

The Theory of Civil Engineering Talents Cultivation of Circular Economy Theory

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Abstract. Facing the environmental problems of the civil engineering industry, we need to reform for civil engineering personnel training. First we from the talent-training objectives, professional skills training, and comprehensive quality training three aspects combined with the concept of circular economy. Secondly, we combine the concept of circular economy in talent cultivation, and put forward relevant measures. Hoping from the people themselves point of view, we can also solve the environmental problems brought by the development of civil engineering industry; promote the sustainable development of civil engineering industry and the environment.

Introduction

Civil engineering is concerned with planning, construction and improvement of human activities and the living environment of the engineering and technical fields. However, in the process of development, civil engineering also brings a series of ecological and environmental problems, such as: water pollution, air pollution, noise pollution, and so on. The construction of civil engineering is not only the development of civil engineering, soil and water loss, biodiversity damage and so on (Fig1). The most serious is that every year to produce a large number of construction waste, the past 50 years, China produced at least 20 billion cubic meters of clay brick products, the next 50 years will be converted into building solid waste. At present, China's total construction waste has reached 7 billion tons, the annual removal of building solid waste generated more than 200 million tons, the new building construction waste generated about more than 100 million tons of solid waste [1-4].

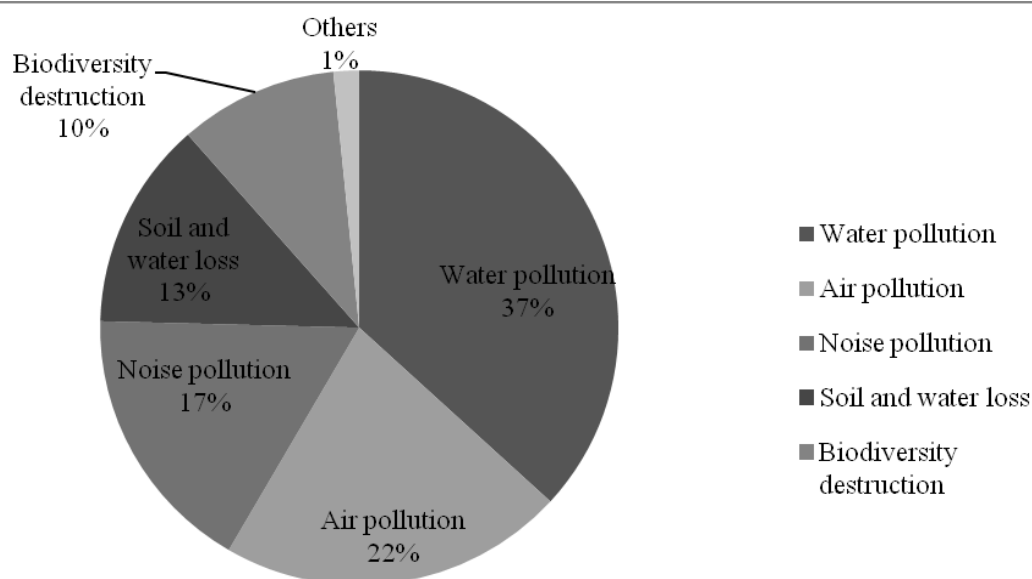


Fig 1: Ecological and environmental problems in the process of civil engineering construction
How to face the environmental problems arising from the civil engineering industry is an

arduous task before us. The civil engineering specialty of colleges and universities shoulders the historical mission of cultivating high-quality civil engineering professionals, how to change our environment from the perspective of the people themselves, and how to carry out the thorough "source control" of the future "civil engineer" A Difficult Think about the Educators of Civil Engineering. The author intends to combine the theory of circular economy with the cultivation of professional talents in order to improve the environmental quality of students and improve the environmental problems brought by civil engineering.

Overview of Circular Economy

Circular economy is an abbreviation of material closed-loop flow economy. It is essentially an ecological economy. It guides human society to use natural resources within the allowable range of environmental capacity according to ecological laws. According to the natural ecological material circulation system, the law of conservation of mass and energy, Flow of the law to reconstruct the economic system of human society, the integration of cleaner production, comprehensive utilization of resources, ecological design and sustainable consumption, in order to achieve the economic system and natural ecosystems harmonious cycle, maintaining the natural ecological balance.

Circular economy is guided by the theory of sustainable development, with the efficient use of resources as the core, with the smallest natural resources consumption, the smallest environmental pollution to obtain the greatest economic development benefits, so as to achieve resource conservation, environmental protection and economic growth " , And ultimately to achieve the reduction of waste, reuse and recycling. In other words, the circular economy system is the current limited resources, high input, high consumption, high pollution, low quality and low efficiency of economic growth from a fundamental change in the way of low input, low consumption, pollution, high quality and high efficiency Benign cycle of economic development model to protect the human environment as the goal, the nature of the ecosystem to a virtuous circle, to achieve the purpose of harmony between man and nature [5].

Cultivation of Civil Engineering Professionals with the Idea of Circular Economy

Personnel Training Objectives. Through four years of undergraduate study and practice, to develop all-round development of moral, intellectual and physical to meet the needs of the community, to master the basic theory of civil engineering disciplines and professional basis, with specialized management knowledge, civil engineering project design, construction, service and management After graduation in the housing construction, civil engineering and other fields in the first-line production technology, organization and management, service and other practical work of the application of senior engineering and technical personnel.

Professional Skills Training. Based on experimental and practical training, design as the main line, engineering training and social practice as the basis, to build the practice teaching system. The basis of practical teaching, including basic experiments, professional basic experiments, professional experiments. Through professional skills training links, expand students' professional knowledge, strengthen the professional awareness of students, students master the basic professional skills and methods to promote students' practical ability to improve. Over all aspects of both independent and complement each other to form a convergence of curricular and extracurricular, school and school complementary basic training and comprehensive training combination of ideological education and professional education training system penetration, the overall improvement of students' entrepreneurial spirit And practical ability.

Comprehensive Quality Training. Comprehensive quality, including moral qualities, humanistic quality, professional quality and physical and mental qualities. The comprehensive quality training should permeate the teaching and practice of all courses. In the process of curriculum development, the quality education should be the foundation, the entrepreneurship education should be the core, the overall quality of the students should be improved throughout the whole process, Professional quality-oriented education, adhere to moral education, knowledge

transfer, capacity-building to promote synergy, and comprehensively improve the overall quality.

Combining the Concept of Circular Economy, Improve the Quality of Personnel Training

To Promote Circular Economy as a Guide, the Concept of Circular Economy into the Personnel Training Objectives. August 29, 2008, "the People's Republic of circular economy promotion law" and the Eleventh National People's Congress Standing Committee adopted the fourth meeting, January 1, 2009 shall come into effect. Article 23 stipulates that units such as architectural design, construction and construction shall adopt the technical process of energy saving, water saving, land saving and material saving for the buildings, structures and structures designed, constructed and constructed in accordance with the relevant state regulations and standards. And small, light, recycled products. The state encourages the use of non-toxic and harmless solid waste in the production of building materials, encourages the use of bulk cement, promotes the use of ready-mixed concrete and ready-mixed mortar, and prohibits the destruction of the landfill site. Arable land burning brick. The production, sale and use of clay bricks shall be prohibited within the time limits and areas stipulated by the State Council or the people's governments of provinces, autonomous regions and municipalities directly under the Central Government.

The concept of circular economy throughout the civil engineering professional training objectives in the students' daily life and learning to promote the law of circular economy as a guide to grasp the idea of circular economy everywhere, through the four years of study and practice, students can in the future Green design, green construction, green management, to perfect the organic integration of expertise and circular economy concept, the use of circular economy management model, in accordance with the "3R" principle, take all kinds of effective measures to complete the construction of the building At the same time, the protection and construction of the environment and ecology make the construction works as a kind of human landscape and the surrounding environment in a wider range of integration, for example: in the actual project selection of ecological design concepts, the use of clean energy, Minimize resource consumption and environmental costs as possible, achieve maximum economic output and minimum waste discharge, achieve economic, environmental and social benefits of unity, building a resource-saving and environment-friendly society.

Adjust the Curriculum System, Set up Environmental Protection and Recycling Economy-related Courses. In general, civil engineering generally includes environmental engineering, but now most of the domestic specialist, vocational schools run by the civil engineering is very narrow, usually only include industrial and civil buildings and roads and bridges in two directions, involving the Professional basic courses and specialized courses related to environmental protection, recycling economy is almost no, not to mention a systematic environmental quality education, which is a serious environmental, resource dependence, destructive professional is not in line with social reality, must In the original curriculum and syllabus and the birth of reform, set up for civil engineering specialty characteristics of environmental protection and recycling economy elective courses, based on civil engineering teaching how to infiltrate the program of environmental education, give full play to the main role of student learning. In addition, the teaching form should be diversified, combined with classroom teaching, extensive group discussions in class, watch the environmental film, set the problem situation, so that students take the initiative to think about, understand environmental knowledge, and participate in environmental action.

Strengthen the Teacher's own Environmental Cultivation, so that Professional and Environmental Integration of Green Education. Europe and the United States and other Western countries in the implementation of environmental protection policies in less than 20 years time, the environment has been greatly improved. In China, since 1979, the People's Republic of China since the protection of law, China has been carrying out environmental protection work has been more than 30 years, although that has made no small achievement, but the overall environmental situation

is still very bad. China's environmental problems difficult to control for many reasons, but the most important thing is the human consciousness, is the quality of human problems. And cultivate high-quality talent is the mission of the University. Teachers of the school, the teacher's professionalism determines the level of teaching quality. Similarly, the teacher's environmental literacy also determines the environmental quality of students, so teachers as educators must strengthen their own environmental quality training in daily teaching and life, earnestly grasp the concept of circular economy and environmental protection, the international and domestic benefit. The latest environmental results introduced to students, so that students know that the professional aspects of environmental pollution, reducing environmental pollution is the possible way, and the professional environmental protection related laws and regulations, the environmental awareness and expertise organically combined, The students are engaged in the work of the future consciously take responsibility for the environment, and take the source control, clean production and recycling economy road, do not take the end of the old governance.

Actively Carry out Extra-curricular Activities and Comprehensively Improve the Overall Quality of Students. Good overall quality is the foundation of creativity. Without good quality, the correct view of students is difficult to form, analyze and solve problems will be lack of basis. Environmental quality is a very important quality of the overall quality, environmental education should be integrated into the whole process of college students' daily life and practice. For civil engineering students, students should be aware of civil engineering is a sustainable development, is not a meal to eat children, sons and daughters of the industry. Therefore, in the daily life and practice of students, we should carry out the extra-curricular scientific and technological activities, cultural and sports activities, social activities, social practices and various competitions related to circular economy, environmental protection and sustainable development in a planned and targeted manner. In practice and activities in the full implementation of the concept of circular economy, grasp the circular economy thinking, comprehensively strengthen and comprehensively enhance the quality of students' environmental quality, in order to promote the comprehensive improvement of students' overall quality.

Conclusion

Civil engineering professionals in the combination of circular economy concept, to optimize the civil engineering professional training, and comprehensively improve the environmental quality of students, so that every graduate of the "civil engineer" in the future production practice with the concept of circular economy and Environmental protection ideas, civil engineering industry, the environmental problems arising from the solution just around the corner, in order to effectively promote the civil engineering industry and the environment, coordination and sustainable development.

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