

Analysis of the Related Concepts of Green Skills Development from the Perspective of Vocational Education Modernization

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Abstract: Strengthening environmental protection and taking the road of green development are the relentless pursuit of the party and the people. The report of the 20th National Congress of the Communist Party of China "promote the great rejuvenation of the Chinese nation with Chinese-style modernization in an all-round way" opened a new era and a new journey mission and put "people and the modernization of the harmonious coexistence of nature" is one of the five characteristics of Chinese-style modernization. Green should become the proper meaning of vocational education. From the perspective of vocational education modernization, the article sorts out the four concepts of green economy, green industry, green occupation, and general skills that need to be clarified in the development of green skills and explains that green economy is the internal driving force of green skill development, and green industry is the driving force. Green skills development provides a new field, green occupation (job) is a new navigation mark for green skills development, and general skills provide essential content and direction for green skills development. Finally, the article presents the connotation and suggestions for green skills development in vocational education. It has important guiding significance for modernizing Chinese-style vocational education and empowering a beautiful China.

Keywords: Vocational education, Modernization, Green skills, Development.

1. Introduction

On October 16, 2022, at the 20th National Congress of the Communist Party of China, Chinese President Xi Jinping put forward the new mission of "promoting the great rejuvenation of the Chinese nation in an all-round way with Chinese-style modernization" and put "harmony between man and nature" Coexisting modernization" is one of the five characteristics of Chinese-style modernization, and "the living environment in urban and rural areas has been significantly improved, and the construction of a beautiful China has achieved remarkable results" as one of the main goals and tasks at the beginning of the complete construction of a socialist modern country, etc., a series of implementation The tasks and goals of the new development concept have been referred to a more unique and higher level of national strategy. Building a community of life between man and nature and taking the road of sustainable development has become essential requirements for realizing Chinese-style modernization. At the same time, the report of the 20th National Congress of the Communist Party of China also proposed "implementing the strategy of rejuvenating the country through science and education and strengthening the support of talents for modernization" and listed education, science and technology, and talents as the primary and strategic support for comprehensively building a modern socialist country. Talents are the first resource. Talents who uphold the concept of green development, practice green lifestyles, and possess green skills are the needs of the times to support the construction of a beautiful China.

Vocational education is an essential part of the national education system and the development of human resources. Since the 18th National Congress of the Communist Party of China, vocational education has trained hundreds of millions of high-quality industrial newcomers. My country has built the world's largest vocational education system[1], and is moving towards the goal of high-quality development. In

modernization, vocational education has initially fulfilled a series of missions to empower green development, such as providing "green skills" transformation services for the ecological economy. I was standing at a new historical starting point, systematically sorting out several vital concepts of green skills development, clarifying the connotation and path of green skills development in vocational education under the background of modernization of vocational education, which will help the modernization of Chinese-style vocational education and contribute to a beautiful China. Building and providing high-quality talent support has important guiding significance.

2. Green Economy: The Internal Driving Force for Green Skills Development

The green economy is in line with the concept of sustainable development. It is a new development model produced by the industrial economy to meet the needs of human environmental protection and health. The result of introspection on the problem is also what modern society should have.

In 1989, the British economist Pearce published the "Blue Book of Green Economy" for the first time to propose a "green economy". Affected by it, some environmental economists later advocated establishing a "sustainable economy" starting from the society and its ecological conditions. On June 3-14, 1992, in Rio de Janeiro, Brazil, the United Nations Conference on Environment and Development adopted the Global Environmental Declaration "Agenda 21", which made "sustainable development" a core concept in the development of human society. UNESCO launched the "United Nations Decade of Education for Sustainable Development (2005-2014)" program at its headquarters in New York on March 1, 2005, emphasizing the

critical role of education in sustainable development. Since then, significantly affected by the 2008 world financial crisis, the result of a green economy and implementing a new green deal has once again become the consensus of human society. On November 16, 2011, the United Nations Environment Program defined the green economy as "improving human welfare and social equity while greatly reducing the Environmental Hazards and Ecological Scarcity"[2]. On September 25-27, 2015, the world-renowned "United Nations Sustainable Development Summit" was held at the United Nations Headquarters in New York. On the opening day of the meeting, an outcome document jointly reached by 193 member states was adopted, namely "Transforming Our World: 2030 Agenda for Sustainable Development, proposing 17 sustainable development goals, etc.

In this new phase, Chinese-style modernization requires us to stay upright and innovate and to open a new realm of the Sinicization of Marxism with new ideas. In the economic field, we will develop a new form of economy that takes ecology, environment, and resources as elements, is supported by green technology innovation, aims at the coordinated development of economy, society, and ecology, and is characterized by the harmonious coexistence of man and nature. In recent years, my country has taken green manufacturing as an essential starting point to promote the development of the green economy and vigorously promoted the green and low-carbon transformation of the manufacturing industry in terms of production methods and industrial structure. Not long ago, the 2022 Green Manufacturing List was announced, including 874 green factories, 47 green industrial parks, 112 green supply chain management companies, and 643 green design products, which means that my country's green manufacturing system has made new progress again [3]. It also shows that the green economy will drive more green industries and jobs, and the demand for green technology and skilled personnel will increase significantly.

As the type of education most closely related to the economy and society, vocational education should actively respond to the inherent demands of green economic development. The production function of the green economy is based on the production factors of the traditional economy, emphasizing the ecology, environment, and resources as the essential elements of the operation of the green economic system, reflecting the value of ecology, the environment, and resources and the fairness of utilization, and emphasizing that through education and other means Improve human capital, and use green technology innovation as an essential means of developing a green economy. Therefore, green human resources and technological innovation are necessary for creating a green economy. Thus, when human society enters the journey of green economic development, the main task of vocational education should also actively empower green human capital in clean technology, renewable energy, ecosystem or environmental infrastructure, biodiversity-based business (such as organic agriculture), waste and chemical management, green city, construction, and transportation, the eight critical areas recommended by the United Nations Environment Program [4], do an excellent job in professional docking and development, to revise and improve the technical critical regions of green skill development. In addition, actively develop vocational education advantages and social forces, build a development platform with the participation of industry, community,

education system, scientific research institutions, etc., and support related policies and regulations to promote and support it.

3. Green Industry: A New Field for Green Skills Development

The concept of "green industry" can be traced back to the "Green Plan" proposed by the Canadian Ministry of Environment. In 1991, to ensure the unity of environmental, economic, and social benefits, promote acid rain and ozone depletion, and protect biodiversity, the Canadian government published the "Green Plan, Challenges to the Nation: A Framework for Discussion on Environmental Issues" through nationwide discussions. over five years, the government, businesses, organizations, and individuals have invested in this project and formed a creative partnership.[5] For the first time, the plan combined "green" with the overall social and economic development plan at the macro level, was quickly recognized by 12 industrially developed countries, and became an important strategy to promote sustainable social and economic development in all countries. [6] In 2003, the United Nations Development Program proposed that green industry refers to products, equipment, services, and technologies that prevent and reduce pollution. In 2011, the United Nations Industrial Development Organization launched the green industry strategy and defined it as an industrial model that can promote sustainable production and consumption. It can make products more efficient in using resources and energy throughout their life cycle, carbon and emission intensity of pollutants is lower, less pollution to the ecological environment, no pollution and safer. [7] In short, the essential characteristics of the green industry are based on sustainable development and health and environmental protection to build a resource-saving and environment-friendly society to ensure that products or services do not pollute the environment in the whole process or A low-pollution emerging industrial form. Compared with other industries, the green industry has the characteristics of industrial comprehensiveness, extensional ambiguity, benefit superposition, comprehensive penetration, cycle reverse, regional ecology, and double dependence.

Based on the green economy, the green industry has once again disassembled the skill category of green skill development, and the fields covered by the green industry have become the critical research and analysis areas for green skill development. Taking the environmental sector and all industries that require greening as examples, there are environmental protection industries, biological resource development, pollution-free agriculture, solar energy, geothermal energy, wind energy, and other environmentally friendly, low pollution, low energy consumption, low water consumption products, services or Technology, as well as traditional industries such as textile chemical industry, transportation, paper making and printing that require greening. In addition, green initiatives also reveal new employment prospects. High-pollution and high-consumption industries will gradually be eliminated, and resource-saving and environmentally friendly green sectors will emerge. After green skills training, human capital that has mastered green skills can be used in direct or indirect production, operation, and ecological environment construction and protection. Employment in emerging environmental industries related to environmental protection, management, or services can also

be promising in traditional sectors that are traditionally associated with environmental protection, such as production and manufacturing, as well as traditional industries that use ecological protection equipment and technologies for environmental pollution control, treatment, and services.

4. Green Occupations (Jobs): A New Beacon for Green Skills Development

With the gradual recognition of the green economy and industry, green occupation, green employment, and green job have gradually become the focus of attention. In 2008, the United Nations Environment Program and the International Labor Organization, and other critical international institutions cooperated to launch the "Global Green New Deal and Green Economy Plan", advocating that governments of all countries establish a low-energy, environmentally friendly, and sustainable "green economy" growth model. Among them, the primary outcome of the conference "Green Jobs: Getting Decent Jobs in a Sustainable, Low-Carbon World" clearly defined green jobs as "green jobs in agriculture, manufacturing, research and development, administration and service sectors". Jobs that play an essential role in protecting or restoring the environment. These jobs help protect ecosystems and biodiversity; reduce energy, material, and water consumption efficiently; decarbonize the economy; minimize or avoid various forms of waste and pollution." [4] In 2021, the International Labor Organization also proposed the essential skills for green jobs, including environmental awareness, reducing, and managing waste, and using energy and water resources efficiently. [8]

In my country, the "People's Republic of China Occupational Classification Encyclopedia" (2015 edition) thoroughly considered the characteristics of the social division of labor in my country's colonial transformation period, carried out systematic research on occupational activities with apparent elements of "environmental protection, low carbon, and recycling", and put some social Occupations with high awareness and prominent green features are marked as green occupations (identified as L), which is the first attempt to classify works in my country. The "People's Republic of China Occupational Classification Code" (2022 Edition) systematically sorts out and improves green occupations according to the social and economic development trend. In the People's Republic of China Occupational Classification Code (2022 Edition), green occupations involve 17 fields of energy conservation and environmental protection.6 domains of clean production.20 lots of clean energy.29 fields of ecological environment.25 areas of green upgrading of infrastructure. Areas of green services.45 covers all aspects of green production and life and sustainable development of the ecological environment, marking 134 green occupations, accounting for 8% of the total number of professions[9]. Monitoring, protection, and governance, beautification of the ecological environment, and production of solar energy, wind energy, biomass energy, etc., have become the new favorite of new energy occupations.

The gradual emphasis and popularization of green occupations (jobs) provide a new beacon for the embarrassment of "two skins" in the school workplace. They will also broaden the channels for students to obtain employment. Skills are the proper meaning of the modernization of vocational education, which is also an

inevitable requirement for developing high-quality vocational education. With the rapid development of the green economy and green industry, it can be determined that green jobs in all walks of life and their ability requirements, job skill standards, and job workflows will also be perfected. The green skills required in green occupations (jobs) should not only be reflected in the vocational education talent training program but also should become an essential reference for labeling green skill standards and developing green skills in the vocational education reform and high-quality development exhibition.

5. General Skills: Important Content and Direction of Green Skills Development

In 1972, Mertens, director of the German Labor Market and Occupational Research Institute, first used the concept of "key ability (Schlusselkompetenz)" in the "Overview of Occupational Adaptability Research" to the European Union, which is the prototype of general skills. In 1974, Mertens made a systematic discussion of it in his "Key Ability: The Educational Mission in Modern Society" [10], He believes that critical ability is the knowledge, ability, and skills not directly related to specific professional practical skills. It is the ability to make judgments and choices in various situations and duties, ability[11]. Soon, similar concepts such as "general ability", "employability skills", and "core literacy" aroused significant repercussions in the United States, Australia, New Zealand, and other countries and became an essential basis for vocational education curriculum setting and reform. In 1996, UNESCO put forward the "four pillars" of lifelong learning in the "Delors Report", that is, learning to know, learning to do things, learning to live together, and learning to survive. In 2002, the Australian Chamber of Commerce and Industry released the "Employability Skills Needed in the Future" to expand the scope of "general skills" to three parts: "hard skills" and "soft skills", namely: basic skills, interpersonal skills Communication skills, personal qualities. In 2018, the European Union proposed the "EU Framework of Reference for Key Capabilities for Lifelong Learning", such as reading and writing, mathematics and science, technology, and engineering skills. In 2019, the Organization for Economic Co-operation and Development released the "OECD Learning Compass 2030", proposing three transformational capabilities: creating new value, coping with pressure and difficulties, and taking responsibility [12]. Although each country has a different understanding of the category of "general skills", its connotation refers to those everyday skills needed for work, life, and development.

Based on this, general skills are an essential content and direction of green skills development. From the perspective of the concept of green development, green skills generally apply to different fields of production and life. The primary green skills, personal and interpersonal skills, are the ability to make judgments and choices that benefit the environment in various situations and duties. A collection of personal green awareness and attitudes, knowledge, abilities, and attitudes that are not directly related to professional skills. More importantly, as a skill, green skills can also be acquired through professional learning and training. Learning green skills can effectively cultivate students' green professional ability, meet the competency requirements of green

professional positions, and adapt to the development of the green economy and the sustainable development of learners in the future.

6. The Connotation and Suggestions of Green Skills Development in the Field of Vocational Education

Green skills are based on sustainable development and are coordinated with developing a green economy, energy conservation, and environmental protection. They are the skills that should be possessed for green work and industry development. With the green transformation of society, economy, and environment, the development of green skills has received continuous attention from the international community. In 2008, the International Labor Organization, the United Nations Environment Program, and the International Federation of Employers jointly launched the "Green Job Action"; in 2009, the Australian government approved the "Green Skills Agreement"; Incorporating Environmental Awareness into Vocational Education and Training" research report, etc. The 2022 "Global Green Skills Strategy in the Context of Sustainable Development" forum was held recently. Representatives and experts from many international organizations and countries, such as UNESCO, International Labor Organization, and United Nations Development Program, gathered to seek green skills development Global advice.

6.1. The connotation of green skills development in the field of vocational education

Green skills development is an integral part of career modernization. Green skills development should fully explore, analyze, and summarize the normative requirements of the technologies and capabilities needed to engage in green jobs or develop green industries and implement green skills training and certification for labor to improve the level of green skills of workers.

Green skills are "sustainable development skills", which refer to the workforce's skills, knowledge, values, and attitudes to support and promote sustainable social and economic development and environmental friendliness in industries, businesses, and communities[13]. Green skills include basic skills, advanced or knowledge-intensive skills, and cross-skills, and can also be divided into three levels: high, middle, and low. They correspond to employees from further education and training backgrounds in the labor market. The core content of green skills development includes leadership and decision-making capabilities, enabling policymakers and implementers to adopt incentives and create conditions to achieve clean production and clean transportation, etc. Capacity improvement and skills transplantation, allowing workers to learn and apply new knowledge and new techniques to green their work; environmental awareness and active learning for sustainable development; coordination and business skills, using cross-cutting technologies to achieve social, economic and ecological goals; systems Risk assessment skills, used to assess, communicate and understand the needs of social and industrial structural transformation and measures to be implemented; innovative and entrepreneurial skills, used to grasp opportunities for low-carbon technologies; creative skills, used to determine options and strategies for green adjustment; communication

Negotiation skills are used to deal with conflicts of interest in complex situations; marketing skills are used to promote green products and services; consulting skills are used to advise customers to adopt green solutions and disseminate green technologies; network, information and language skills are used to Develop the global market.

6.2. Suggestions for developing green skills in the Field of vocational education

The development of green skills in vocational education is concentrated in the research and development of the APEC "Green Skills Development in Vocational Education System" project of the Vocational and Technical Education Center Research Institute of the Ministry of Education. The author was fortunate to participate in the project as a project team member.

The project integrates the concept of green, environmental protection, and sustainable development into vocational education, and through research and analysis of green skills required by green jobs, it is split into three elements of economy, environment, and society, as well as the three dimensions of operation, technology, and management involved in each component. Based on this, the talent training program will be greened among them.

From a larger perspective, green technology can be divided into general and professional green technology. In different occupations and jobs, the requirements for general green skills will be other, but from the perspective of comprehensive human development, leadership, decision-making, problem-solving, innovation, teamwork, information processing, interpersonal communication, and system The cultivation of abilities such as artwork and self-planning needs to be completed in educational links such as classroom teaching, extracurricular activities, and practical training. Integrate and acquire those mentioned above general vocational skills and specific vocational skills. Combined with the construction of green campuses, the establishment of green courses, the rendering of green culture and the cultivation of green teachers, the acquisition of general green skills is achieved in an all-round way [14].

Professional green skills are the necessary professional knowledge and professional skills for green occupations and green jobs. It generally includes technical knowledge and environmental protection awareness in a characteristic field of green economic activities; environmentally friendly tools, working methods, technological methods, etc.; sustainable material production, processing, treatment, recycling, etc.; provision of green products and services, etc. For example, in using green and clean energy to replace traditional animation, the technical knowledge and production process of green and clean energy requires acquiring specific vocational skills. Innovate existing vocational skills and embody professional green vocational skills education. Green skills development must be carried out to become a necessary factor for sustainable development. Professional green skills also require overall design, especially to implement in vocational education classrooms. By setting up green low-carbon technology, intelligent environmental protection equipment technology, and other majors, formulating standards for developing green skills, and improving the teaching content of green skills. Cultivate double-qualified teachers with green literacy, integrate the green development concept into the whole process of vocational education teaching, effectively achieve green education, and help build a beautiful China.

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