

# Reform of Green Education in Universities under the Background of Green Development—Taking the Practice of Green Universities in Shandong Province as an Example

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**Abstract:** Implementing the concept of green development and strengthening green education for college students is an important area for implementing sustainable development in China. Universities should guide students to establish the concept of green and low-carbon development, cultivate green behavior norms, and lay the ideological and action foundation for building a good ecological environment. The reform of green education in universities is mainly achieved through the comprehensive construction of green campuses. This article mainly focuses on optimizing the layout of campus space, carrying out ecological civilization education, cultivating green campus culture, and promoting green innovation research to achieve practical and detailed development of green education in universities.

**Keywords:** Green and low-carbon development concept; Green education; Green campus; Innovative research

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## 1. Introduction

Shandong is an important industrial base in China and a strategic fulcrum for economic development in the northern region. We must firmly adhere to the modern development path of ecological priority and green development, and strive to build a green, low-carbon, and high-quality development demonstration zone. Strengthening green education for college students is an important strategic choice to adapt to the upgrading of local industries in Shandong, implement high-quality development, cultivate sustainable development concepts and professional skills, and is an important content of carrying out ecological environment protection and civilization construction. This article combines the actual transformation and development of Shandong universities, explores and studies the reform of green education in universities in serving the economic and social development of the transformation of old and new driving forces in Shandong. It fully leverages the important functions of universities in cultural promotion, talent cultivation, scientific research, social services, and other aspects, providing useful reference for further promoting green and low-carbon development in society.

## 2. The Implementation of Green Education in Shandong Universities has Profound Significance

### 2.1 Green Education is an Inevitable Requirement for Implementing the National Major Development Strategy and Serving the Social and Economic Development of Shandong Province

In 2022, the Ministry of Education issued the *Implementation Plan for the Construction of a National Education System for Green and Low Carbon Development*, which sets the main goals, "By 2025, relevant colleges and universities will initially establish a professional system of carbon peak carbon neutrality related disciplines, and the scientific and technological innovation ability and innovative talent training level will be significantly improved. By 2030, students' green low-carbon lifestyle and behavior habits will be systematically nurtured and developed, a more complete multi-level green low-carbon concept education system will be formed, and a batch of carbon peak carbon neutrality first-class disciplines and research with international influence and authority will be formed Institution." In 2022, the State Council issued the "Opinions on Supporting Shandong to Deepen the Transformation of New and Old Kinetic Energy and Promote Green, Low Carbon, and High Quality". As an important demonstration area for the transformation of new and old kinetic energy, Shandong needs to improve the institutional mechanisms for the continuous transformation and upgrading of kinetic energy and green and low-carbon development. To build a strong socialist modernization province, green education support needs to be provided in Shandong's universities, which should be implemented in the operational system and mechanisms of universities, We

need to implement green education through the comprehensive construction of green schools.

## **2.2 Exploring Green Education is an Inevitable Choice for Implementing the Fundamental Task of Cultivating Students' Moral Character and Promoting Their Comprehensive Development**

Universities should comprehensively implement the Party's education policy, organically combine the fundamental task of cultivating morality and cultivating talents with the concept of green education. By gradually improving the green moral education system, promoting the construction of green courses, enriching the carriers of green education, carrying out green practice activities, accelerating green scientific research and innovation, focusing on promoting students' comprehensive and sustainable development, and walking out a unique path of green education.

## **3. Shandong Universities Integrate Green and Low-carbon Development into the Entire Process of Education and Teaching**

### **3.1 Creating a Green Education Environment in Universities**

Schools should strengthen connotation construction and achieve environmental and cultural education. In the construction process of the campus, the goal should be the coordinated development of people, buildings, and the natural environment, fully reflecting the concept of harmonious coexistence between humans and nature, focusing on creating a healthy, comfortable, and efficient development space for teachers and students, and building a campus where humans and nature coexist harmoniously. The construction of campus culture should also closely adhere to the word "green", integrate local characteristics, and focus on creating a good school atmosphere, teaching and learning style, condensing the positive and upward spirit of students as the core, promoting socialist core values, cultivating students' positive and healthy worldview, outlook on life, values, and elegant aesthetic values as the guide, and focusing on cultivating campus culture that reflects the connotation of the school, reflects the era of teachers and students, and reflects the regional characteristics of Shandong.

### **3.2 Integrating Green and Low-carbon Requirements into Curriculum Teaching at Various Stages of Higher Education**

Fully integrate the idea of green ecological civilization into all disciplines of colleges and universities, strengthen the integration of science, engineering, agronomy, economics, management, law and other disciplines, establish a carbon peak carbon neutrality core knowledge system covering climate system, energy transformation, industrial upgrading, urban and rural construction and other fields, and accelerate the preparation of a cross disciplinary comprehensive knowledge map according to the requirements of the Implementation Plan for the Construction of a Green and Low Carbon Development National Education System, Compile a batch of excellent textbooks in the field of carbon neutrality of Carbon Peak to form a high-quality resource pool. The school combines the national and Shandong development strategies, innovates the talent cultivation mode of universities, and builds a technical talent team that meets the needs of industrial upgrading. Optimize the layout of disciplines and majors through green development, improve the integration mechanism of industry, academia, and research, build a green discipline development platform, and cultivate green innovative talents. According to the requirements of local economic construction in Shandong, universities will focus on creating interdisciplinary and integrated new engineering disciplines such as green ecology, intelligent technology, big data, and cloud computing. Universities actively adjust their professional development plans, strengthen the construction of new majors and the distinctive transformation of existing majors, accurately position the training direction, and support the construction of green disciplines.

Deeply tap the outstanding traditional cultural charm of Shandong characteristics, such as Confucian culture, Mount Taishan culture, Yellow River culture, canal culture, and so on, to empower the construction of green cultural concepts in colleges and universities. Based on excellent historical culture and the requirements of the times, we will improve curriculum resources, improve classroom education and teaching level, and integrate the concept of green development into curriculum resources and classroom teaching. We will strive to create green courses, green classrooms, and green laboratories to improve the level of educational technology and promote education and teaching reform.

### **3.3 Improving the Level of Green Scientific Research Services in Universities**

Universities should integrate the concept of green education into all aspects of scientific research, guide researchers to further enhance their awareness of green research, improve the quality of green research achievements, and deepen cooperation between schools

and enterprises in green research. Universities should improve the construction of relevant systems, increase the enthusiasm of researchers in engaging in green scientific research, accelerate breakthroughs in relevant basic theories, core technologies, and integrated application research, and promote the production of iconic and innovative green scientific research achievements. Based on the geographical and resource advantages of Shandong, universities are accelerating the development of scientific research platforms. Focusing on the green development needs of Shandong's economy and society, they are targeting the forefront of disciplinary development, further integrating characteristic and advantageous resources, and focusing on building talent training bases in green development fields such as green mines, life and health, Yellow River geology and water environment monitoring.

Strengthen cooperation in green scientific research between schools and regions, actively participate in agricultural revitalization actions, assume the responsibility of being a major grain province, promote the research and application of green ecological agricultural technology, achieve negative growth in the use of fertilizers, pesticides, and plastic films, improve the comprehensive utilization level of agricultural waste, and contribute university research efforts to rural revitalization and green development in Shandong region.

## 4. Conclusion

The reform of green education in universities is a long-term development process that runs through various aspects, levels, and links of society. To carry out green education, universities must deepen reforms in educational content, teaching methods, and channels, strive to build green and harmonious campuses, and improve the green education system. In addition, the cultivation of green awareness also requires guiding college students to start from themselves and strive to make the whole society consciously enhance the concept of ecological civilization protection, providing a strong spiritual pillar for the implementation of sustainable development strategy and the construction of a beautiful China.

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