

A Study to Explore Environmental Education in the Curriculum Development in China

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Abstract

Environmental education is an emerging educational tool and method to address a wide range of educational issues. However, environmental education is not commonly used in Chinese education. Especially in curriculum development. Therefore, this study used four teacher interviews to explore the research on environmental education in curriculum development in China and to make valuable recommendations. According to our research findings, environmental education is mainly led by the Chinese government, rather than by schools and teachers. Recommendations emphasize the involvement of stakeholders in environmental education, including government, departments, schools, and teachers.

1. Introduction

In recent Environmental education is a type of education that aims to utilize education to address environmental challenges and achieve long-term environmental sustainability. Its goal is to enable individuals to create effective solutions for long-term development [1].

The relevance of environmental education has been acknowledged and embraced by people from all walks of life as a result of the escalating environmental problem. Many nations consider environmental education to be an essential aspect of the educational revolution, and have established numerous environmental education models, with schools serving as the primary delivery channel [2]. As a result, environmental education is widely supported in schools across the globe.

The development of environmental education in China is crucial. As China's rapid social and economic growth takes its toll on the environment, air and water pollution, loss of biodiversity, land degradation and desertification pose a serious threat to the country's long-term development. Education is vital in preparing the country's future generation, not only to promote social and economic progress, but also to ensure that these improvements are long-term.

Recently, the concept of "green education" has emerged to be promoted, to integrate environmental education, environmental protection, and sustainable development in all-natural and social science disciplines and all elements of school life [3]. China

applies green education to schools at different levels of education, from kindergarten to university.

Compared to the global level of environmental education, China's environmental education has made some progress at both the theoretical and practical levels. However, there are still problems, including a lack of knowledge and training, outdated concepts, a lack of environmental education teachers, and a lack of awareness [4][5][6]. Therefore, the development of an environmental education curriculum in China is a challenge that needs to be addressed urgently.

2. Interview process

This study was conducted through the use of qualitative research for data collection, and this section presents the research conducted in the form of interviews. A total of four teachers were interviewed as participants. The four teachers who participated in the interviews were from different stages of education. The content of the interviews was structured around four main questions (see Table 1).

Name	Position	School	Interview place
Ms. Zhang	Chinese teacher and headteacher	A high school in Zhejiang Provenance in China	Video call
Mr. Li	Information technology teacher	A high school in Fujian province in China	Written feedback
Ms. Li	English teacher	An education institution in Shaanxi province in China	Written feedback
Mrs. Ma	Arabic teacher	A university in Gansu province in China	Phone interview

Table 1. Interview Information Form

We also conducted an interview to find out how and to what extent environmental education has been implemented in the school curriculum, and what goals have been achieved in the implementation process. *What are the challenges facing*

environmental education? What support is needed for environmental education? Through the analysis and study of the interviews, suggestions for the future implementation of environmental education in the school curriculum were made:

Question 1: How is environmental education in the school curriculum currently implemented?

Ms. Zhang: Currently, environmental education is promoted, but there is no separate environmental education curriculum. The Education Bureau will issue documents or notices about environmental education content and then schools will implement following the content of the documents. At the class meetings, we will carry out environmental education. In high schools, class meetings that the headteacher hosts are generally held once a week. The topic of the class meeting is uncertain, it is up to the Education Bureau and current events. Besides, the Ministry of Education and the school will issue brochures on environmental education to raise students' awareness of environmental protection. The headteacher and school also carry out some environmental activities. For example, environmental knowledge competitions, picking up litter, garbage classification, and tree planting activities.

Some topic knowledge in the Chinese class is connected to environmental education. As a Chinese educator, I will incorporate environmental education into the curriculum. A portion of the subject in the necessary exam writing essay is connected to environmental protection, and I will expand on the content of this section now. There are a few articles about environmental education in the textbook. Consider the ancients' environmental protection with modern literature's environmental protection. At this time, I'm going to group them into a series of subjects.

Mr. Li: Apart from our superiors' regulations, there are certain implicit concepts regarding environmental sustainability in the context of teaching in the school classroom, and there are many things we may do based on these ideas.

I apply the notion of environmental education in my lessons. For example, I educate my students about normal computer maintenance, which has the benefit of extending the life of the computer while also minimizing unneeded or artificial waste, as well as allowing them to see how text-based computer multimedia applications can considerably simplify people's lives.

Ideas and suggestions are usually put forward at school meetings, and we implement them. Environmental education has not been a part of education in our country for a long time, but it is

related to everyday behaviors such as environmental protection, conservation, and protection of the environment.

For the IT course, I believe that environmental education will save a significant amount of manpower, resources, and even funds for education; this method can be useful in guiding and assisting students in collecting information and building a database related to environmental protection, and we can extract a series of environmental data through data processing; for example, we can create a machine waste collection vehicle to teach students how to sort waste and environmental awareness, and we can extract a series of environmental information through data processing; for example, we can create a machine.

Ms. Li: I have arranged several significant school conferences as an English teacher, in addition to having some environmental education training at school. In addition, I represent the institution at educational conferences held around the city. This is an idea that I need to bring into my school and classroom as an instructor. Environmental education is necessary for students.

I will continue to highlight the relevance of the learning environment in the curriculum and work to increase kids' overall literacy. I will incorporate environmental education principles into my curriculum design because English is an important subject. Essay contests, speech contests, theatre plays, and even environmental debate challenges are just a few examples. This is a fantastic approach to get children involved in something that interests them while also giving them a deeper awareness of the environment.

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In addition, I help them become more conscious of the curriculum's surroundings. Teachers and students' motivation is influenced directly by the classroom and school environment. Students are asked, for example, not to toss trash out, to sort trash, to decrease waste, and to occasionally bring in recyclable objects to use as learning materials.

Mrs. Ma: Our university has pushed for environmental education for professors and students in recent years. We hope that everyone knows about

it. We try our best to influence our members subliminally through the publication of environmental knowledge in the school's publicity windows and galleries; the regular broadcast of environmental-related messages, films, and videos on the school radio station and campus electronic screens; and the regular broadcast of environmental-related messages, films, and videos on the school radio station and campus electronic screens. Teachers must ensure that the subject is focused and that environmental awareness is actively instilled in the classroom. When organizing public classes and good teaching plan contests, the school intentionally prioritizes environmental education, and environmental knowledge questions are highlighted in the final evaluation.

Question 2: What has been achieved so far?

Ms. Zhang: The documents issued by the Education Bureau and the completion of various activities are very good, but the durability is not very good. Schools, teachers, and students are passively accepting the knowledge of environmental education, rather than completing activities spontaneously, so environmental education needs to be improved and perfected. It is not difficult to integrate the content of environmental education in the classroom. As long as there is environmental knowledge in the textbook, the teacher can integrate and expand it.

Mr. Li: Teachers in schools are learning about this and working hard to put it into practice. Our country's beliefs and goals are communicated through strategies and papers. We're gradually learning new stuff. The most significant accomplishment is the success of environmental education in schools, where concepts are readily integrated into the curriculum. Using text and multimedia resources, my students were able to produce posters and web-pages on the topic of the environment. Computers are carefully maintained, and equipment lasts longer under my teaching style.

Ms. Li: I think the achievements include the following: The teacher integrates environmental education and teaching well. The teacher is skilled in using environmental education concepts to instruct and teach students to do behaviors that are beneficial to environmental education. The implementation of environmental education fosters the development of correct environmental attitudes in students and teachers.

Students can maintain a good environment whether in school or elsewhere, develop good habits of making things from recyclable items, and behave in a socially conscious way in their daily lives.

Mrs. Ma: Our school uses characteristics as a breakthrough to reinforce behavioral instruction. Students are encouraged to gather information via nurturing flowers, trees, and other forms of environmental management that they cannot learn from textbooks. Students will be able to increase their passion for nature's beauty and be more creative as a result of these types of practical exercises. We also employ the school's rules and regulations to make it a place where kids may strive to be.

Nowadays, the campus is clean and tidy, and there is no littering of paper and fruit shells outside, no plucking and climbing of campus plants and trees. Students and teachers will remove the stains on the walls voluntarily. Each faculty organizes students and teachers to fertilize and weed the campus gardens every week to keep them appealing and beautiful.

In addition to actively creating a better school environment, we also guide students to participate in social-environmental protection work by communicating with community workers to learn how to sort waste from our daily life and how to use seemingly useless items to turn waste into treasure. Also, some students have taken the initiative to investigate the community environment. Contacted the relevant departments to put forward some constructive suggestions. In short, the school hopes that these environmental education measures will help students and teachers to fully explore their ability to create and appreciate the beauty and to make use of the small the environment provided by the school to contribute to the larger environment of society.

Question 3: What are the challenges to implement/integrate environmental education in the school curriculum?

Ms. Zhang: We are exam-oriented education. Exam-oriented education is still based on examinations and knowledge learning. Environmental education will be in a weak position and the school will not set it up as a separate subject, just using it as an activity to raise environmental awareness.

Mr. Li: There will be many problems in the implementation of environmental education in China because the education situation is different in each country. For example, environmental education is not suitable for every area of China. There are differences in education in China, in resources, teaching level, economic level, and other aspects. So it's going to be a long process. For my course, the challenge lies in the intense work and little professional guidance.

Ms. Li: For the school where I work, the challenges include the lack of professional environmental education knowledge in the school, which makes it difficult to implement. The school has no corresponding system. There is no specific scope for environmental education, and many teachers and students do not particularly understand the meaning.

Mrs. Ma: Humans need to learn to live in harmony with nature, and this is an important issue in the 21st century. The integration of environmental education into the school curriculum is a strong challenge, as it is quite flexible, innovative, and realistic. Both environment and education are closely related to our daily life, and the changes it brings fundamentally affect traditional teaching methods, teachers' basic business structures, teaching guidelines, educational concepts, and school management ideas and management systems. Sometimes it makes a school lightly passive and awkward.

Our school also lacks a team of instructors that specialize in environmental education, resulting in poor teaching quality. As a result, our school still has to strengthen its efforts in introducing talents and building an exchange platform in accordance with development demands, so that students may benefit from high-quality teaching materials in a group setting.

Question 4: What kind of support is needed to implement/integrate environmental education in the school curriculum?

Ms. Zhang: I hope to get the support of the government. If the government can increase its efforts to promote environmental education, then in this environment, schools and teachers will more easily and fully carry out environmental education. Schools can increase their material support to increase the enthusiasm of students and teachers. Environmental protection organizations in society can also cooperate with schools. There are still relatively few entertainment movies of environmental education on the market. Videos and movies about environmental education will increase the interest of students.

Mr. Li: There are teaching assistants and more professional experts involved because we encounter questions or problems in the implementation of the school curriculum that we cannot solve. We need the help of teaching assistants to solve them. We also need professional experts to train the teachers. The government provides them with resources and financial support. Government support is the biggest

incentive to promote environmental education. This will facilitate better implementation.

Ms. Li: I think the greatest support comes from our students, and we need them to be informed and actively involved. We also need to collaborate with other teachers, share our teaching, learn from other strengths, and share issues in environmental education. Support from the school system is also important to promote the development and impact of environmental education in schools. Public opinion can promote environmental education and create a good sense of community, with more and more people getting involved.

Mrs. Ma: When implementing environmental education in the school curriculum, we also need the support and assistance of multimedia technology. Teachers need to use information technology to optimize environmental education lessons, stimulate students' interest in learning, and enhance communication and interaction. At the same time, we need to strengthen students' sense of concern and mobilize their sense of responsibility. The support we need most should come from teachers and students. We hope that teachers will provide diverse teaching formats in terms of teaching methods, design creative teaching activities, and activate students' inner motivation to integrate knowledge, emotion, attitude, value education, and environmental education. Only then will students be fully aware of the importance of environmental protection.

3. Recommendation

Overall, the Ministry of Education expects that through passing the National Guidelines for Environmental Education, Chinese children would get a better understanding of the environment and sustainable development [7]. Until now, China has not paid much attention to environmental education, which has resulted in a serious lack of knowledge and awareness of environmental education among students. This has also hindered China's educational efforts to protect the environment.

Interconnectedness, variety (biological and cultural), sustainability, and involvement are all essential elements in the standards. Environmental education in China is cited as an example of the critical role that humans can play in conservation and sustainable development by incorporating teachers, students, departments, and government officials in the establishment of guidelines that may be advocated by an NGO [7]. Therefore, considering the implementation of environmental education in the Chinese education curriculum, education

stakeholders are the ones that need to be included [8].

The government plays an important role in environmental education and is a driving force in the development of environmental education in the school curriculum [9]. Support from the government is needed. Improvements in environmental education require government support. To further promote the development and spread of environmental education in primary and secondary schools, the Ministry of Education should promote it. The government can also play a prominent role in making energy efficiency more successful [9].

Since the government is the main sponsor of environmental education, what it needs to do is support environmental education in different regions and adopt diverse methods to environmental education in different locations to make it more adaptable. Environmental education legislation has to be passed quickly by the Chinese government. In nations like the United States and Japan, the key parts of environmental education law can be studied. Specific rules, such as certification criteria and financing, should be included of the environmental education law. Create a strategy for enforcing penalty laws [10]. In addition to referring to successful legislation in other countries, there is a need to adapt the content to take into account the unique characteristics of China and to monitor implementation by local authorities.

Public opinion is also one of the driving forces in environmental education. Public opinion supports government action to a certain extent, and it also represents the public's views and opinions on environmental education. The role of public opinion is that it travels fast, and it should help the government to promote the idea of environmental education. It is important to develop environmental awareness. Schools can do a better job of disseminating knowledge through activities [11].

Considering the current political, economic and cultural situation in China. In future research on environmental education, the research should go beyond the field of education and should extend to cultural and social aspects such as environmental social participation in the protection and promotion of social sustainability; it should be people-centred. Financial support should be provided for such research [12]. Financial support can be used to address issues of curriculum development in Chinese schools through research. The ultimate goal of education should be achieved.

China has the capacity to engage in multilateral international cooperation and exchange. One of these is through participation in international conferences on sustainable development, the promotion of the concept of sustainable development, multinational cooperation projects on sustainable development,

and the development of Chinese cultural models of environmental education (EE) and education for sustainable development (ESD) based on the Western model of education for sustainable development. It draws on the philosophical traditions and ideals of Confucianism [13].

Next, then, schools need to take the lead in environmental education, rather than waiting for a note from the government and therefore act as a window to promote environmental education in society. The best way to do this is to identify environmental content within the established subject areas in the curriculum [14]. In schools, schools need to help teachers with the development of environmental education curricula, with the ultimate aim of helping students develop an awareness of environmental education to better receive the knowledge and content.

The cooperation of the parents of the pupils will lead to better implementation of environmental education and will also contribute to the development of the school curriculum, thus having a positive impact on students [15].

Teachers play a key role in the development of environmental education programs in schools [16]. Therefore, teachers need to explore more materials to stimulate students' interest in environmental education. They can start by focusing on the environmental issues around them and making students aware of the need to protect the environment. Green education and 'green curriculum' should be accompanied by a 'green atmosphere', as 'green education can only be truly effective if it raises students' environmental awareness and integrates the concept of sustainable development into every corner of their lives [3]. Such a curriculum will only be effective.

The Education Bureau is the interface between the state and the school. In addition to the need to implement policies promulgated by the national Ministry of Education, and to achieve specified educational objectives, the Education Bureau can add environmental education to school examination standards. The Education Bureau can also encourage teachers to include environmental education in their teaching. Teachers can be effective in raising awareness of environmental education when teaching texts. Therefore, the publication of 'green textbooks' and related articles in various subjects should be encouraged to enrich teaching and learning [17].

As countries grow, their impact on the environment increases, and this is where controls on consumption become critical. For example, with China's rapid growth, the demand for wood, steel, and fossil fuels is increasing, and without control, sustainable development cannot be achieved. They need to realise that there is not an inexhaustible supply of resources. Creating the right awareness of

environmental education starts with individual student activities [18].

In emphasizing experiences and outdoor activities in teaching environmental education, teachers should give students different experiences in the environment through different teaching activities so that they can understand the environment and how to protect it for future needs [19]. Learners will develop skills to search for different relationships between the environment, surrounding phenomena, and environmental issues/problems. As a result, they will develop environmental sensitivity, action skills, and take responsible action in nature, social relationships [20].

The prior knowledge base held by individuals may sometimes be biased or misunderstood, so their knowledge structure is different from the scientific concept [21]. However, cooperative learning can be a good way to avoid such misconceptions. Cooperative learning allows learners to share their prior knowledge with teachers and other learners [22]. The use of investigative, experimental, and cooperative learning methods addresses the issues of acquisition of knowledge and skills, also the cultivation of attitudes. Through these methods, learners are allowed to implement guided inquiry into environmental issues [23].

Kimaryo [24] notes that for teachers to be able to implement environmental education in schools, they need to have a good knowledge base of environmental education. Good teachers should have a good knowledge base, which includes knowledge, skills, understanding, and a tendency of collective responsibility. In addition, education departments and schools should organize regular training for teachers to improve their ability to teach environmental education.

According to Shulman's model, pedagogical content knowledge is influenced by three other knowledge bases, namely subject matter knowledge (SMK), pedagogical knowledge (PK), and knowledge of the context (KofC) [25] [26]. However, in environmental education, the areas to be measured are knowledge, skills, attitudes, and action skills. These cannot be assessed exclusively through written or oral tests and exams. Currently, the goal of assessment is integration, that is, assessment becomes part of the learner's daily learning, so teachers use a variety of assessment tools, such as using portfolios, writing reports, or writing reflections on learning, to see if students have developed the willingness and ability to engage democratically with environmental issues. This goal is particularly important in environmental education because it focuses on a broad range of knowledge, skills, attitudes, and action competencies that cannot be given through tests and exam assessments [27].

4. Conclusions

In general, the study builds on the content of the interviews, and we began by understanding the perceptions of environmental education in Chinese schools and the initiatives and recommendations of these teachers. By looking at environmental education in secondary schools, our study found that it is still largely government-led, rather than school- and teacher-led, and that environmental education is not regularly promoted, but only occasionally. For example, although the university administration has been encouraging students and teachers to actively participate in the implementation of environmental education, most of them have been more submissive than spontaneous in their exploration and practice. The process of implementation is passive, and this can easily lead to a loss of motivation to learn about environmental education. Therefore, even though the various activities carried out by the school and the Education Bureau have been completed, it is not difficult to find that most people have not changed from the level of awareness and many matters related to environmental education are still superficial. Even some teachers have never realized the importance of environmental education. There is still a long way to go to promote environmental education in China, and there are still many issues to be considered and solved from the government to the districts and from the districts to the schools.

The most important stakeholder in environmental education is the government, which needs to support environmental education, including legislation, financial support, and multilateral international cooperation and exchange. Cooperation between schools and non-interested organizations to promote the spread of knowledge about environmental education. Public support. Support from parents for the work of schools and teachers. Teachers need to promote knowledge in curriculum development and develop students' awareness of environmental education.

5. References

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