Proceedings of ICGPSH 2024 Workshop: Industry 5 and Society 5 – A Study from The Global Politics and Socio-Humanity Perspective
DOI: 10.54254/2753-7048/2025.LC20496

Global Educational Change under the Current Situation of Global Warming

Ran Yan[1,a,*]

[1]*Preschool Education (Sino-Foreign Cooperation), Tianhua College, Shanghai Normal University, Shanghai, 201815, China*
a. heyueju@ldy.edu.rs
**corresponding author*

Abstract: Global warming has increasingly become the focus of global concern, which significantly impacts the ecological environment and social structure. The response to this crisis will require educational reform. This paper aims to green campus construction a crucial step in addressing the urgent environmental issues facing our planet. By embracing sustainable practices, schools can lead the way in promoting environmental awareness, cultivating green behavioral habits, and driving innovative solutions that contribute to the global community's overall health and well-being. The integration of environmental education and history discipline under the framework of multi-disciplinary integration education provides us with valuable experience and enlightenment. Interdisciplinary integration is an effective way to improve the quality of education and cultivate students' comprehensive literacy. By integrating knowledge, skills and values from different disciplines, the learning experience of children's green development concepts can be achieved through this process. As a large energy consumer, China has a significant impact on the global energy landscape. In the face of increasingly severe energy and environmental challenges, China has not only taken measures in terms of policy to adjust the energy structure, reduce the growth rate of energy consumption, and increase research efforts.

Keywords: Global warming, climate crisis, education reform, new energy industry.

1. Introduction

1.1. Explaining the Grim Situation of Global Warming

Global warming has been the focus of public concern in the past few decades. It is not appropriate to describe it as a purely scientific problem, because it concerns everyone's life and even has a profound impact on us and the structure of society. With the release of the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2021, the world's attention has once again focused on the issue of global warming [1]. According to the report, the average global temperature today has increased by 1.2 degrees Celsius compared to the average temperature during the Industrial Revolution (1850 to 1900). This represents a dramatic change in the global climate system as well as a range of social impacts. This upward trend is still underway, with global temperatures expected to rise by 1.5°C or more in the next 20 years, and this 1.5°C is a critical tipping point, although it is a small number for most people. Once this point is passed, the world is likely to face some serious

© 2025 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2753-7048/2025.LC20496

effects that cannot be reversed. For example, the melting of sea ice and icebergs will have a devastating impact on ecosystems in polar and alpine regions. The biodiversity and unique ecological environment of these areas will be seriously damaged, and many rare species may become extinct as a result.

Sea level rise is also a problem that cannot be ignored. As global temperatures continue to rise, the expansion of ocean water by heat, coupled with the intensification of glacier melting, the sea level continues to rise, putting enormous pressure on coastal ecosystems. This not only threatens the security of coastal cities, but also may lead to the disappearance of ecosystems such as wetlands and estuaries, which will affect the global ecological balance.

Global warming is not only an environmental problem, but also a social problem related to the future survival and development of human beings. In the face of this serious challenge, we need a global effort to take action to reduce greenhouse gas emissions and protect our common home planet [2, 3].

1.2. The Effects of Climate Warming on Industrial Structure

In recent years, the problem of global warming has become more and more serious. How to deal with climate warming is an important issue that needs to be solved urgently, because global climate warming has seriously threatened the sustainable development of China's economy. At the same time, China's industrial growth has slowed down significantly, and its role in driving GDP growth has been weakening. It faces many problems, such as overcapacity, declining industrial profits, declining investment growth, low overall quality of enterprises, and insufficient technological innovation capacity. It also faces new opportunities and development prospects. For China, which has just entered the late stage of industrialization, the industrial industry needs to transform and upgrade from capital-intensive industries with high energy consumption and excess capacity to technology-intensive industries with high added value, and the driving force of industrial growth must also change from factor-driven to innovation-driven to meet the long-term needs of economic growth. Therefore, in the critical period of industrial transformation, it is of great significance to study the impact of climate warming on China's education reform, especially in terms of industrial adjustment.

First, China has been warming faster than the global average since 1909. The forecast results show that by the end of this century, China's temperature will continue to rise, a rise of about 1.3℃-5.0℃. In the context of increasingly serious climate warming, most of the existing literature has examined the impact of global warming on China's agricultural sector. However, compared with agriculture, industry accounts for a larger proportion of our gross domestic product and is the main driving force of our economic development.

Second, China's industrial economy is in the transition stage to the "new normal", and the industrial growth rate has a downward trend. In the face of the downturn in the industrial economy, the Party Central Committee has put forward the overall idea of macro-control to further promote the "supply-side structural reform" on the premise of moderately expanding aggregate demand, aiming to reduce the supply of low-end ineffective industries, expand the supply of middle and high-end industries, and promote the upgrading of industrial structure. To realize the transformation of industrial growth mode from material factor input driven to knowledge, skills and other innovative factors driven. Therefore, in the critical period of industrial transformation, the study of the impact of temperature change on China's industrial sector and its impact mechanism plays a vital role in the smooth promotion of industrial "supply-side reform", which is conducive to the smooth transition of the industry to the optimal new normal, so that industry will continue to play a leading role in China's national economy. To realize the transformation of China from an "industrial power" to an "industrial power".

DOI: 10.54254/2753-7048/2025.LC20496

Finally, China is the world's largest manufacturing country. In 2012, China's exports of manufactured goods accounted for 1/7 of the global trade in manufactured goods and its influence on the global manufacturing industry has been increasing. Therefore, the negative impact of climate warming on China's industrial development will also indirectly affect the sustainable development of the global economy. Studying the impact of temperature change on China's industrial sector and its impact mechanism is conducive to the government of the education sector to formulate relevant policies, adjust the industrial structure, reduce the negative impact of climate warming on China's industrial development, and promote the sustainable development of the global economy [2].

1.3. To Highlight the Key Role of Education in Addressing Climate Change

The international community has widely implemented ESD since the beginning of the 21st century, and the United Nations calls on countries to incorporate it into the formal curriculum system. In 2002, the United Nations decided to implement the UN Decade of Education for Sustainable Development (DESD). The implementation of this plan marks the world's sustainable development education has entered a new stage. Following the end of DESD in 2014, the United Nations Educational, Scientific and Cultural Organization, UNESCO has launched the Implementation Roadmap of the Global Action Plan on Education for Sustainable Development, which has carried out the overall design and deployment of the implementation of education for sustainable development on a global scale, and promoted the integration of sustainable development into education and education into sustainable development. Then, in 2015, the United Nations General Assembly adopted resolution 70/1, Transforming Our World: The 2030 Agenda for Sustainable Development sets out 17 Sustainable Development Goals (SDGs), of which SDG4 clearly states that "by 2030, Ensuring that all those who learn are equipped with the knowledge and skills needed for sustainable development", as a new engine for promoting ESD [4,5].

1.4. Clarify the Purpose and Significance of This Study

By analyzing the impact of global warming, and specifically discussing the flood disasters and social changes caused by temperature changes at the North and South Poles, this study puts forward suggestions for educational curriculum knowledge.

First, the risks of coastal infrastructure caused by flood disasters are analyzed, and the impact of such infrastructure on residents' daily life and even education is analyzed. Then, the background of curriculum reform, curriculum implementation path and curriculum knowledge content are analyzed in detail, so as to present the integration methods and concrete manifestations of environmental education to adapt to climate change. Secondly, through the comparison of the social organization basis, curriculum reform background and curriculum implementation path of global warming education curriculum policy, the main body of environmental education curriculum reform and its interaction with external groups are extracted, so as to present the main characteristics of the curriculum reform in each stage to adapt to the current situation of global warming.

Finally, based on the above research results, combined with China's environmental education curriculum development background, put forward the Chinese ecology

The reference suggestion of incorporating knowledge into civilized education curriculum.

2. Temperature Changes in the North and South Poles Cause Flooding Disasters

In recent years, due to global climate change, tidal floods have become more frequent, and millions of people rely on the coastal infrastructure. Assuming a modest pace of sea level rise, a study released by the Union of Concerned Scientists (UCS) estimates that by 2050, almost 1,100 essential pieces of infrastructure along American coasts will flood on average 12 times year; By 2100, there may be

DOI: 10.54254/2753-7048/2025.LC20496

5,300 flooded infrastructure units; in U.S. coastal regions, the number of critical infrastructure units at risk of flooding is expected to increase by 20% by 2030 compared to 2020 [6]. The researchers believe that infrastructure such as sewage treatment facilities and power plants are essential to maintaining the normal functioning of society. If these infrastructures are flooded even once, it will have a great impact on the daily life of residents. As the risk of tidal flooding to U.S. coastal infrastructure grows rapidly in the coming decades, all sectors of society must take urgent action to prepare communities to respond appropriately [7].

3. Innovative Practices of Education in Addressing Climate Change

3.1. Green Campus Construction: Energy Saving, Emission Reduction and Ecological Protection

Therefore, the construction of a green campus is of vital importance to promote the sustainable development of society. One of the important contents of green campus construction is energy saving and emission reduction. Schools can pass advanced energy-saving technology and equipment to greatly reduce energy consumption and reduce carbon emissions. For example, the use of solar photovoltaic power generation, replacing traditional lighting equipment, optimizing the operation of air conditioning systems and so on. These measures not only to provide students with a healthy learning environment. It also helps to cultivate students' environmental awareness. To achieve the goal of green campus construction, it needs the joint efforts of the government, schools and all sectors of society. The government should increase its support for the construction of green campuses and provide policy guidance and financial support. Schools should formulate a detailed green campus construction plan, clear goals and tasks and time nodes, to ensure that all measures are effectively implemented. Schools should also strengthen cooperation with enterprises, communities and other social forces to jointly promote the development of green campus construction. How to construct a green classroom under the guidance of the green education concept? People must sort out the connotation of green university, which includes three layers: first, use "green. The concept of "color education" cultivates students; The second is to use "green technology" awareness Development of various disciplines; The third is to use "green campus" project to edify teachers and students.[8]

3.2. Integrating Climate Education into the Curriculum System: Enhancing Students' Awareness and Skills

Under the framework of multi-disciplinary integrated education in China, environmental education has been liberated from the limitation of a traditional single discipline and transformed into a "symphony" involving multiple fields. This interdisciplinary thematic learning strategy promotes the integration of environmental education contents among different disciplines and creates a more three-dimensional and in-depth learning situation for students.

In this integrated education, the discipline of history shows its influence which cannot be ignored. By delving into the Industrial Revolution, students gain insight not only into socio-economic change in its historical context, but also into its complex links to environmental degradation. Such in-depth desk studies strengthen students' understanding of history, but also nurture their environmental awareness and inspire them to look at current environmental challenges from a historical perspective.

3.3. The Significance of Educational Research on Ecological Civilization Goals for Global Warming

Most researches on the goal of ecological civilization education not only focus on the core "goal" setting of ecological civilization education, but also focuses on ensuring its realization and landing

DOI: 10.54254/2753-7048/2025.LC20496

by measuring the degree of realization of the goal. Therefore, the evaluation of ecological literacy is also a research topic that cannot be ignored. Erol developed the "Ecological Literacy Scale", which includes ecological cognition, ecological emotion and ecological behavior. The higher the score of each scale, the higher the level of the respective dimension, and the higher the total score, the higher the level of ecological literacy. Schultz discusses connectedness with nature more directly, i.e., "the extent to which one includes nature in one's self-cognitive representation," designing a "scale of the self that includes nature." (Inclusion of Nature in the self Scale), which is made up of seven of the circle, were marked as "self" and "nature", two laps from no said to almost complete overlap degree of fusion of self and nature [9]. At the same time, Schultz that bond between man and nature is the feeling of the unconscious, at least not conventional or can be taken out at any time, so once again to develop "implicit nature connection test" (Implicit Connections with Nature Test) evaluation. The relationship between environmental concerns such as "attitude", "consciousness" and "values" and ecological behavior, so as to measure the degree of connection between individuals and nature [10]. and a measure of a natural emotion between "natural connectivity scale" (Connectedness to Nature Scale), believed that individuals belonging to the nature and embedded into the stronger, will appear to be more close to environment [11]. In addition, the "New Ecological Paradigm Scale" is a tool to measure public ecological awareness and attitudes, with higher scores indicating more ecocentric tendencies. Based on cultural core, psychological cognition and performance scenes, some Chinese scholars have constructed an evaluation index system of ecological civilization literacy, including ecological feelings, ecological wisdom and ecological practice [12].

4. Strategies and Paths of Educational Reform

The world energy structure is in urgent need of adjustment and optimization. There is a place for consumption in the world. According to the BP Statistical Review of World Energy, China used 2,972 million tons of oil in 2015. Equal in 2014, or 23% of the world's total energy consumption. China, on the other hand, is a major producer and consumer of coal. In 2014, China used 1,847 million tons of oil equivalent, or 46.9% of the world's total energy production. In 2014, China consumed 1,962 million tons of oil equivalent, or 50.6% of the world's total coal usage.

According to the 2015 China Statistical Yearbook, the growth rate of China's total energy consumption increased from 1998 to 2004, while in recent years, the growth rate of energy consumption dropped to 2.18% in 2014. According to the 2015 BP Statistical Review of World Energy, although China's energy consumption growth rate dropped to the lowest level since 1998, it still leads the global energy consumption. The optimization of China's energy structure is of great significance to the adjustment of the world's energy structure. Education plays a key role in shaping students' attitudes, values and behaviours towards sustainable development, among others. Given China's huge contribution to global energy consumption, which accounts for 23% of global energy consumption, this data shows that it is urgent to include global warming education in school curricula. The first step in fostering a more environmentally conscious society, I believe, is to incorporate environmental education into students' curricula. One way to integrate global warming awareness is to incorporate related topics into science and social studies curricula at different levels of education. This can include, for example, greenhouse formation, renewable and non-renewable energy sources, energy efficiency, and environmental activities that affect humans.

In addition, extracurricular activities should be promoted and environmental education strengthened. Schools can set up clubs or societies to subtly practice areas dedicated to promoting sustainability, such as recycling programs, tree planting initiatives, and energy conservation campaigns. These activities not only encourage students to apply what they have learned to a real-world environment. Another key aspect is the training of teachers. Educators must have adequate knowledge and the skills needed to provide effective environmental education. In addition, education

DOI: 10.54254/2753-7048/2025.LC20496

should also train innovative talents who can adapt to today's society, governments will continue to introduce relevant policies to support the development of new energy, and increase the training of relevant talents in education. The continuous innovation of new energy technology will promote the reduction of energy cost and the improvement of efficiency, making it more competitive.

5. Conclusion

In the context of global warming, education reform plays a pivotal role. The reform of the education system will not only improve its ability to cope with climate change, but also produce talents with environmental awareness and future innovative new energy technologies, thus contributing to the adaptation and mitigation of global warming. First of all, through optimizing campus facilities, promoting energy-saving and environmental protection technologies, carrying out green planting and other measures, to achieve the green development of the campus environment and energy saving and emission reduction. This practice can integrate green concepts into daily teaching and management to cultivate the development of students' green concepts. Second, training new energy talents is another key measure for education reform to adapt to global warming, and the education system needs to cultivate a group of new energy talents with innovative spirit and practical ability. These talents will play an important role in the research and development, promotion and application of new energy technologies, thereby promoting the transition of the entire society to a cleaner and low-carbon energy system. Thirdly, the goal of ecological civilization education further highlights the strategic position of education reform in adapting to global warming. By integrating the concept of ecological civilization into the education system, students are guided to establish a correct ecological view. In the future, with the in-depth implementation and continuous improvement of these reform measures, people have reason to believe that the education system will become an important force in promoting global sustainable development and combating climate change. These education reforms will also have a profound impact on the growth trajectory of each generation of students, shaping a greener and more harmonious society in the future.

References

[1] *O'Grady C. (2022) Warming of 1.5°C carries risk of crossing climate tipping points [J]. Science, 377(6611): 1135-7.*

[2] *Yang Lu. (2018). Research on the impact of global warming on Chinese Industrial Enterprises (Ph. D. Dissertation, Southwestern University of Finance and Economics). Learned scholar*

[3] *Varela R, de Castro M, Dias J M, et al. (2023) Coastal warming under climate change: Global, faster and heterogeneous [J]. Sci Total Environ, 886: 164029.*

[4] *Shi, G.D, & Wang, G.Y [Shi Gendong, Wang.] (2012) sustainable development education basic tutorial [M]. Beijing: Educational Science Press, 2009: 15*

[5] *Yan Yuanyuan. (2023). A comparative study on curriculum Knowledge of Environmental Education among four countries (Master's Thesis, East China Normal University). master*

[6] *Jiang Wen & Li Hui. (2024). Rising sea level exposes the coastal infrastructure of the United States to the risk of flooding. Water Resources and Hydropower Express (08), 1.*

[7] *Duan Yuanyuan. (2024). Analysis of green education concept and Research on Green classroom Construction. Chinese Journal of Multimedia and Network Teaching (Mid-10 days) (09), 132-135..*

[8] *Erol Koçog˘lu, Şule Egüz, Rasim Tösten, etal. PerceptionofEcologicalLiteracyin Education:A ScaleDevelopmentStudy [J].InternationalJournalofEducationandLiteracyStudies, 2023, (3).*

[9] *Wesley Schultz.The structure of environmental concern:Concernforself, otherpeople, andthe biosphere [J]. Journal of environmental psychology, 2001, (4).*

[10] *Coral M. Bruni P, Wesley Schultz. (2010) Implicit beliefs about self and nature: Evidence from an IAT game [J]. Journal of environmental psychology, (1).*

[11] *Stephan Mayer, Cynthia McPherson Frantz. (2004) The connectedness to nature scale: A measure of individuals' feeling in community with nature [J]. Journal of environmental psychology, (4).*

DOI: 10.54254/2753-7048/2025.LC20496

[12] NtanosS, Kyriakopoulos G., Skor doulis M., etal. (2019) An application of the new environmental paradigm (NEP) scale in a Greek context [J]. Energies, (2).