

# A Study on the Current Situation and Countermeasures of Ecological Civilization Education for College Students under the Construction of National Ecological Civilization Pilot Zone - A Case Study of 21 Universities in Hainan Province

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**Abstract.** In recent years, under the background that the country gradually attaches importance to ecological civilization accomplishment and strengthens the construction of ecological civilization system, ecological civilization construction has become an important part of Chinese social governance, and ecological civilization education in colleges and universities has also received continuous attention. As a national pilot zone for ecological civilization, Hainan Province has concentrated advantages in environmental resources and is a key player in promoting ecological civilization in the construction of free trade ports. In this context, as the main front of talent training, colleges and universities should actively play the role of educating people on their intellectual bases. They should not only do a good job in ecological civilization education and promote the construction of the strategic quality of ecological civilization in the whole society but also give full play to the positive role of ecological civilization in economic construction and social development. As the construction of ecological civilization continues to progress, various entities have made some degree of progress in the field of ecological civilization education. Firstly, the government has continued to improve the top-level design and accelerate the construction of ecological civilized policy systems and ideological systems; secondly, universities have co-ordinated and civilization the allocation of disciplines, strengthened the concept of research and study and expanded practical platforms; thirdly, the public has actively participated in creating a favourable atmosphere in society as a whole to advocate ecological civilization and promote the integration and coordination of various educational resources. But at the same time, the development of ecological civilization education also faces many difficulties. First, the depth of theoretical research is insufficient, the discipline barrier has not been broken through, and the educational results have little effect. Second, the policy system needs to be improved, the educational logic is not clear, and the policy framework needs to be optimized. Third, the orientation of education is fuzzy, personnel training lags, and the transformation of practice is hindered seriously. Fourth, the main body of education is dislocated and lacking, the potential of resources is weak, and the integration still needs to be strengthened. Based on this, this paper analyzes the implementation of ecological civilization education in 21 universities in Hainan Province through field research, summarizes the current dilemmas and problems in ecological civilization education, attempts to strengthen the cause-effect orientation, deepen the theoretical construction of ecological civilization education in universities on the premise of clarifying the correlative influences of ecological awareness and participation behaviour, actively explores the effective path of cultivating ecological awareness among university students, and provides benefits for the construction of ecological civilization in Hainan Province and the development of Hainan's free trade port.

**Keywords:** Ecological civilization education, national ecological civilization pilot zone, universities.

## 1. Introduction

### 1.1. Background of the study

Hainan Province has an extremely prominent ecological position, being a region with a concentration of environmental resource advantages and an important ecological protection barrier for the country. In the construction of the free trade port, how to promote ecological civilization has become one of the key factors. As people continue to pay attention to environmental and resource

issues, promoting ecological civilisation is not only to save energy and protect the environment but also a realistic requirement for the construction of a green and beautiful free trade port. Ecological civilization education, on the other hand, is an important way to raise citizens' awareness of environmental protection and promote sustainable development. The construction of a free trade port in the new era requires the training of a group of university students who have both professional knowledge and awareness of green development so that they can practice green development theories in practice.

To further cultivate students' ecological civilisation literacy, the Chinese government has continuously launched useful attempts since 1996, introducing a series of policies to promote the renewal of educational concepts and the advancement of educational work in various universities [1], reflecting the importance the state attaches to ecological civilisation education and the importance of promoting national ecological civilisation education for the future development of the country.

**Table 1.** National policy overview

Year	Policy
1966	national action programme on environmental education and publicity
2003	thematic education programme on environmental education for primary and secondary school students
2003	guidelines for the implementation of environmental education in primary and secondary schools (trial)
2008	measures for the management of national ecological civilisation education bases
2010	outline of the national medium- and long-term education reform and development plan (2010-2020)
2011	national action programme on environmental awareness and education (2011-2015)
2013	measures for the declaration and management of national environmental education social practise bases for primary and secondary schools
2017	national guideline for practical environmental protection activities in primary and secondary schools
2017	overall programme for the reform of the ecological civilisation system
2019	impementation plan for the national ecological civilisation pilot area (hainan)
2021	"Beautiful china, i am an actor" action plan to enhance citizens' awareness of ecological civilisation (2021-2025)
2022	work plan for strengthening the system of cultivating talents for higher education in carbon peaking and carbon neutrality

In this context, Hainan Province has issued a series of policies to put the guiding principle of "ecological province" into practice and to effectively promote the development of ecological civilisation education.

**Table 2.** Hainan Province Policy Sorting

Year	Policy
2010	hainan provincial department of education comprehensive environmental improvement work programme
2018	desion on futher strengthening the construction of ecological civilisation and writing a beautiful chapter of hainan, china
2018	hainan province's implementation opinions on vigorously promoting ecological civilisation education
2019	implementation plan on supporting hainan in deepening education reform and opening up
2022	management catalogue for access to ecological protection red line in hainan province

In addition to the gradual clarification of policy directions, the social sector has also been gradually deepening its research on ecological civilisation education. According to Lv Xiuping, Director of the Research Centre for Ecological Civilisation at the Chinese Academy of Social Sciences, ecological civilisation education should become an important part of quality education for all. Professor Chen Xianghong of Hong Kong Baptist University points out that ecological civilisation education should be combined with global citizenship education. That means fostering ecological awareness while also focusing on cultivating a sense of responsibility and mutual assistance across national boundaries to promote global sustainable development. For the regional construction of ecological civilisation, Long Fengsen, Secretary of the Party Committee of Hainan Normal University, pointed out that

Hainan is well placed to make a more distinctive and valuable ecological civilisation education system. In response to the problems of ecological civilisation education, Sun Zhigang, an academician of the Chinese Academy of Sciences, believes that ecological civilisation education needs to be further enriched and expanded in terms of content and form, and should be supplemented with lectures on interdisciplinary and diverse biological environmental issues.

Adhering to green development and continuously promoting education on ecological civilisation is highly consistent with the development requirements and goals of this province of Hainan. It is not only an important part of improving the modern education system in Hainan Province but also an important guarantee to reserve high-quality talents for the construction of the free trade port. In 2019, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued *the Implementation Plan for Ecological Civilisation Education in the National Ecological Civilisation Pilot Zone (Hainan) (2019-2025)*, which clearly states the objectives and tasks of ecological civilisation education and plans the corresponding implementation of measures. And as policies become clearer, public awareness of environmental protection is gradually increasing, there will be more room for the development of ecological civilisation education in the future.

## **1.2. Current status of research**

### **1.2.1. Current status of domestic research**

Throughout the development of environmental education in China, the following characteristics are reflected. Firstly, the overall focus on the cultivation of environmental protection awareness among educated people has led to a deepening of their understanding of environmental and ecological civilisation education. Secondly, ecological civilisation education has always been based on the reality of the national situation, and through active curriculum and practical innovations, it has constantly tried to keep up with international standards and improve the overall level of ecological and environmental education. Of course, there are some shortcomings in the development of environmental education in China. Firstly, ecological civilisation education still occupies a marginal position in quality education. Although ecological education covers a large area, many universities have significantly scaled down ecological civilization education to ensure employment rates and professional discipline ratings, making it difficult to present an overall systematic teaching effect (Diao Long, 2017). Secondly, the current university-level ecological civilization education curriculum is mostly concentrated in public courses such as Civics, lacking thematic seminars on ecological issues, and showing a tendency to be too traditional and simple as far as ecological civilization curriculum is concerned (Sun Zhenglin, 2014).

### **1.2.2. Status of foreign research**

Throughout the development of foreign ecological civilisation education, the following characteristics have emerged: firstly, the theme of foreign ecological civilisation education is more focused, highlighting environmental education and actively promoting the transformation of green industries in practice. Secondly, the scope of ecological civilisation education abroad is relatively broad, and the main actors include the government, schools, families, enterprises and civil society organisations, etc. There is a wealth of participating subjects, reflecting the characteristics of all people. Thirdly, foreign ecological civilisation education is rich in content, focusing on different levels of ecological civilisation education and emphasising the integrity and continuity of ecological civilisation education. Fourth, foreign ecological civilization education relies on a complete legal system, highlighting the combination of education and the legal system, with solid legal and institutional safeguards (Gu Yonglin, 2018).

### **1.2.3. Review of the study**

There are many factors affecting the effectiveness of ecological civilization education in colleges and universities, and there are multiple perspectives in academic circles to analyze ecological civilization education in colleges and universities. The current ecological education in universities is

fragmented, which is prone to the disadvantage of "high investment but low harvest" (Diao Long, 2017); there are three reasons that hinder the promotion of ecological civilization education in universities: market pressure, barriers between disciplines and cognitive bias of learning subjects, while the interactive nature of discipline construction helps students to build a general knowledge framework (Sun Zhenglin, 2014); a complete and standardized education system plays an important role in the construction of ecological civilization education in colleges and universities, and an ecological civilization education office should be established to develop a precise and orderly implementation program for ecological civilization education and strengthen the construction of a professional teacher team (Jiang Shu, 2011).

From a comprehensive perspective, domestic research still needs to optimise the systematic practical study of ecological civilisation education, including the feasibility analysis of its transformation and practical efficiency, as well as the analysis of the relevance of the market to school education and other issues. This study will analyse the problems of ecological civilisation education in Hainan universities from a strictly practical point of view and will attempt to provide suggestions for ecological civilisation education in universities from the perspective of pathway optimisation.

### 1.3. Significance of the study

In 2016, China launched the first batch of national ecological civilisation pilot zones, and over the past few years, we have actively explored and taken early and pilot measures, achieving a series of reform results, writing a new chapter of green development and contributing valuable experience to the construction of ecological civilisation and institutional reform in China. Carrying out education on ecological civilization is a long-term plan for the well-being of the people and the future of the nation. Strengthening ecological civilisation education in universities is an important part of enhancing the effectiveness of ecological civilisation publicity and education for all people, and is also an important foundation for promoting the process of ecological civilisation construction in a fundamentally and sustainably manner. As an important educational stage connecting students and society, the quality of ecological civilisation education in colleges and universities is closely related to the effectiveness of future ecological civilisation construction. This paper is essentially an in-depth study of the future green ecological development of society, reflecting the superiority of the socialist system, and is of great research significance in both theory and practice.

Theoretically, on the premise of profoundly grasping the construction of China's ecological civilization pilot zone and ecological civilization development, this study investigates in depth the current situation of ecological civilization education in 21 colleges and universities in Hainan Province, and attempts to provide valuable experiences and references for colleges and universities to construct ecological civilization curriculum systems, expand ecological civilization education approaches and innovate ecological civilization teaching methods. On this basis, this study attempts to clarify the causal relationship between the construction of the national ecological civilization pilot zone and the ecological civilization education of university students, reveal and clarify the interaction between the two and the optimal development mode, lay a solid theoretical foundation for the construction of the ecological civilization pilot zone in Hainan Province in the new era and provide suggestions for the optimization of the construction path.

In practical terms, based on the existing achievements in ecological civilisation education, this study seeks to achieve a useful exploration of the construction of a national pilot ecological civilisation zone and educational empowerment for the construction of a free trade port in Hainan, contributing to the new economic development of Hainan Province. The study will strengthen the importance of ecological civilisation education for university students, help Hainan universities to deepen their ecological civilisation education teaching reform and talent training model innovation, and provide practical new teaching solutions and new ideas for ecological civilisation education in universities in the rest of the region, respond to the urgent needs of the times for the cultivation of talents for ecological civilisation construction in universities, and make positive contributions to the construction of ecological civilisation in the new era.

## **1.4. Relevant concepts, scope of study and research ideas and methods**

### **1.4.1. Related concepts**

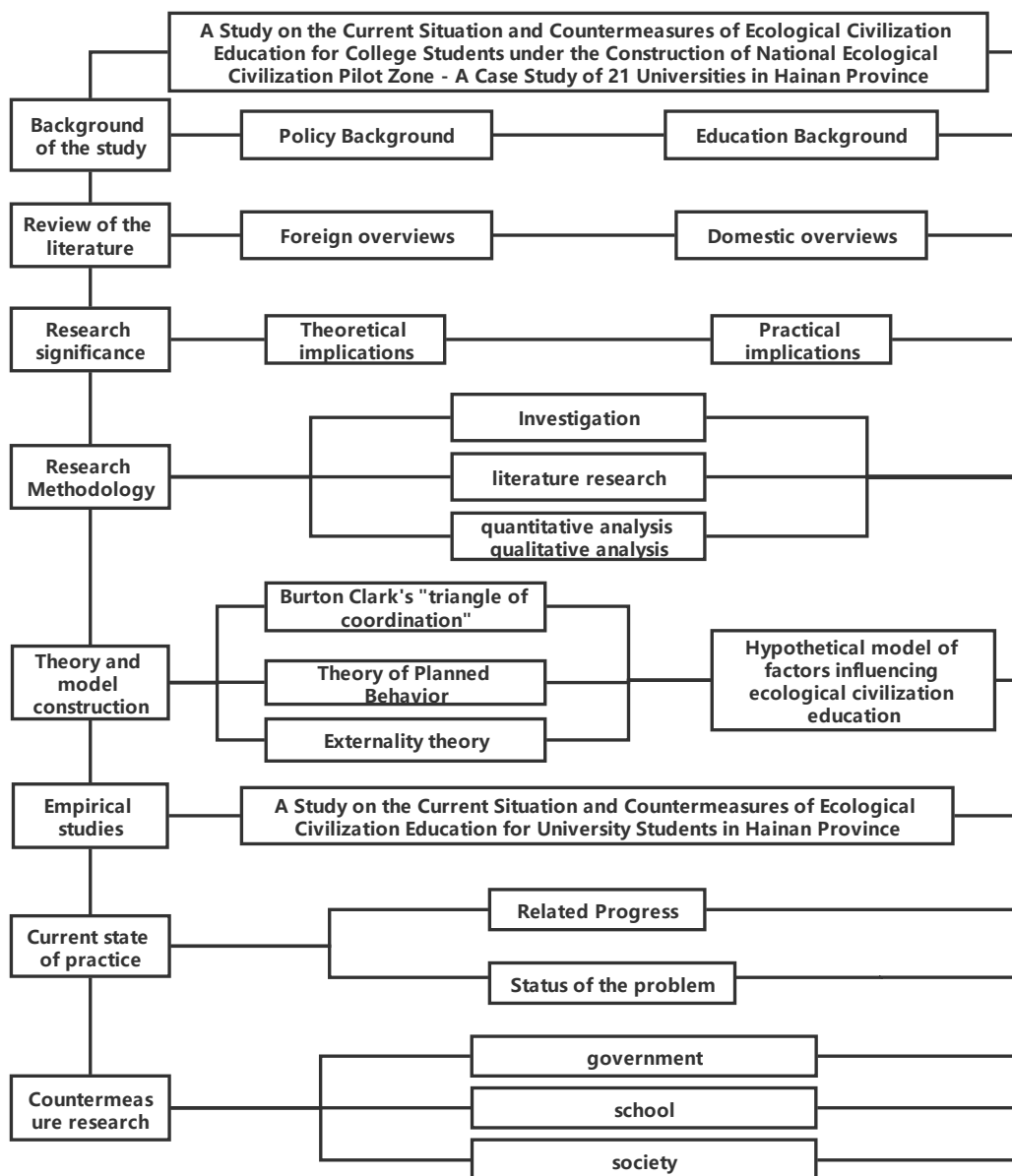
The National Ecological Civilisation Pilot Zones were proposed at the Fifth Plenary Session of the 18th Party Central Committee to focus on selecting some areas for early and pilot implementation, boldly carrying out innovative experiments on reform initiatives, exploring replicable and replicable modes of system operation, and using them to play an exemplary role in ecological civilisation construction and institutional reform. The pilot zones were established to conduct comprehensive experiments, demonstrate standards, improving systems, exploring pathways and accumulating experience.

Ecological civilisation education, as one of the five major connotations of moral education, is divided into three parts: conservation education, environmental education and education on national conditions. In other words, education on the basic national conditions of resources such as the atmosphere, land, water and food, as well as educational activities such as food, water and electricity conservation, will guide students to establish the development concept of respecting nature, conforming to nature and protecting the environment, and to develop habits of diligence, thrift, low-carbon and environmental protection as well as a healthy and civilised lifestyle.

### **1.4.2. Scope of the study**

This survey was conducted in the context of the construction of a national ecological civilization pilot zone in Hainan Province, based on the current ecological situation in Hainan Province, government policies and implementation, school teaching, social-ecological civilization education-related situations, and students' wishes and feedback, etc. The data sample covers students and teachers from 21 universities in Hainan Province in Haikou, Sanya, Qionghai and Wenchang.

### 1.4.3. Research ideas and methods



**Figure 1.** Research framework diagram

This study combines theoretical analysis, questionnaire data analysis and field research, and is written by the ideas of problem formulation, problem analysis and problem-solving. Firstly, theories such as the Planned Behaviour Model are selected as a supporting basis to design a hypothetical model of the influencing factors of ecological civilisation education. Then, the current situation of ecological civilisation education in 21 universities in Hainan Province is used as a survey sample to verify the hypothesis through empirical research and reveal the problems in the development of ecological civilisation education in universities, and finally, a series of universal recommendations are put forward.

This paper focuses on the following methods of data collection:

(1) Literature method: Making full use of the library and electronic databases such as Knowledge Network, we collected a large amount of relevant literature in the field of ecological civilization education in universities to fully understand the current status of its research.

(2) Questionnaire method: 21 universities in Hainan Province were visited and questionnaires were distributed in field research to collect data extensively.

(3) Interview method: We conducted separate interviews with education authorities, university teachers, experts in related fields and students to understand the contradictions and problems of ecological civilization education in universities.

(4) This paper focuses on the following methods of analysing information:

(5) Theoretical analysis method: By integrating the information obtained, we analyse the current situation from the government, universities and society, using the Planned Behaviour Model, externality theory and triangular coordination theory to analyse the existing problems and make suggestions for improvement.

(6) Statistical analysis method: We modelled the data based on the theoretical analysis of the questions and used SPSS to process the questionnaire data through descriptive analysis, reliability analysis, validity analysis and mediation.

## 2. Theoretical basis of the study and model construction

### 2.1. Triangular coordination theory and its application in this study

The "triangular coordination" theory proposed by Burton Clark is a commonly accepted methodological basis for studying changes in the higher education system. According to this theory, government power, market forces and academic authority are the three elements that influence the development of the higher education system [2]. A review of the development history of ecological civilization education in higher education will reveal that it has been profoundly influenced by government power, expressed in the form of policy promotion and administrative intervention, social power, expressed in the form of ethos, resource integration and practical needs of production, and academic authority, expressed in the form of technological innovation, talent cultivation and resource platform. On this basis, this paper puts forward three key subjects that influence the development of ecological civilization education in universities: the government, society and universities. Taking the three key subjects as the entry point, the paper analyses the current situation of ecological civilization education in colleges and universities and explores its development problems and strategies to cope with them.

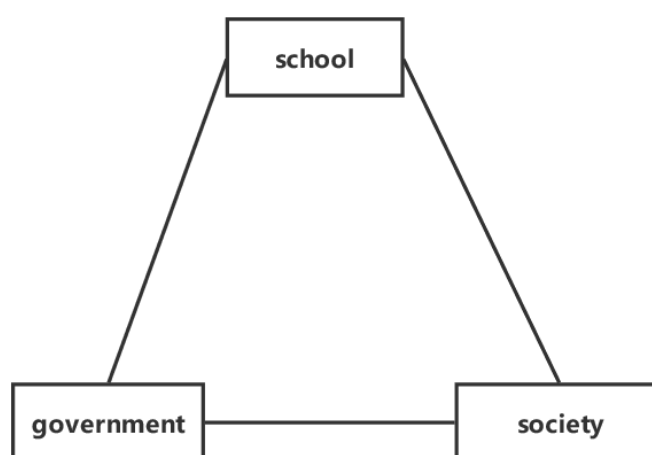


Figure 2. Theoretical model of triangular coordination

### 2.2. Theory of planned behaviour and its application to this study

The theory of planned behaviour asserts that individuals make rational use of information that is valuable to them and behave rationally. Based on this function, the model can be used to predict or explain the theoretical relationship between behaviour and attitudes, particularly about the explanatory power of individual behaviour. The connotations of the Theory of Planned Behaviour model consist of three main elements, namely behavioural attitudes, perceptual behavioural control and subjective norms, which are independent of each other and jointly determine a person's behavioural intentions [3]. Perceptual behavioural control is the abundance of resources and

opportunities that individuals perceive as necessary to complete a behaviour, that is, the directly perceived ease of adopting a certain behaviour. In ecological civilisation education in colleges and universities, we regard it as a resource platform directly provided or indirectly promoted by the state, society and the school, which provides students with the ability to directly perceive the ease of adopting ecological behaviour. The environment or opportunity. The school and the teacher, as a pressure group, act as a behavioural regulators for the students, and we regard the behaviour related to ecological civilisation education by the school and the teacher as a form of education by the school and the teacher. Attitudes of participation [4], forms of education [5] and resource platforms [6] can influence students' ecological awareness [7] and ultimately their ecological behaviour [8] in ecological civilisation education.

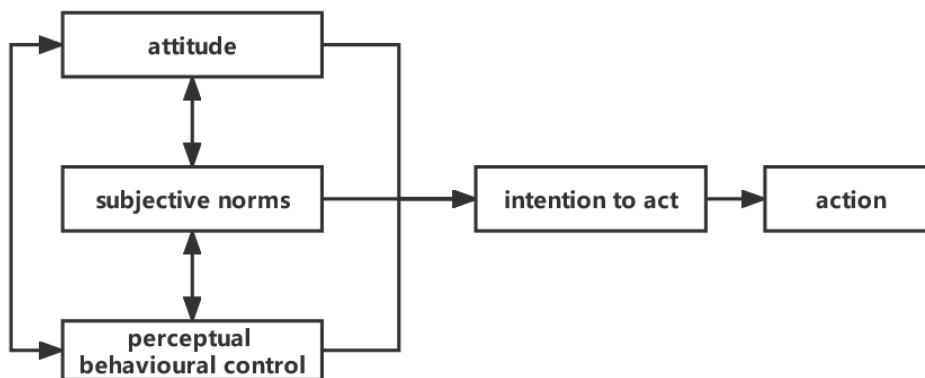


Figure 3. Theoretical model of planned behaviour

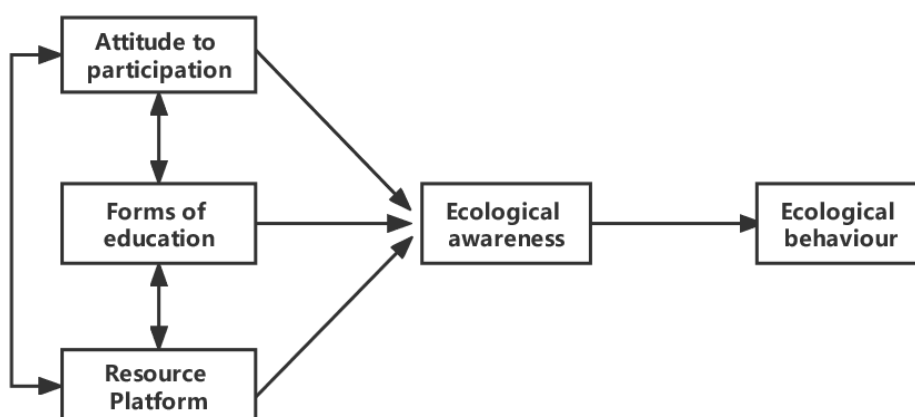


Figure 4. Application of the Theory of Planned Behaviour model to ecological civilization education in higher education

### 2.3. Externality theory and its application in this study

Externality theory refers to a situation where the actions of one person or a group of people damage or benefit another group of people[9]. As part of quality education, the development of ecological civilisation education will promote the construction of ecological civilisation in society as a whole, which in turn will promote social development. At the same time, the theory of externalities also provides us with ideas for exploring countermeasures to promote the development of ecological civilization education. According to this theory, the development of ecological civilisation education should be promoted by expanding positive externalities or reducing negative externalities, specifically in terms of "participatory attitudes", "forms of education", "resource platforms", "ecological awareness", and "ecological knowledge". The positive externalities are reflected in the five assessment indicators of "ecological awareness" and "ecological behaviour", to achieve progress in the development of ecological civilisation education.

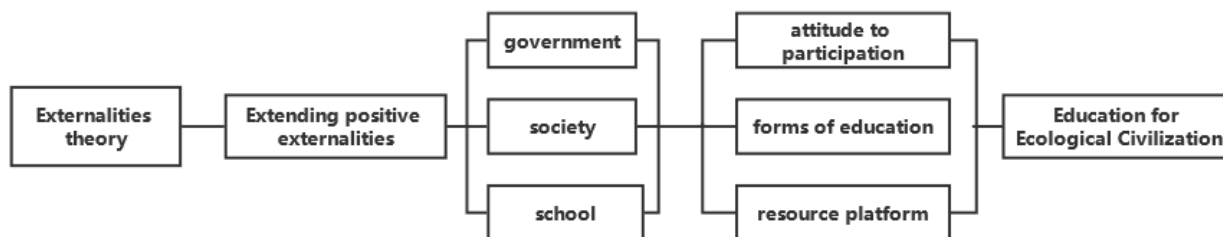


Figure 5. Theoretical model of externalities

## 2.4. Research model construction

In summary, as indicators for assessing ecological civilisation education, there are interlinkages and interactions between 'attitude to participation', 'form of education', 'resource platform', 'ecological awareness' and 'ecological behaviour' are interrelated and interact with each other. Among them, the factors influencing ecological civilisation education in colleges and universities are students' participation attitudes, education forms and resource platforms, while the effects of ecological civilisation education in colleges and universities are shown through students' ecological consciousness and ecological behaviours. The key subjects that control the changes of the influencing factors are the government, society and schools, so the countermeasures will be based mainly on expanding their positive externalities.

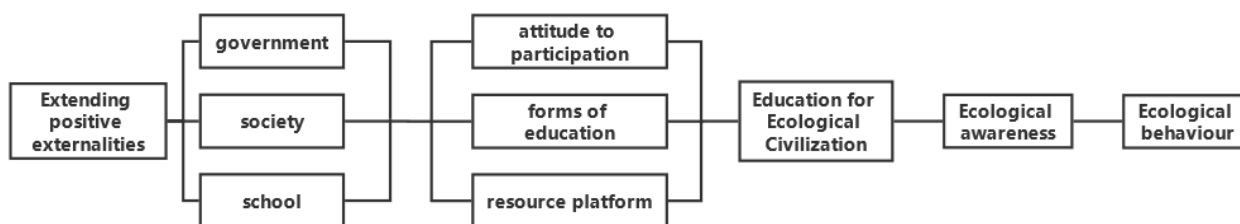


Figure 6. Research model for ecological civilisation education in higher education

## 3. Questionnaires and empirical analysis

### 3.1. Ideas for questionnaire development

This questionnaire aims to examine the current situation of ecological civilization education among university students in Hainan Province under the construction of the National Ecological Civilization Pilot Zone and its influencing factors, in the hope that the analysis of the questionnaire results can provide effective suggestions for the development of ecological civilization education in Hainan universities. There are six main items in the questionnaire. In addition to the basic information of the respondents, the rest of the questions are classified and five major dimensions of participation attitude, education form, resource platform, ecological awareness and ecological behaviour are established for the study. The theoretical basis for questionnaire development is shown in the table below.

Table 3. Basis for questionnaire development

Hypothetical dimensions	Question number	Question item content	Reference basis
Attitude to participation	1	How much do you know about ecological civilization education	Fan Meng; 2017; 'Ideological and political education in the perspective of university Students' Ecological Civilization Education Research'
Attitude to participation	2	How do you know about the National Ecological Civilisation Pilot Area (Hainan)?	2019; National Ecological Civilization Pilot Zone (Hainan)Implementation Programme

Attitude to participation	3	Your knowledge of the Ecological Civilisation course	Fan Meng; 2017; 'Ideological and political education in the perspective of university Students' Ecological Civilization Education Research'
Attitude to participation	4	What do you think that the main elements of ecological civilisation include	Zhou Hongchun; 2019; 'Steadfastly promoting ecological Civilization Construction'
Attitude to participation	5	Your attitude towards the development of ecological civilisation education	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Attitude to participation	6	How do you think ecological civilisation is relevant to university students	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Attitude to participation	7	The extent to which the construction of a national pilot ecological civilization zone (Hainan) has influenced ecological civilization education for university students	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Attitude to participation	10	Your level of concern about the ecological crisis and environmental issues	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	12 (2)	Number of first classes on ecological civilization in your school in a semester Number of first classroom sessions on ecological education	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	12 (4)	Your satisfaction with the school's first class on ecological civilization education Satisfaction with the first class	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	13 (2)	Number of second classes on ecological civilization in your school in a semester Number of second classes on education on ecological civilization	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	13 (4)	Your satisfaction with the school's second class on ecological civilization education Satisfaction with the second classroom	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	14 (2)	Number of third classes on ecological civilization in your school in a semester Number of third classes on ecological education in your school	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	14 (5)	Your satisfaction with the school's third class on ecological civilization education Third classroom	Yang, C.-H., Yan, K.; 2012; 'China's Current Ecological Civilization Construction Key Influencing Factors and Construction Strategies'
Forms of education	20	In what areas do you think ecological education in our school is lacking	Sun Rui; 2022; 'Research on Cultivating College Students' Awareness of Public Participation under the Perspective of Ecological Civilization A Study on Cultivating Public Participation Awareness

Resource Platform	11	What are your main channels for learning about ecological civilisation?	Fan Tingyu, Wang Shun, Wang Xingming, Jin De, Sheng Pengfei; 2021; "Research on the cultivation path of college students' ecological A Study on the Cultivation Path of Civilizational Literacy among College Students from the Perspective of "Three-Whole Education
Resource Platform	12 (1)	Your school's first lesson in ecological civilisation education Form of the lesson	Fan Tingyu, Wang Shun, Wang Xingming, Jin De, Sheng Pengfei; 2021; "Research on the cultivation path of college students' ecological A Study on the Cultivation Path of Civilizational Literacy among College Students from the Perspective of "Three-Whole Education
Resource Platform	13 (1)	Your school's second lesson in ecological civilisation education Form of the classroom	Fan Tingyu, Wang Shun, Wang Xingming, Jin De, Sheng Pengfei; 2021; "Research on the cultivation path of college students' ecological A Study on the Cultivation Path of Civilizational Literacy among College Students from the Perspective of "Three-Whole Education
Resource Platform	14 (1)	Your school's third lesson in ecological civilisation education Format of the lesson	Zhang Shiyu; 2021; "A Study on Ecological Literacy of College Students in the New Era Cultivation of Ecological Literacy in the New Era
Resource Platform	14 (4)	Which of the following eco-cultural education sites has your school organised for students to visit?	Zhang Shiyu; 2021; "A Study on Ecological Literacy of College Students in the New Era Cultivation of Ecological Literacy in the New Era
Resource Platform	16	Your satisfaction with the school's ecological education activities and Satisfaction with publicity	Du Changjian; 2020; "Research on Ecological Civilization Education in China Research
Resource Platform	17	Your satisfaction with the government's ecological civilization education activities and Publicity satisfaction	Du Changjian; 2020; "Research on Ecological Civilization Education in China Research
Resource Platform	18	Your satisfaction with the activities of the society to educate and promote ecological civilization Satisfaction with publicity	Du Changjian; 2020; "Research on Ecological Civilization Education in China Research
Resource Platform	21	What do you think are the most effective ways to teach ecological civilization education	Zong Yunli; 2022; 'Experiential teaching applied to cultivating The Study of Cultivating Ecological Civilization Literacy
Ecological awareness	8 (1)	The current ecological state of the planet is good	Wang A Xun; 2016; "A New Media Approach to Ecological Civilization Education Research on New Media Approaches to Ecological Civilization Education
Ecological awareness	8 (2)	Building a "beautiful China" and achieving sustainable development are mainly is a matter for the government and environmental protection departments	Wang A Xun; 2016; "A New Media Approach to Ecological Civilization Education Research on New Media Approaches to Ecological Civilization Education
Ecological awareness	8 (3)	Humans can change the natural environment to meet their own needs Natural environment	Wang A Xun; 2016; "A New Media Approach to Ecological Civilization Education Research

			on New Media Approaches to Ecological Civilization Education
Ecological awareness	19	What do you think should be included in the development of ecological civilization education activities should focus on	Wang, X.; 2016; 'Socialist Ecology with Chinese Characteristics Civilization Construction with Chinese Characteristics A Practical Study'
Ecological behaviour	9 (1)	Be proactive in learning about environmental policies such as Carbon Dioxide and Carbon Neutral	Zhang Youguo; 2021; 'Carbon Peaking, Carbon Neutral Work the Situation Facing and Ideas for Starting the Year
Ecological behaviour	9 (2)	Conscious use of energy efficient products	Wang A Xun; 2016; 'A New Media Approach to Ecological Civilization Education Research on New Media Approaches to Ecological Civilization Education
Ecological behaviour	9 (3)	Take the initiative to discourage or stop acts that damage the ecological environment stop	Wang A Xun; 2016; 'A New Media Approach to Ecological Civilization Education Research on New Media Approaches to Ecological Civilization Education
Ecological behaviour	12 (2)	Number of times in a semester you participated in the first class on ecological education at your school Number of times you have participated in the first class on ecological education in your school in a semester	Sun Zhenglin; 2014; 'The Education of Ecological Civilization in Universities Dilemmas and Paths'
Ecological behaviour	12 (3)	Number of times in a semester you participated in a second class on ecological education at your school Number of times you participated in a second class on ecological education at your school	Sun Zhenglin; 2014; 'The Education of Ecological Civilization in Universities Dilemmas and Paths'
Ecological behaviour	14 (3)	Number of times in a semester you participated in a third class on ecological education at your school Number of times you participated in a third class on ecological education at your school in a semester	Sun Zhenglin; 2014; 'The Education of Ecological Civilization in Universities Dilemmas and Paths'

### 3.2. Analysis of basic information on

This paper adopts a random sampling method to conduct a questionnaire survey for college students in Hainan Province, involving 21 colleges and universities such as Hainan University, Hainan Normal University and Sanya College. 850 questionnaires were distributed in March 2023, excluding 17 invalid questionnaires, 833 valid questionnaires were distributed, with an effective rate of 98.0%. The results were analysed using SPSS 25.0 software. The data were analysed using SPSS 25.0 software. The basic information of the respondents is shown in the figure below.

**Table 4.** Demographic characteristics of the sample

Statistical variables	Categories	Frequency	Percentage
Gender	Male	398	47.8
	Female	435	52.2
Age	<=18	105	12.6
	19~20	418	50.2
	21~22	242	29.1
	>=22	68	8.2
Grade	First year of university	296	35.5
	Second year of university	167	20.0
	Third year of university	281	33.7
	Fourth year of university	41	4.9
	Master and PHD	48	5.8
Place of origin	Urban	482	57.9
	Rural	351	42.1
Major	Humanities	530	63.7
	Sciences	303	36.4
Political Status	Member of the CCP (including reserve ones)	79	9.5
	Member of the communist youth league	565	67.8
	Populace	189	22.7

According to the above analysis results, we can see the numerical characteristics of the demographic variables of the surveyed population, the selection of the sample in terms of gender, age, grade, major and other aspects are in line with the requirements of random sampling, and the structure of the returned questionnaire is reasonable, which clearly reflects the distribution of the basic information of the surveyed subjects. From the above table, it can be seen that the questionnaire can comprehensively represent the current situation of ecological civilization education among different types of university students.

### 3.3. Descriptive analysis

The results of the descriptive statistics are shown in the table below. The overall mean value of participation attitudes is  $3.60 > 3$  (median), which is in the middle to upper level. Specifically, university students have a positive attitude and to a certain extent recognise the importance of ecological civilisation education, but are slightly less concerned about national ecological civilisation development strategies, laws and regulations and other policies, and still need to give full play to their own initiative to actively participate in the construction of ecological civilisation. The overall mean value of education forms is  $1.92 < 3$  (median), which is much lower than the average, indicating that there is still much room for improvement in the richness of education forms in the first classroom curriculum system, the second classroom on-campus learning venues and the third classroom off-campus social practice, and that the construction of the curriculum system should not be delayed. The overall mean value of the resource platform is  $2.87 < 2.88$  (median), which is basically in the middle of the range. However, the government still needs to play a leading role in coordinating all parties to participate in the construction of the ecological civilisation education resource platform, and promote the realisation of ecological civilisation social practice, study tours and other forms of education. The overall mean value of ecological awareness is  $3.41 > 3$  (median), which is at an intermediate level and has not yet reached the good standard. Good ecological moral quality and ecological civilizational behaviour are important measures of the overall quality of university students, and it is important to help them shape correct ecological civilizational values and enhance ecological civilizational awareness, so as to promote their overall development. The overall mean value of ecological behaviour is  $2.22 < 2.75$  (median), in which the number of times university students participated in the first, second and third classes on ecological civilisation education conducted by the school is significantly low, reflecting on the one hand the low frequency of ecological education activities

conducted by the school, and on the other hand the fact that university students have not yet truly externalised their ecological civilisation consciousness into ecological civilisation actions, and need to continuously practise and practise by themselves to internalise It is necessary for students to internalise and externalise their ecological civilisation through continuous practice and practice, and gradually sublimate it into a kind of ecological self-discipline and self-awareness.

**Table 5.** Descriptive analysis of the current state of ecological civilization education(N=833)

Dimension	Number	Minimum	Maximum	Mean	Standard deviation
Attitude to participation	1	1	5	3.22	1.024
	2	1	5	2.81	1.103
	3	1	5	2.95	1.103
	4	1	4	3.59	0.914
	5	1	5	4.21	1.084
	6	1	5	4.27	0.85
	7	1	5	3.98	0.977
	10	1	5	3.79	0.795
	Population	1.13	4.88	3.60	0.626
Forms of education	12 (2)	1	5	1.53	0.961
	12 (4)	1	5	2.52	1.454
	13 (2)	1	5	1.45	0.852
	13 (4)	1	5	2.39	1.458
	14 (2)	1	5	1.4	0.853
	14 (5)	1	5	2.23	1.42
	Population	1	5	1.92	0.902
Resource platform	14 (4)	0	5	0.92	1.291
	16	1	5	2.47	0.959
	17	1	5	2.57	0.931
	18	1	5	2.54	0.909
	Population	0.75	5	2.87	0.802
Ecological awareness	8 (1)	1	5	3.35	1.084
	8 (2)	1	5	3.36	1.324
	8 (3)	1	5	3.51	1.325
	Population	1	5	3.41	1.049
Ecological behaviour	9 (1)	1	5	3.24	0.993
	9 (2)	1	5	3.61	0.948
	9 (3)	1	5	3.6	0.971
	12 (3)	0	5	1.08	1.194
	13 (3)	0	5	0.97	1.137
	14 (3)	0	5	0.82	1.039
	Population	0.5	5	2.22	0.652

### 3.4. Confidence analysis

Questionnaire reliability, i.e. questionnaire reliability and stability, is used to test the consistency of the data results received by the questionnaire and is an indicator to ensure that the scale questionnaire is capable of stable repeated measures. Cronbach's alpha coefficient (Cronbach's alpha coefficient) is used to test the reliability of the data. If the alpha coefficient does not exceed 0.6, the scale is generally considered to have insufficient internal consistency. As can be seen from the table below, the alpha coefficients for each dimension and for the scale as a whole are greater than the standard of 0.70, thus ensuring the consistency of the factor constructs in this section of the questionnaire and indicating that the reliability of the study scale is very good and can be used.

**Table 6.** Reliability analysis of influencing factors

Factor	Cronbach's $\alpha$		Number	
Attitude to participation	0.892	0.805	3	9
Forms of education	0.847		3	
Resource platform	0.946		3	

**Table 7.** Reliability analysis of dependent variables

The name of the dependent variable factor	Cronbach's $\alpha$		Number	
Ecological awareness	0.892	0.856	3	6
Ecological behaviour	0.879		3	

### 3.5. Validity analysis

Validity, or the validity of a questionnaire, refers to the extent to which a scale can accurately measure what it is intended to measure, and in this study, structural validity was assessed using exploratory factor analysis (EFA).

#### 3.5.1. KMO and Bartlett's test

The KMO statistic is a value between 0 and 1. The closer the KMO value is to 1, the stronger the correlation between the variables and the more suitable the original variables are for factor analysis.  $P < 0.05$  means that the relationship is significant. The results are shown below, the KMO value is  $0.837 > 0.6$  (critical value), so it is suitable for factor analysis; Bartlett's sphericity test results show that the P value is  $0.00 < 0.05$ , indicating that the questionnaire variables are well correlated, the data meet the requirements of the study, and the validity can be examined by exploratory factor analysis.

**Table 8.** KMO and Bartlett's test

KMO sampling relevance measure		0.837
Bartlett's Test of Sphericity	Pseudo Chi-square	7984.287
	Degree of freedom	105
	Central tendency	0.000

#### 3.5.2. Extraction of principal components

To examine validity using exploratory factor analysis, the first step is to extract the appropriate classification criteria for the selected topics. As can be seen from the table below, there were five factors with initial eigenvalues greater than one, with a cumulative variance explained of 81.314%, indicating that the five factors extracted from the 15 questions were ideal for explaining the original data and suggesting a division into five dimensions.

**Table 9.** Total variance explained

ingredie nts	Initial Characteristic value			Extraction Sums of Squared Loadings			Sum of squares of rotational loads		
	populati on	variance %	accumulatio n%	populati on	variance %	accumulatio n%	populati on	variance %	accumulatio n%
1	4.489	29.928	29.928	4.489	29.928	29.928	2.743	18.29	18.29
2	2.863	19.084	49.012	2.863	19.084	49.012	2.515	16.764	35.054
3	1.807	12.049	61.061	1.807	12.049	61.061	2.449	16.325	51.379
4	1.583	10.556	71.617	1.583	10.556	71.617	2.342	15.615	66.994
5	1.455	9.697	81.314	1.455	9.697	81.314	2.148	14.32	81.314
6	0.491	3.271	84.585						
7	0.435	2.901	87.487						
8	0.359	2.391	89.878						
9	0.311	2.076	91.954						
10	0.276	1.843	93.796						
11	0.264	1.760	95.556						
12	0.213	1.421	96.977						
13	0.192	1.283	98.26						
14	0.150	1.001	99.262						
15	0.111	0.738	100						

**3.5.3. Rotating the component matrix**

Factor rotation was performed using the maximum variance method to derive the specific factor category each question fell into. The results are shown in the table below. All questions only had loadings above 0.5 on a single dimension, so they were all valid questions and passed the validity test and were retained. Based on the analysis of the content of the specific questions, the five factors were identified as participation attitude, education form, resource platform, ecological awareness and ecological behaviour. The dimensions and their corresponding questions are shown below.

**Table 10.** Rotated component matrix

number	context	Resource Platform	Attitude to participation	Ecological behaviour	Forms of education	Ecological awareness
17		0.927				
18		0.917				
16		0.894				
3			0.895			
2			0.89			
1			0.866			
9 (2)				0.92		
9 (3)				0.863		
9 (1)				0.823		
13 (4)					0.892	
14 (5)					0.871	
12 (4)					0.807	
8 (3)						0.876
8 (2)						0.829
8 (1)						0.801

**3.6. Analysis of intermediary effects**

Mediated effects analysis is a method of studying the effects on outcomes through mediating variables. In this study, Bootstrap sampling was used to test for mediating effects to verify that the independent variables (attitude towards participation, form of education, resource platform)

influenced the dependent variable (ecological behaviour) through the mediating variable (ecological awareness). 95% confidence intervals with upper and lower bounds that do not contain 0 means that the regression coefficient is significant. c' the upper and lower limits of the 95% confidence interval do not contain 0, then the independent variable does not fully influence the dependent variable through the mediating variable, i.e. it is partially mediated. The results of the test are shown below. The regression coefficients of path 1 (participation attitude → ecological awareness → ecological behaviour) are 0.127 for coefficient a, 0.083 for coefficient b, and 0.327 for coefficient c', which correspond to the upper and lower limits of the 95% confidence intervals of 0.054-0.199, 0.030-0.136, and 0.270-0.384 respectively, all of which do not contain 0, and the 95% confidence interval of the indirect effect The upper and lower limits of the confidence interval for the indirect effect were 0.002 to 0.027, which also did not contain 0, indicating that pathway one was partially mediated. Path 2 (education form → ecological awareness → ecological behaviour) and path 3 (resource platform → ecological awareness → ecological behaviour) were similarly partially mediated.

**Table 11.** Intermediary role model tests

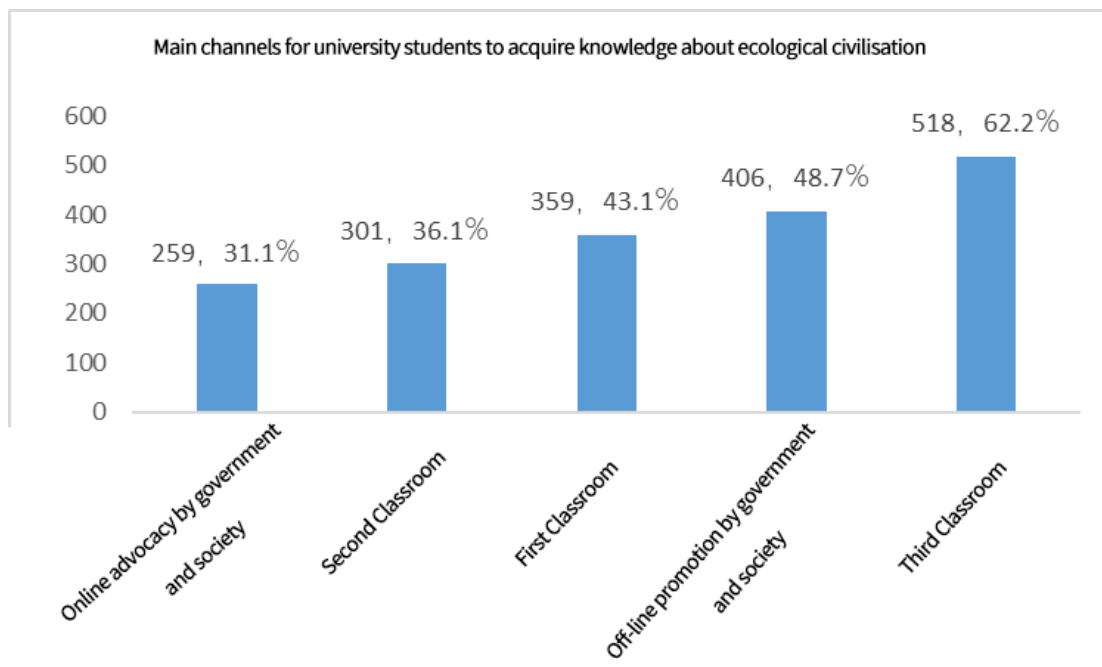
			b	SE	T	P	95% confidence interval		R <sup>2</sup>	F
							LLCI	ULCT		
method 1	Ecological awareness	const	3.030	0.116	26.023	0.000	2.801	3.258		
		Attitude to participation	0.127	0.037	3.425	0.001	0.054	0.199	0.014	11.729
		const	2.428	0.122	19.926	0.000	2.189	2.668		
	Ecological behaviour	Ecological awareness	0.083	0.027	0.841	0.001	0.030	0.136	0.138	66.168
		Attitude to participation	0.327	0.029	11.294	0.000	0.270	0.384		
method 2	Ecological awareness	const	3.661	0.077	47.567	0.000	3.510	3.812		
		education forms	-0.106	0.029	-3.703	0.000	-0.162	-0.050	0.016	13.709
		const	3.004	0.123	24.452	0.000	2.763	3.245		
	Ecological behaviour	Ecological awareness	0.073	0.029	2.557	0.011	0.017	0.130	0.024	10.317
		education forms	0.096	0.024	4.050	0.000	0.050	0.143		
method 3	Ecological awareness	const	3.816	0.149	25.704	0.000	3.525	4.108		
		Resource Platform	-0.116	0.041	-2.830	0.005	-0.196	-0.035	0.010	8.006
		const	2.089	0.157	13.304	0.000	1.780	2.397		
	Ecological behaviour	Ecological awareness	0.085	0.027	3.087	0.002	0.031	0.138	0.106	49.323
		Resource Platform	0.314	0.032	9.697	0.000	0.250	0.378		

**Table 12.** Tests for mediating effects of ecological awareness

		Effect	BootSE	T	P	95% confidence interval		Results
						BootLLCI	BootULCI	
method 1	Total effects	0.338	0.029	11.475	0.000	0.273	0.386	partial mediation
	Direct effects	0.327	0.029	11.294	0.000	0.27	0.384	
	Indirect effects	0.011	0.005			0.002	0.027	
method 2	Total effects	0.089	0.024	3.742	0.000	0.042	0.135	partial mediation
	Direct effects	0.096	0.024	3.05	0.000	0.05	0.143	
	Indirect effects	-0.008	0.005			-0.020	-0.007	
method 3	Total effects	0.304	0.032	9.392	0.000	0.241	0.368	partial mediation
	Direct effects	0.314	0.032	8.697	0.000	0.250	0.378	
	Indirect effects	-0.010	0.006			-0.026	-0.011	

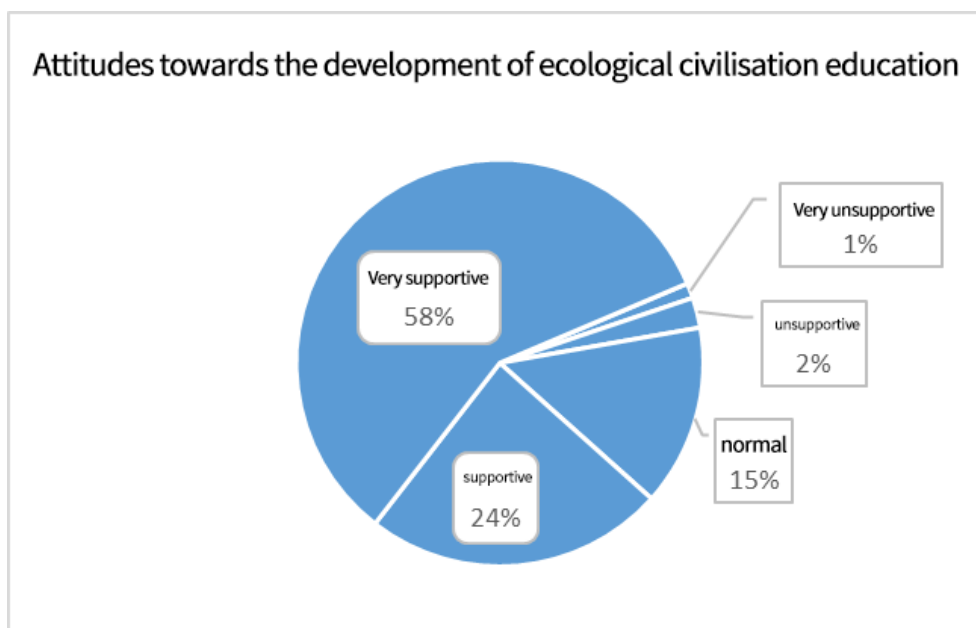
### 3.7. Analysis of other key data

In the survey sample, 82% of university students had a positive attitude towards the development of ecological civilisation education, indicating a high level of recognition of ecological civilisation education among university students and providing a guarantee for the subsequent smooth implementation of measures to improve ecological civilisation education.



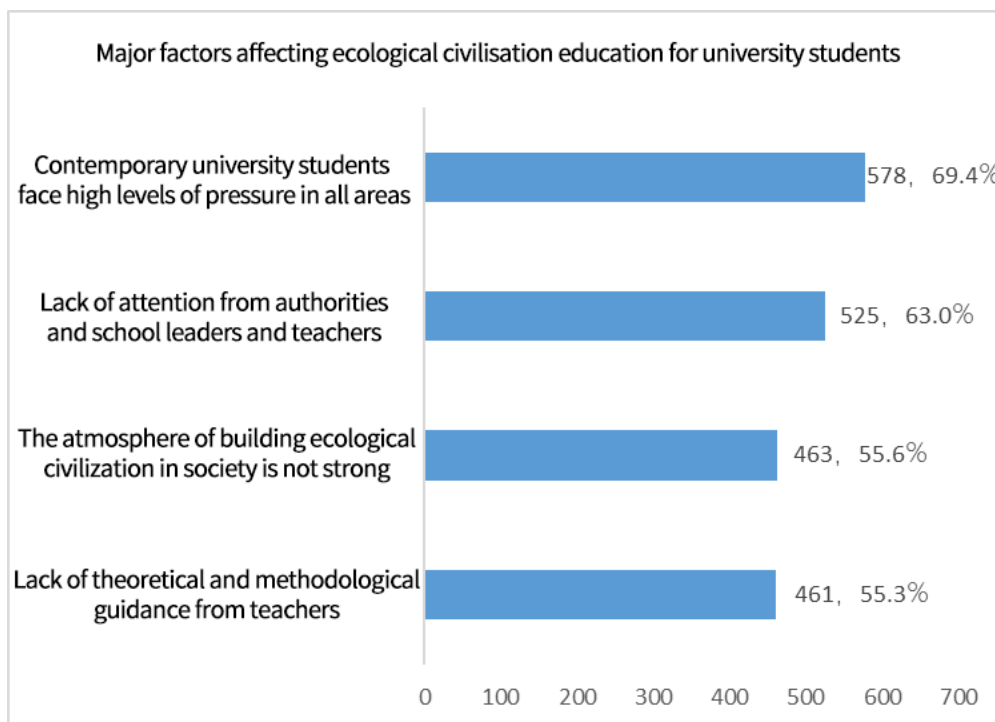
**Figure 7.** Educating for ecological civilisation

When asked about the channels for acquiring knowledge about ecological civilisation, 62.2% of the university students surveyed received ecological civilisation education mainly through the third classroom channel, indicating that the third classroom is more abundant in terms of form and frequency than other channels. Only 31.1% of university students learnt about ecological civilisation through online activities and propaganda (such as TV and radio, internet forums, etc.) carried out by the government and society, and this aspect needs to be improved.



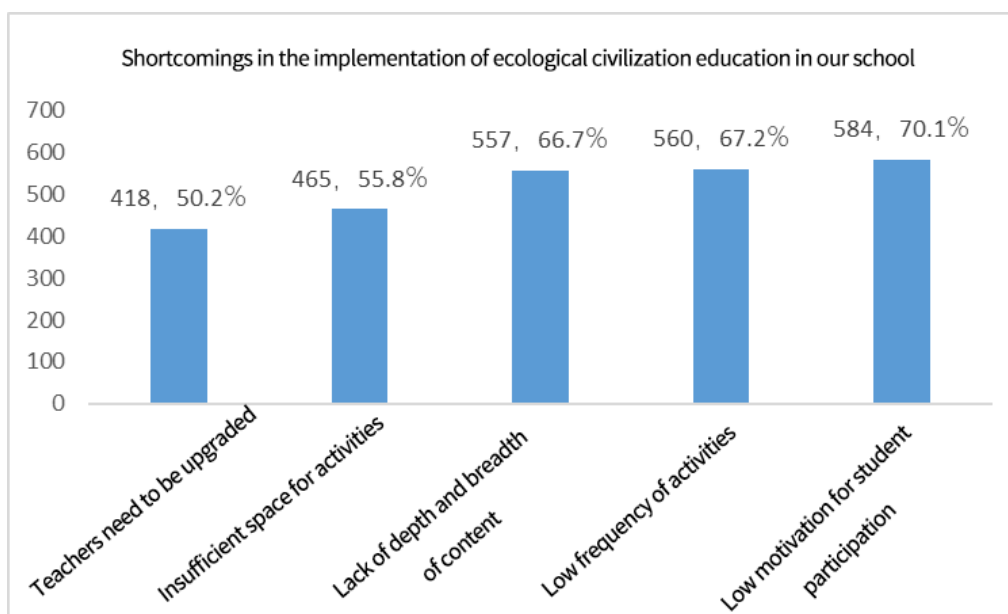
**Figure 8.** Main channels for university students to acquire knowledge about ecological civilisation

When asked about the shortcomings of ecological civilisation education, the proportion of each option was greater than 50%, which shows the urgency of improving ecological civilisation education. In particular, as many as 70.1% of the university students surveyed believe that they are not motivated to participate, so their ecological awareness needs to be improved. On the government side, the construction of ecological civilization education resource platforms and venues is not sound, and the objective conditions for ecological civilization social practice are poor.



**Figure 9.** Shortcomings in the implementation of ecological civilization education in our school

The data shows that the reasons for the poor state of ecological civilization education among university students are greater than 50%. Among them, 69.4% of the students surveyed believe that they are currently under great pressure from all sides, and 63.0% of them believe that the authorities and school leaders and teachers do not attach importance to ecological civilization education, indicating that the improvement of ecological civilization quality requires not only the students' own initiative but also help from outside.



**Figure 10.** Main factors affecting ecological civilisation education for university students

### **3.8. Conclusion**

Building an ecological civilisation is a matter of people's well-being and the future of the nation, and education on ecological civilisation has become a social consensus. On the one hand, the analysis of the data shows that university students have good ecological awareness and behaviour, which to a certain extent reflects that the government, schools and society have achieved certain results in ecological civilisation education. There is still room for improvement. On the other hand, the results of the mediating effect analysis show that the participation attitude of university students, the form of education provided by schools, and the resources provided by the government, schools and society all contribute to the ecological awareness of university students, which is directly transmitted to their personal ecological behaviour. At the same time, the mediating effect analysis also scientifically validates the correctness of the theory of planned behaviour, thus enabling its successful application in the development of ecological civilisation education.

In ecological civilisation education for university students, the government, universities and society are in a three-legged position. Governments at all levels are the leaders of ecological civilisation education and guide the direction of its development. Through data collection and field interviews, combined with data results, the team found that the government in practice provides relatively weak institutional, legal and financial protection for ecological civilisation education, and the superstructure is not sound enough, which to a certain extent restricts the development of ecological civilisation education. Schools are the main teaching ground and play a key role in cultivating students' ecological civilisation literacy, but a comprehensive analysis of literature and research data shows that the current curriculum system for ecological civilisation education in universities needs to be optimised, and efforts are still needed in terms of campus ecological culture, curriculum development system, teacher training, practical teaching and mobilising students' motivation. In the first classroom, ecological civilisation knowledge is mainly taught through the disciplines, but there are fewer special courses related to ecological civilisation, and the second and third classrooms are limited in terms of the paths and forms of development, and there are insufficient teachers to make education effective. Society, as the branch of ecological civilisation education, includes citizens and various civil ecological protection organisations and other subjects, but at present there is a lack of position, and the media carrier is not in place, the communication matrix has not yet been formed, and the social atmosphere is not strong enough.

Therefore, only by increasing the degree of importance attached to ecological civilisation education by the government, universities and society, so that the three subjects can play their respective roles and collaborate with each other in the field of ecological civilisation education and build a linkage mechanism, can we help promote ecological civilisation education in the new era and build a "trinity" of ecological civilisation education. This will help to promote ecological civilisation education in the new era and build a new "trinity" of ecological civilisation education.

## **4. Major problems of ecological civilization education for university students under the construction of the National Ecological Civilization Pilot Zone**

### **4.1. The government superstructure still needs to be sound and the scope for development is limited**

#### **4.1.1. Shortcomings in theoretical research and limited theoretical guidance**

At present, the construction of ecological civilization in China has started late[10], the discussion on the concepts related to ecological civilization, ecological civilization education and ecological civilization construction is not deep enough, and the basic research is not solid enough[11], and the innovation needs to be improved. Most of the researchers agree that the comprehensive quality of the nation can be improved by strengthening the cultivation of ecological civilization awareness among university students, but in terms of concrete means to achieve this goal, most of them are a bit thin in their discussion and discussion of their views in their articles. For one thing, researchers have focused

more on the theoretical elaboration of the concept of ecological civilisation[12], and less on the practical situation and characteristics of university students themselves; for another, researchers have conducted fewer feasibility studies on the design effects of theoretical courses, and tend to focus more on the rational stipulation of the teaching objectives of the courses.

#### **4.1.2. Policies and regulations need to be supplemented and institutional mechanisms need to be improved**

At this stage, the central government and various regions have promulgated a series of policies and systems regulating ecological civilisation education, all of which are useful attempts to educate about ecological civilisation, but there is fragmentation in the design of ecological civilisation education policies. On the one hand, the policies focus on ideological and political construction, and do not provide enough guidance on specific practices to carry out and other refinements. Secondly, a good educational ecosystem has not been formed, and the content of ecological civilisation education forms an inevitable conflict with the form of education itself, thus making it difficult to implement ecological civilisation education.

In terms of the management system, the policy direction of ecological civilisation education is still not clear enough, and the division of responsibilities is not sufficiently detailed, leading to confusion and misalignment of educational subjects. Secondly, the regional coordination of educational links is relatively inadequate, failing to fine-tune the micro-planning of relevant processes, and the overall guidelines are relatively broad, still lacking constructive and concrete initiatives, which can easily hinder the effective implementation of ecological education activities.

At the same time, there is still a huge legal gap in China's ecological civilization education, the formulation and popularization of relevant laws are relatively low, and the content still needs to be improved, with the following four specific problems:

Firstly, the legislative process for ecological civilisation education has been slow and insufficient attention has been paid to it. Firstly, the focus of state and social law is concentrated on economic legislation for the eco-industry, while insufficient care is given to the field of education. At the same time, the legal documents that fall within the scope of ecological civilisation education also focus more on ideological and political construction and lack attention to the educational process.

Secondly, the content of legislation on ecological civilisation education is lacking, and the quality and level still need to be improved. Firstly, the current legal framework is relatively macro, and although the normative documents have pointed out the guiding ideology and general objectives of education for ecological civilisation, they have not resulted in relatively detailed and specific provisions, lacking a certain degree of practicality. At the same time, it has not formed a complete institutional system with the system at its core, lacking a logical normative structure from guiding ideology to basic principles, then to work purposes, and finally to specific tasks[13].

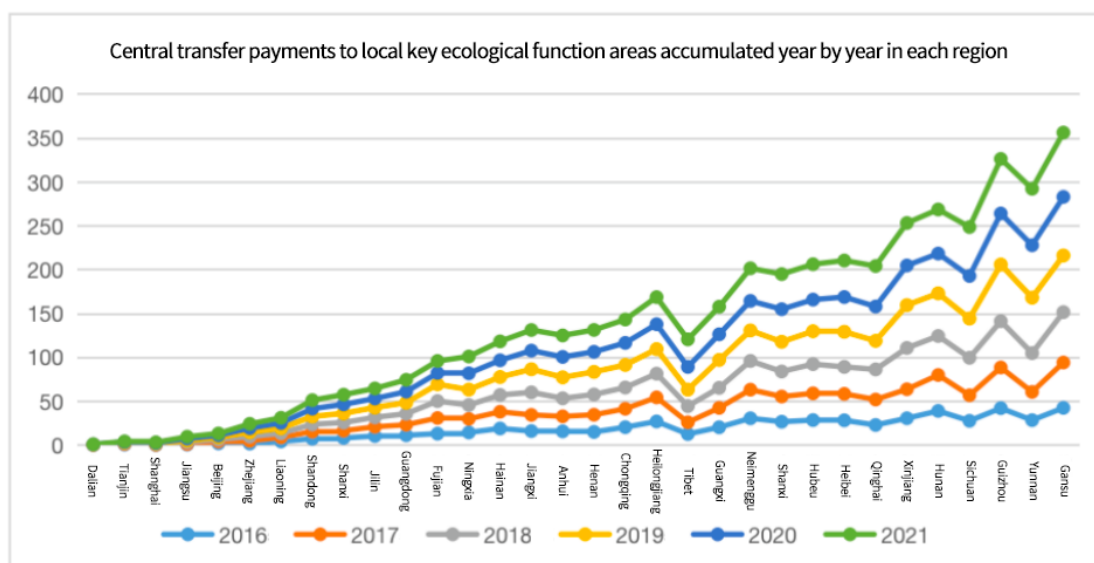
Third, the audience for ecological civilization education is insufficient, and the specific target orientation is still not clear enough. As far as legislation is concerned, there are more blind spots in the current policy itself, mainly reflected in the fact that normative documents on ecological civilization education are limited by the overall small number, low level of legislation and short occupation of space and other practical factors[14]. In terms of existing policy orientation, the main focus is on ecological civilization education in schools, with secondary schools as the main target audience, neglecting to give clear instructions and regulations on the responsibilities undertaken by different institutions such as government departments, enterprises and institutions, and social organizations. This makes it difficult to coordinate social organisations effectively in the organisation of ecological resources, and indirectly results in huge educational and resource barriers between government, academia and enterprises, making it difficult to carry out cross-sectoral synergy and cooperation, which will ultimately affect the quality of education and in turn reduce the productive power of the supply side of ecological civilisation education, thus affecting the construction of the overall system.

Fourthly, the legal links of ecological civilization education are closed, and the internal circulation of the whole process is low. The current level of effectiveness of China's ecological civilization

education legislation is more directly from the important spirit of central documents across to local normative documents, which is a large leap and more links, which itself is easy to produce problems such as deviations in policy interpretation, coupled with the uneven understanding of the administrative and legislative party and government organs of various departments, which is more likely to produce misinterpretation or misjudgment of policies, so it is also very likely to lead to poor presentation of the law and other The problem.

#### 4.1.3. Relatively weak financial inclination and insufficient incentive to build facilities

From 2016 to 2019, the national general public budget expenditure on ecological civilization construction reaches 3.1 trillion yuan, with an average annual growth rate of 14.8% [15], with an overall positive development.



**Figure 11.** Year-on-year accumulation of transfer payments from the central government to local key ecological function areas by region

However, the use of funds is focused on the field of ecological and environmental construction, and there is still a huge gap in financial support for the education sector. For example, the National Green Development Fund, established in July 2020 by the Ministry of Finance and others, with an initial size of 88.5 billion yuan, focuses on environmental protection and pollution prevention, ecological restoration and greening of the national space. The problem therefore manifests itself, on the one hand, in the fact that investment in the ecological green industry is more inclined towards economic production, with insufficient residual construction of related facilities, and in the fact that no effective link has been formed with education, failing to achieve systematic investment in the combination of industry, academia and research, resulting in the loss and depletion of the capital chain. On the other hand, the curriculum reform itself is underfunded and financial inputs are shared but not interoperable between disciplines, causing a degree of financial pressure and resulting in redundancy and misallocation of funds. So for government finances, there is a need to increase the precision and utilisation of funds while increasing the financial investment.

## 4.2. The ecological education system in universities is lacking and the effect is poorly presented

### 4.2.1. Ambiguous positioning of educational objectives and out-of-focus perception of educational values

Although ecological civilisation education has made unprecedented progress in the context of building an ecologically civilised society, there are still shortcomings. On the one hand, the economic effects pursued in the process of social development have had a more negative impact on ecological civilisation education in a subtle way. In today's colleges and universities, exam-oriented education

still dominates, and much emphasis is placed on realistic issues such as employment rates and examination rates while training students, leading to utilitarian training goals that make it difficult to obtain the desired results. On the other hand, some universities focus on completing teaching tasks and do not explore the meaningful values involved in depth, making ecological civilisation education lacking in permanence and wholeness.

#### **4.2.2. Insufficient depth of subject development and limited level of practical teaching**

At present, ecological civilisation education has been incorporated into the national education system, but as the "new star" of comprehensive quality education, the theoretical content of ecological civilisation-related courses is single, the theoretical construction is not perfect, and the whole curriculum system and course settings lack depth and breadth. First of all, in colleges and universities, more emphasis is still placed on specialised courses, and courses on ecological civilisation education are at a lower level. Secondly, at this stage, the ecological civilisation course is closely linked to other courses and has not yet been completely independent from other courses, and the education content is fragmented and disordered, lacking disciplinary logic. Once again, the content of ecological civilization practical education in colleges and universities is monotonous and in a single form, failing to play a good educational role. Finally, ecological civilization education in China's colleges and universities still needs to be improved in terms of the importance of the educational process and methods, and there are few practical activities such as study activities and volunteer activities, and the practical education on ecological civilization is lacking.

#### **4.2.3. There is an overall lack of quality teachers and varying levels of education**

Teachers in higher education are in a key position in ecological civilisation education, but the current lack of teachers and the lack of a professional teaching force in ecological civilisation education in China is a prominent problem, with teachers lacking professional theoretical knowledge and insufficient professionalism.

On the one hand, the training system for teachers of ecological civilisation education in colleges and universities needs to be improved. Most of the training for teachers in colleges and universities is in management and educational skills, and rarely involves the theme of ecological civilization education. Teachers cannot learn a perfect knowledge system of ecological civilization education, cannot form a systematic concept of ecological civilization education, and lack professionalism. On the other hand, university teachers have insufficient ideological awareness and lack of enthusiasm. Some university teachers have not changed their concept of education and are still "educator-centred". They do not recognise that students are the main body of learning and do not mobilise students' subjective initiative in the teaching process, which makes students lack interest in ecological civilisation education and makes ecological civilisation education ineffective.

#### **4.2.4. Insufficient construction of campus culture, with little effect on education**

Ecological civilisation education in higher education requires the combined effect of professional education and campus culture to develop better, but from the current development of ecological civilisation education, the boosting power of campus culture is still greatly lacking.

On the level of campus material culture, the development of material culture related to ecological civilization education in China's colleges and universities is seriously lagging behind, and there is a lack of educational venues and educational facilities related to ecological civilization. Universities lack both on-campus exhibition halls and museums and off-campus counterparts of ecological civilization education bases, which do not facilitate the development of practical activities. On the level of campus spiritual culture, ecological civilization education in China's colleges and universities accounts for a low proportion of campus cultural propaganda, with weak propaganda, a single form and content of propaganda, and insufficient depth, the ability and level of environmental propaganda work needs to be improved, and the construction of campus spiritual culture is lagging behind.

### **4.3. Lack of social ecological education roles and poor pathway development**

#### **4.3.1. Insufficient development of civil society organizations and lack of educational subject role**

Most of the social environmental organisations in China are non-profit organisations, and their low social influence has resulted in very little donor funding at the social level. Their sources of funding are mainly government grants and social donations, but government support is mostly limited to providing appropriate venues for activities, etc., with less actual financial support. In terms of human resources, civil ecological conservation organisations generally lack full-time staff, and the use of volunteer resources by social organisations in China is generally inefficient, with the role of education becoming less and less obvious.

#### **4.3.2. Insufficient cultivation of social ethos and media potential to be explored**

On the one hand, the promotion of excellent traditional ecological culture and advanced ecological values is currently limited, and a systematic and powerful consensus on the value of ecological civilisation education has not yet been formed, for example, some citizens have not yet formed a consensus on green and low-carbon living, and the benign herding effect is missing. On the other hand, the cultivation of ecological culture carriers is inadequate, and the potential of the media needs to be explored. The media's lack of publicity for existing cultural works related to ecological civilisation and the profit-oriented market environment limit the media's power to promote ecological civilisation education; at the same time, the media and media workers do not dig deep enough into the excellent traditional ecological cultural ideas and resources, and the quality of the cultural works created is not high.

## **5. Suggestions for optimizing ecological civilization education for university students under the construction of the National Ecological Civilization Pilot Zone**

### **5.1. The government improves top-level design and solidifies the foundation for development**

#### **5.1.1. Innovate the organizational structure and deepen the basic theoretical research**

At present, ecological civilization education in China is still at a preliminary stage, and the relevant systems and laws are not sound. It is hoped that, concerning the establishment of the Central Leading Group for Comprehensively Deepening Reform and the Central Leading Group for National Security, a Central Leading Group for the Construction of Ecological Civilisation will be formed, and an Ecological Education Committee will be formed by experts in ecology, management, planning and other relevant disciplines, to give full play to our political advantage of concentrating our efforts on major issues and strengthen top-level design to help the development of ecological civilisation education in China. It is suggested that the Central Ecological Civilisation Education Committee should take the lead and conduct in-depth research on the current issues that need to be urgently addressed in ecological civilisation education and related fundamental issues, based on the National Social Science Planning Project, the Humanities and Social Science Planning Project of the Ministry of Education, provincial and municipal social science planning projects and the 13th Five-Year Education and Teaching Planning Project, so that ecological civilisation education can be developed in a rule-based, gradual and steady manner [16].

#### **5.1.2. Improve institutional safeguards to stimulate the vitality of educational subjects**

Clarify the management system of ecological civilization education, define the path of implementation of ecological civilization education, and improve relevant policies and regulations.

Firstly, the management system of ecological civilization education should be clarified and a management system of ecological civilization education led by the party committee, led by the government and responsible by departments should be constructed. Under the leadership of the Party

committee, a general plan should be formulated and strictly implemented to unify the management philosophy and guiding ideology of ecological civilisation education; ecological civilisation education should be incorporated into national economic and social development planning, into the government's public service system, and an urban and rural ecological civilisation education guidance and service system should be established; a leading group for ecological civilisation education should be set up in the people's governments at the county level or above, with dedicated staff dedicated to the task of preparing, according to local characteristics and development needs education outlines and training plans, and develop a standardised system for the quality of ecological civilisation education.

Second, the implementation path of ecological civilization education should be clarified [17]. Guide schools of all levels and types to establish a working system for ecological civilization education and incorporate ecological civilization education guidance into school development planning; guide colleges and universities to establish ecological civilization education models that are appropriate to the age and physical and mental development reality of education targets; encourage higher education institutions such as teacher training schools and research institutions to set up ecological civilization education majors or research directions, create ecological civilization education think tanks, and vigorously promote ecological civilization education research and training of talents.

Once again, relevant policies and regulations should be improved to provide legal protection and policy norms for ecological civilization education<sup>[18]</sup>. The improvement of the level of legislation is the core and key to solving the normative problems of ecological civilization education, while the current line of sight focuses on the necessity of ecological civilization education and lacks the means to guarantee the development results of ecological civilization education in the form of practice. Therefore, the government should pay attention to the fundamental role of the integration and cross-sectoral nature of legislative research on ecological civilization education, introduce relevant policies to regulate the development of ecological civilization education, help improve relevant laws by granting additional research projects and training professional researchers, and fill the legal gaps in the field of ecological civilization education.

### **5.1.3. Increase financial investment to boost resource platform construction**

The lack of financial investment in ecological civilization education is one of the important factors that restrict the development of ecological civilization education. National governments at all levels, especially the central government, should increase their investment in ecological civilization education in terms of human and financial resources, and consider setting up a special fund account for ecological civilization education at the national level to provide the necessary support and guarantee for the development of ecological civilization education in colleges and universities in terms of facilities, equipment, library materials and funds [19]. At the same time, the government should open up diversified funding channels for ecological civilization education and effectively mobilize various social bodies and resources to actively participate in the construction of ecological civilization education, so as to provide solid material guarantee for promoting ecological civilization education and continuously improve the quality of ecological civilization education.

### **5.1.4. Exerting exemplary effect and promoting joint construction of government and schools**

The ecological civilisation education system is complex in composition, and the realisation of educational objectives cannot be achieved without the cooperative participation of all subjects. The government is the leader of ecological civilisation education, guiding the development direction of ecological civilisation education and acting as an exemplar in the cooperation of all subjects. In the construction of ecological civilization education, the government should actively "match" social forces and universities to provide channels and platforms for communication and collaboration, and promote the construction of a trinity of government, school and society [20]; speed up the planning and approval of practice bases and ecological schools, and promote coordination between them through a good mechanism of joint government-school construction. The joint construction

mechanism between the government and schools should promote coordination, mutual cooperation and mutual promotion. In the end, the development synergy of ecological civilization education in colleges and universities will be formed, so as to achieve better results in ecological civilization education.

## **5.2. Universities improve system construction to optimise teaching and learning**

### **5.2.1. Clarify the educational positioning and strengthen the educational goal setting of universities**

The teaching of ecological civilisation is fundamentally a quality cultural education [21], so universities should clarify their position as the "main field" of education, define and implement the goals of quality education, and achieve the all-round development of students. At the same time, universities must firmly establish the value orientation of ecological civilisation education, break down the barriers to ecological civilisation education from the conceptual point of view, and raise the degree of importance attached to it, so as to lead scientific teaching planning and innovative curriculum design.

### **5.2.2. Deepen the construction of disciplines and refine the design of the university curriculum**

The main battlefield of education is the classroom, and universities should do a good job of building ecological civilisation curriculum systems. On the one hand, universities should integrate existing curriculum resources to ensure that independent courses are taught with professionalism and theoreticality, but also actively promote the integration of disciplines. By optimising the content of the first.

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