachers and the students of the whole school; second, teachers should adjust from a spoon-feeding teaching technique to a logical thinking and innovation teaching approach; lastly, teachers should adjust from exam-oriented teaching to adult-oriented teaching. The construction of a green classroom is shown in Figure 4.

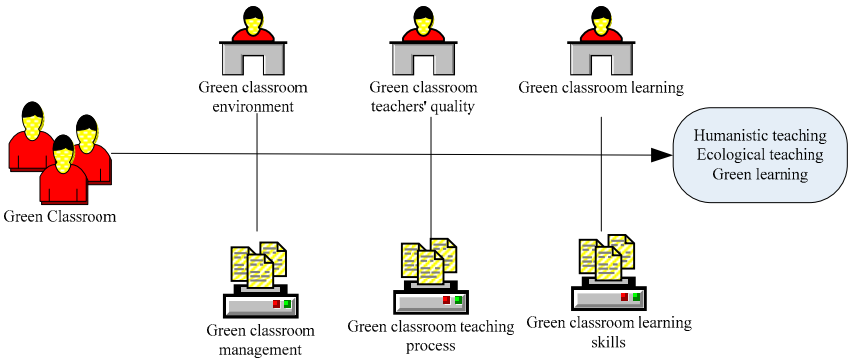

Figure 4. Green classroom construction.

2.4. Approaches by Which to Infiltrate Green Environmental Protection Education into Teaching

It is very necessary to infiltrate green environmental protection education into the teaching of different disciplines. By infiltrating green environmental protection education concepts into teaching, students can constantly improve their green environmental protection awareness imperceptibly. Under different disciplines, the manner of infiltrating green environmental protection into education is also slightly different. This article primarily takes the chemistry course and the Chinese course as examples by which to analyze them.

2.4.1. Infiltration of Green Environmental Protection Education in the Chemistry Curriculum

(1) Connecting the teaching content with real life

In chemistry teaching, teachers should be good at transferring the knowledge in textbooks, such that it can be closely linked with real life. The students' actual life can be explored to provide reliable support for the development of education and teaching

activities, such that they can actively participate in the activities and can cultivate the students' green awareness in the activities.

(2) Improving chemical experiments and enhancing environmental awareness

In chemistry teaching, students often need to do chemical experiments. Conducting chemical experiments can better cultivate students' comprehensive qualities and abilities. Therefore, teachers should fully mobilize students' practical operation abilities, observation abilities, and thus strain their abilities according to the specific content of chemical experiments. During the experiment, teachers can convey environmental awareness to students. Generally speaking, when conducting experiments, teachers usually come into contact with certain harmful substances. When teachers demonstrate experimental teaching, they can explain their hazards to students, so as to cultivate students' awareness of ecological environmental protection.

Teachers should also integrate chemical experiments with environmental protection education. For example, teachers can inform students of the possible harm caused by the wrong disposal of hazardous substances. In this process, students will be able to know the correct treatment of hazardous substances. In the context of practical teaching, in order to avoid the leakage of harmful gases, students should be allowed to master the treatment methods of these gases, as well as master various environmental protection knowledge, so as to better realize the importance of environmental protection.

2.4.2. The Penetration of Green Environmental Protection Education in Chinese Curriculum

The training of writing is an important part of Chinese teaching. The level of writing is closely related to a students' social practice and ideological awareness. When guiding students' training of writing, green environmental protection education can be infiltrated into the composition guidance to enhance students' environmental awareness. For example, people can integrate the theme of scenery descriptions, narrative themes, observational diaries, and other such writings in order to carry out environmental education penetration.

There are two kinds of extracurricular practical activities in Chinese teaching. One is composition teaching, and the other is extracurricular activities. Composition teaching is actually an application of Chinese knowledge; therefore, it can also be seen as a kind of Chinese practice. In writing, students can observe life with heart and find the beauty of life. In order to achieve the goal of teaching, the teacher flexibly uses knowledge to express different views on green ecology.

2.5. Educational Resource Allocation Model Based on Differential Evolution Algorithm

From the perspective of sustainable development—to develop green environmental protection education, in addition to building a green education system and building a green education classroom—it is also necessary to build an education resource allocation model in order to achieve the reasonable allocation of education resources, so as to ensure the balanced development of education quality. In order to improve the performance of the educational resource allocation model, it is necessary to integrate certain algorithms to optimize it. Therefore, this paper proposes to apply the differential evolution algorithm to the model. The differential evolution algorithm has a good inherent parallelism and fast convergence speed; it can reasonably and quickly allocate different educational resources. Therefore, the application of the educational resource allocation model, as based on the differential evolution algorithm, to the allocation of educational resources can effectively achieve a balanced and optimal allocation of educational resources.

2.5.1. Differential Evolutionary Algorithm

The differential evolution algorithm is a global optimization algorithm. In this algorithm, individuals in the population have matching solution vectors. From the operation process, the algorithm is generally the same as the genetic algorithm, with mutation, crossover, and other operations. The operation process of the differential evolution algorithm is to take any population as the starting point, to carry out initialization, normaliza-

tion, mutation, and other operations on individuals, as well as to determine how to, finally, retain the best individual.

2.5.2. Construction of Educational Resource Allocation Model

In the solution space, if any individual that can meet the constraint conditions is generated, the n-dimension value of the individual is

$$\mathrm{Y}_{\mathrm{m,n}}^{\mathrm{Q}} = \mathrm{minY_n} + \mathrm{rand}(0,1)\cdot(\mathrm{maxY_n} - \mathrm{minY_n}) \tag{1}$$

Among them, $\mathrm{maxY_n}$ represents the maximum value in solution space $\mathrm{Y_n}$, and $\mathrm{minY_n}$ represents the minimum value; in addition, $\mathrm{Y}_{\mathrm{m,n}}^{\mathrm{Q}}$ represents the initial value of the Q generation population.

After the mutation operation of population individuals in the education resource allocation model, during the $Q+1$ iteration calculation, it is necessary to find any three individuals from the population as the mutation vector, which is expressed as R_m^{Q+1}. The formula of this is

$$R_m^{Q+1} = Y_1^Q + T\cdot\left(Y_2^Q - Y_3^Q\right) \tag{2}$$

In the formula: Y_1^Q, Y_2^Q, and Y_3^Q represent the three different types of individuals randomly selected from the population; moreover, $\left(Y_2^Q - Y_3^Q\right)$ represents the difference vector, and T represents the scaling factor.

Cross operation is performed on the educational resource allocation model [16]. After cross operation, the individuals in the population and the mutation intermediate individuals generate new individuals, which are expressed as $U_{m,n}^{Q+1}$. The new individuals are extracted, and the formula is

$$U_{m,n}^{Q+1} = \begin{cases} R_{m,n}^{Q+1}, rand(0,1) \le I_O \text{ or } n = rand[1,E] \\ Y_{m,n}^{Q}, rand(0,1) > I_O \text{ and } n \ne rand[1,E] \end{cases} \tag{3}$$

After crossover and mutation operations, certain individual thresholds in the population may exceed the limited interval. It is assumed that the range of p is $[a,s]$, and p' represents the new individual after operation. It is necessary to distinguish the boundary conditions of the new individual and to give the corresponding solutions. The solution is as follows:

The first is boundary absorption, and the operation is as follows:

$$p' = \begin{cases} a, p' < a \\ s, p' > s \end{cases} \tag{4}$$

The second is to generate new individuals at will, that is, when $p' < a$ or $p' > s$, whereby the result is

$$p' = a + rand(0,1) \times (s-a) \tag{5}$$

After the individuals in the population undergo mutation and crossover operations, new individuals are obtained, and the best one is selected to enter the next generation. The formula is as follows:

$$Y_m^{Q+1} = U_m^{Q+1}, g\left(U_m^{Q+1}\right) < g\left(Y_m^Q\right) \tag{6}$$

After many iterations, the high-quality individuals are saved. The retrieval process is correctly guided to approach the global optimal solution, and the best results are finally output.

The flow chart of the educational resource allocation model integrating the differential evolution algorithm is shown in Figure 5.

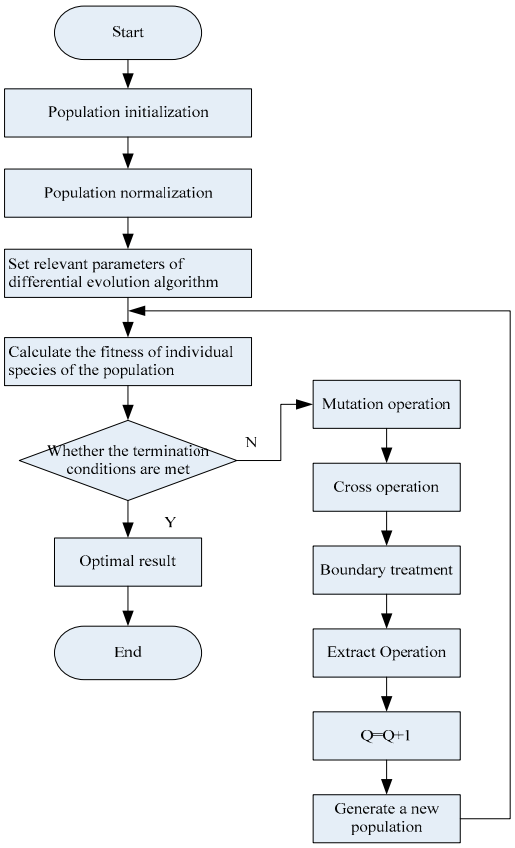

Figure 5. Flow chart of the educational resource allocation model.

The education resource allocation model uses the mean square error as the fitness value function [17], and the fitness values are as follows:

$$D_m = D_{m-1} + \left[\frac{F_m + h_m}{k_m} - \frac{\sum F_m + \sum h_m}{\sum k_m} \right]^2 \tag{7}$$

Among them, D_m represents the total fitness value of educational resources after allocation to each district and county; F_m represents the total resources of each district and county before allocation; h_m represents the number of resources allocated to each district and county by the model; and k_m represents the number of students in each district and county.

As for $D_m > 0$ and $h_m \geq 0$, through the above research, if one wishes to reduce the value of D_m, then priority should be given to the allocation of educational resources to the districts and counties that are less than the average of the total district and county resources.

3. Research Results

In order to test the effectiveness of the differential evolution algorithm on the educational resource allocation model, this paper collected the relevant information of educational resources in five counties in a certain area, as well as counted the number of teachers, students, and books in middle schools in each county. According to the above data information, combined with the algorithm in this paper, researchers carried out relevant testing experiments on the educational resource allocation model, and used traditional algorithms to carry out comparative experiments.

3.1. Student Teacher Ratio Allocation Test

The number of teachers is a part of educational resources. In order to rationally allocate the number of teachers and students in each county, with the aid of the allocation model,

two algorithms were used to test the number of teachers and students in each county. The specific allocation is shown in Figure 6.

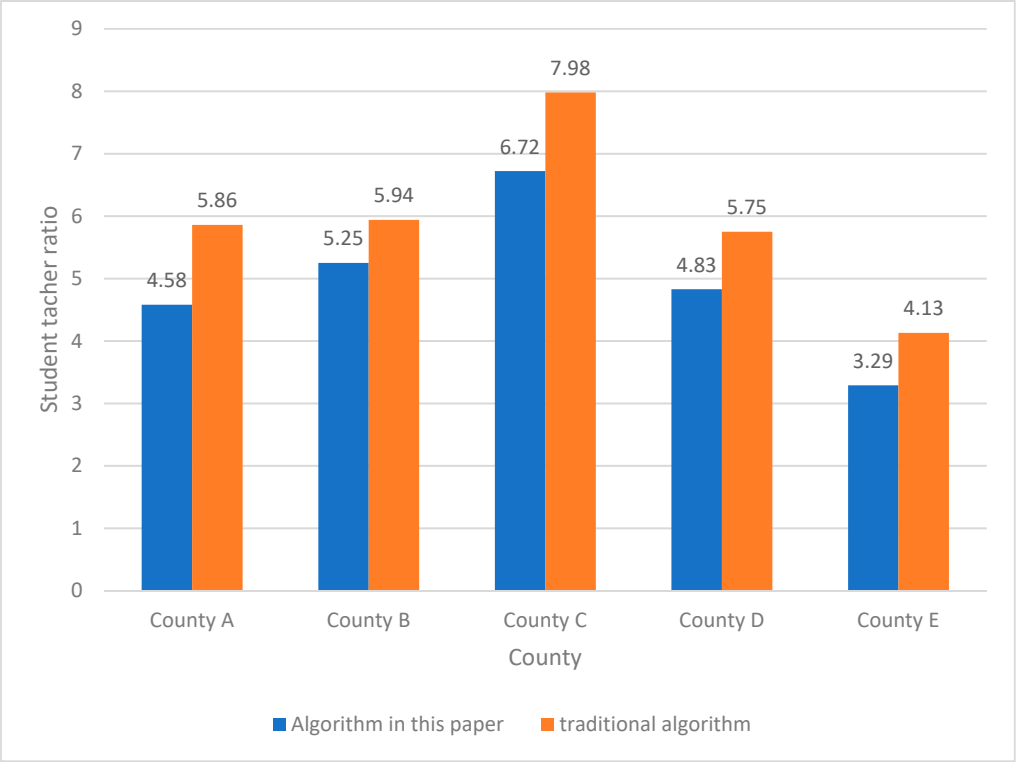

Figure 6. Comparison of distribution of student teacher ratio in each county.

It can be seen from Figure 6 that the allocation of teacher and student resources varied among the different counties, indicating that there was a certain gap in the allocation of teacher resources among the counties. The higher the student teacher ratio, the more unreasonable the distribution of student teacher resources in the county; the smaller the student teacher ratio, the more reasonable the distribution of student teacher resources in the county. Under the traditional algorithm, the student–teacher ratio of each county was relatively large, and the minimum student–teacher ratio of County E was 4.13, which indicated that there were more teacher resources in this county and that the allocation was more reasonable. County C had the largest student–teacher ratio, reaching 7.98, which indicated that the number of students in the county was too large. The number of teachers was too small, and the allocation of student teacher resources was relatively unreasonable. The average student–teacher ratio in each county was 5.93. Under the algorithm in this paper, the student–teacher ratio in each county was relatively small. The minimum student–teacher ratio in County E was 3.29, indicating that the teacher resources in this county were relatively sufficient and that the student–teacher ratio was reasonable. The maximum student–teacher ratio in County C was 6.72, indicating that the teacher resources in this county were relatively scarce and that the student–teacher ratio was not reasonable. The average student–teacher ratio in each county was 4.93.

3.2. Distribution Test of Per Capita Book Volume of Students

The amount of books per student is also one of the important indicators to measure whether the distribution of educational resources in a region is reasonable. In order to further compare the differences between the two algorithms, this paper conducted a test experiment in terms of the book allocation per student. The test results of the two algorithms are shown in Figure 7.

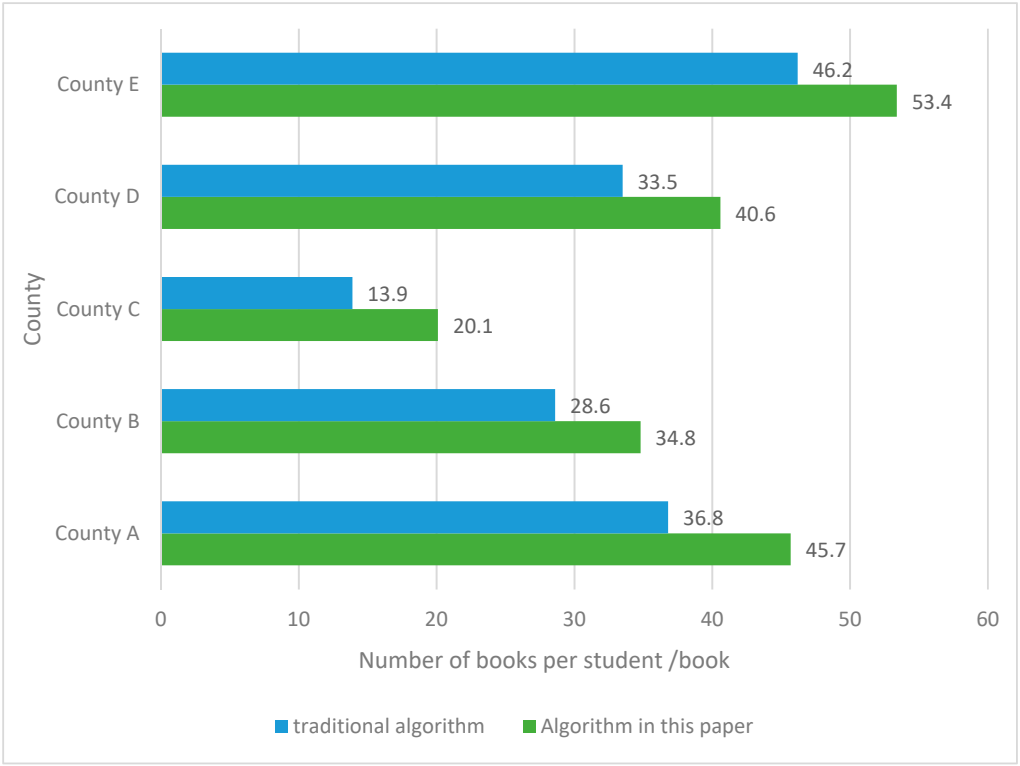

Figure 7. Comparison of per capita book distribution among the students in each county.

The amount of books per student determines the abundance of educational resources in the county. The more books per student, the more books the county has and the better educational resources; the less books per student, the more scarce the county's book resources and the less educational resources. It can be seen from Figure 7 that under different algorithms, the distribution of books per capita among students in each county was different. Under the traditional algorithm, the number of books per student in County C was the least, 13.9, which indicated that the book resources in this county were relatively scarce; the maximum number of books per student in County E was 46.2, which indicated that the book resources in this county were sufficient; and the average number of books per student in each county was 31.8. Under this algorithm, the number of books per student in County C was at least 20.1; the maximum number of books per student in County E was 53.4; and the average number of books per student in each county was 38.92.

3.3. Average Running Time Test

In order to compare the advantages and disadvantages of the two algorithms more comprehensively, this paper also conducted test experiments from the average running time of the model allocation of educational resources, as shown in Figure 8.

It can be seen from Figure 8A,B that the average running time of the two algorithms for different resource allocation was significantly different. In Figure 8A, the average running time of the model in terms of allocating teacher resources was 1.47 s. The average running time of the model to allocate book resources was 1.39 s. It can be seen that the average running time of the two resources was relatively short, which indicated that using the algorithm in this paper to allocate resources can shorten the average running time of the model and can also improve the running efficiency of the model. In Figure 8B, the average running time of the model in terms of allocating teacher resources was 2.36 s. The average running time of the model in terms of allocating book resources was 2.58 s. The average running time of each resource allocation would also be slightly higher. This showed that using traditional algorithms to allocate resources would cause the model to consume more average running time, resulting in a lower allocation efficiency of the model.

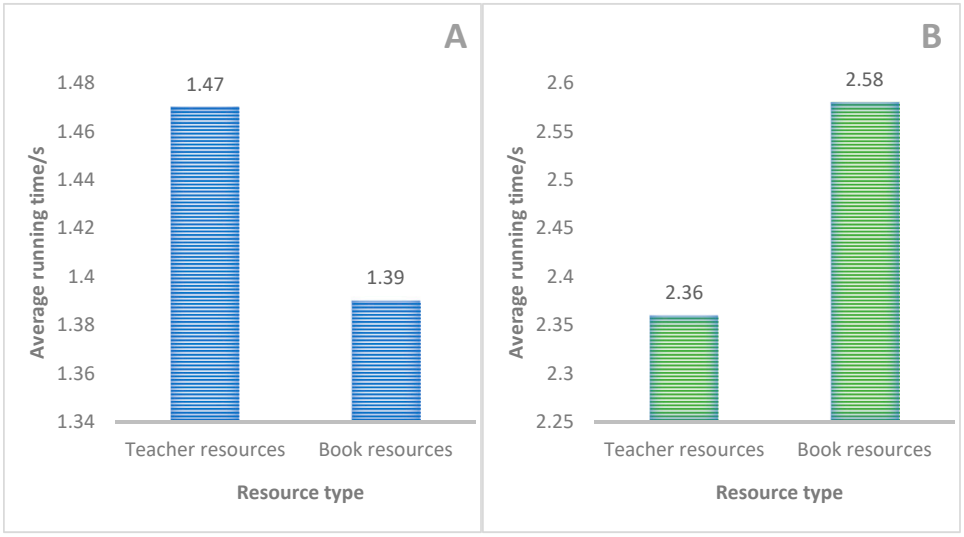

Figure 8. Average running time of the different resource allocations. (**A**) Average running time of different resource allocation of the algorithm in this paper. (**B**) Average running time of different resource allocation of traditional algorithm.

4. Evaluation

In the student–teacher ratio test experiment, the student–teacher ratio in each county under the algorithm in this paper was found to be smaller. The smaller the student–teacher ratio is, the more reasonable the allocation of teacher resources will be, and the more teacher–student resources will be in this area. In the test experiment of the per capita book distribution of students, whether the distribution of the per capita book volume of students in a single county or the average distribution of the per capita book volume of students in each county, the per capita book volume of students in this algorithm is higher than that which is found in the traditional algorithm. It can be seen that this algorithm can effectively improve the matching performance of the model and make the book distribution more reasonable. In terms of the average running time test of the educational resource allocation model, the average running time of the model allocation under the algorithm in this paper is shorter. It shows that this method can effectively improve the resource allocation efficiency of the model and can improve the allocation performance of the model.

5. Conclusions

In order to realize the reasonable and optimal allocation of educational resources in different regions, as well as to improve the quality of education and teaching, it is also necessary to build an educational resource allocation model on the basis of green environmental protection education to ensure the balanced allocation of various educational resources. In order to improve the allocation performance of the model, this paper also introduced the differential evolution algorithm, and carried out experimental research on the allocation of teacher resources and book resources in each county with this model. The experimental results show that the algorithm can effectively optimize the proportion distribution between students and teachers, make the allocation of resources between teachers and students more reasonable, and also reasonably optimize the distribution proportion of the per capita book volume of students, thus reducing the differences in the distribution of book resources in different regions, so as to achieve the balanced allocation of education and teaching resources. It can be seen from this that it is feasible to use the educational resource allocation model, integrating the differentiation algorithm in order to study the resource allocation of green environmental protection education. Due to the limitations of the experimental conditions, this experiment only analyzes the model from the aspects of teacher resources, book resources, and the average running time of resource allocation. Other aspects have not been studied. In future research work, the differential evolution algorithm still needs to be constantly adapted

to the developmental needs of the educational resource allocation model. In addition, it also needs to improve the performance of the algorithm, and thus needs to also provide more effective help for resource allocation.

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