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An Ouroboros in Modern Times-Green Building

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Abstract

With rapid industrial growth and the swift pace of technological change, nowadays more and more pollutions have come into existence and caused severe local and global environmental problems. These problems such as earth's dwindling resources, climate change and global warming are threatening every aspect of life on Earth. Since the international community raised awareness of the importance of global environmental protection of the Earth, there is a renewed and popular fascination with green buildings, which are considered an Ouroboros in modern Times. Through the in-depth investigation of the books and Internet resources, we explore the benefits of green buildings and discuss the differences between green and non-green buildings. In addition, a questionnaire survey is conducted as the method on 150 students in our school so as to investigate the knowing of sustainable architecture among teenagers. We hope this project can help us understand more about green buildings and draw public attention to construction going green.

Key word：technological change, pollution, global environmental protection

I.Introduction

I.1.The Motivation of the Study

Since the last few centuries, as the industry grew and created a high-tech era today, accompanied by a large number of pollutants infiltration of air, water and soil from the past to the present which also makes global warming worsening. In order to prevent global warming from rising, we can learn from their lifestyles. In this report, we will review the pollution caused by the building and proposed ways to improve the response to these problems, and "green building" is our focus. At present, Taiwan has built many areas of green buildings, and the promotion of a community type, green building can be used not only to protect the Earth, can also be a way to enhance the interaction between people. Hoping this report can make people more understand green building.

I.2.Purposes of the study

1. Understanding of green buildings
2. Environmental benefits of green buildings
3. Comparison of green buildings and general constructions
4. To know the general level of understanding of high school students for green buildings

I.3.Research Procedure

Figure(1) Research Procedure

II.Methods

II.1.The finding of information and the making of the questionnaire

We gave out 150 questionnaires to the students of Shu-Te, with the objective of understanding the amount of knowledge that high school students know about green buildings, including its benefits to the environment, the mark of green buildings , its materials…and so on to do research.

II.2.Study process

1. To decide the topic
2. To collect the sources of books, the internet
3. To make a questionnaire
4. To organize the results of questionnaire
5. To analyze the results of questionnaire
6. To know the general level of understanding of high school students for green buildings

III.Findings

III.1.Introduction of green building

III.1.1Origin of green building

In 1972, the United Nations held a conference in Stockholm Sweden, the representatives is particularly concerned about the Earth pollution and wastage of resources. Since then, many scholars have proposed "green building" concept of environmental protection, it means the use of materials and architectural design, to achieve the purpose of saving energy. In Japan, "Green Buildings" are called "environmental symbiosis buildings," In the United States and Europe, they are called "eco-buildings" or "sustainable buildings."

Two years later in1974, the first energy crisis happened. The United States built a "eco-building" house in Minnesota, Florida and named it after Ouroboros,

hoping to achieve complete symbiosis with the environment and self-sufficient home designing.

III.1.2. Nine Indexes and sign of green building

1. Nine Indexes of green building

Since 2002, every construction that cost more than fifty million must meet the demands of at least two of the seven indexes to acquire a Green Building certificate. The following introduces of the nine indexes of Green Buildings：

Biodiversity	In 1992, The Earth Summit Constitute Convention on biological diversity is one of the highest guiding principles, which would be more sustainable if green building can balance design biodiversity.
Greening	It means the process of transforming artifacts such as a space, lifestyle or a brand image into a more environmentally friendly version.
Rainwater Conservation	It means the ability of conserved water and storing water in the natural soil and artificial soil. It is useful to the activity of microorganism.
Energy Saving	Daily energy-saving targets of green buildings is the main evaluation of objects as air conditioning and lighting power consumption, in the mean time, defining the daily energy-saving targets as the overall consumption of energy-saving air-conditioning system and lighting during the peak of summer.
Carbon Dioxide Reduction	Refers to the energy used in the production process of being converted out of the emissions CO2 on physical structures of all buildings , building materials, while CO materials 2 reduction countermeasures on buildings but by the policy of saving building to indirectly reduce CO2 emissions.
Waste Reduction	Green architecture also seeks to reduce the

	waste of energy, water and materials used during construction.
Water Resources	Are sources of water that are useful or potentially use. Uses of water include agricultural, industrial, household, recreational and environmental activities. The majority of human use requires fresh water.
Water Pollution and Garbage Improvement	This indicates putting focus on the architectural space and the use of facilities related to the management of specific assessment project.
Indoor air quality	The Indoor Environmental Quality (IEQ) category in LEED standards, one of the five environmental categories, was created to provide comfort, well-being, and productivity of occupants.

Table1(self-made)

2. Architectural mark

To definitely carry out the policies of Green Building, the Building Research Center of the Ministry of the Interior set up the "Chinese Architecture & Building Center". According to the four main categories of the nine indexes of Green Building, they started to certify green buildings they also launched "EEWH" at the same time, which is a recognizable symbol for encouraging the designing of Green Buildings. It stands for Ecology, Energy Saving, Waste Reduction and Health.

Figure(2) Architectural mark

III.1.3.Materials of green buildings

It means the central competent authority approval ecological, reactivity, environment High performance:al protection, healthy, high performance materials.

Ecological	Using nature materials to reduce energy and resource using and impact to earth environment.
Reactivity	According to materials function and restrict the use of hazardous industrial waste. Waste material is recycled to be reproduced.
Environmental protection	Having recyclable, reusable, low pollution and savable resources.
Health	It will not cause harm to the human body.
High performance	Overall, it has a high degree of physical and chemical performance, including safety, function, sound proof, permeable unusual performance.

Table2(self-made)

III.2. Benefits of green buildings

Green Buildings are not only a kind of healthy, money saving and environmental friendly new philosophy of life. Not only can it improve climate, prevent flooding and saving the crisis that earth is facing, but also brings health to us and saves resources. From a building's construction material choices to pipeline designing, going green from the interior, to the use of water and electric saving buildings, green buildings can provide you with a simple and useful magic wand of ordinary life.

Conservation of rainwater and going green are important indexes of Green Buildings. Furthermore, these two indexes have some connection with climate improvement. They need to cooperate with buildings, environment and public equipments. If carried out completely, it can prevent the environment from many unnecessary from disasters.

But keeping water and soil also plays an important part. It not only affects environmental rainwater conservation, but it is also related to environmental greening. Planting trees and growing grass not only makes the environment prettier, it also saves energy and reduces the Island Heating Effect.

If everyone carries out a green life, the Earth would exist forever. Humans can also grow in harmony with nature. In conclusion, Green Building is the first step to love the Earth more and lead a better life.

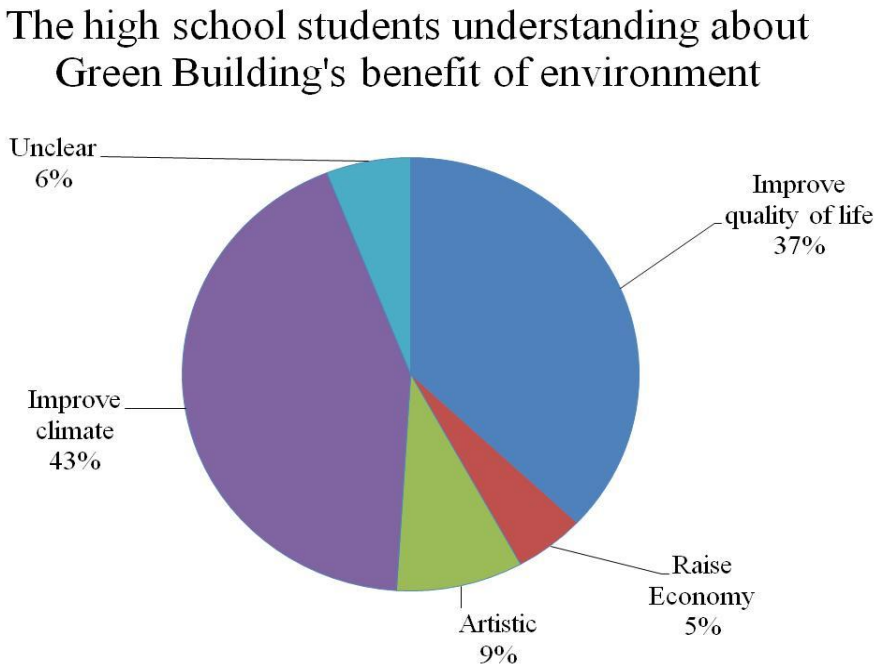
III. 3.Differences between green buildings and non-green buildings

We can tell the difference between ordinary and green buildings from the type of building, the building materials and architectural design aspects. The following is the difference between Kaohsiung CKS Stadium (ordinary building) and Kaohsiung Arena (Green Building).

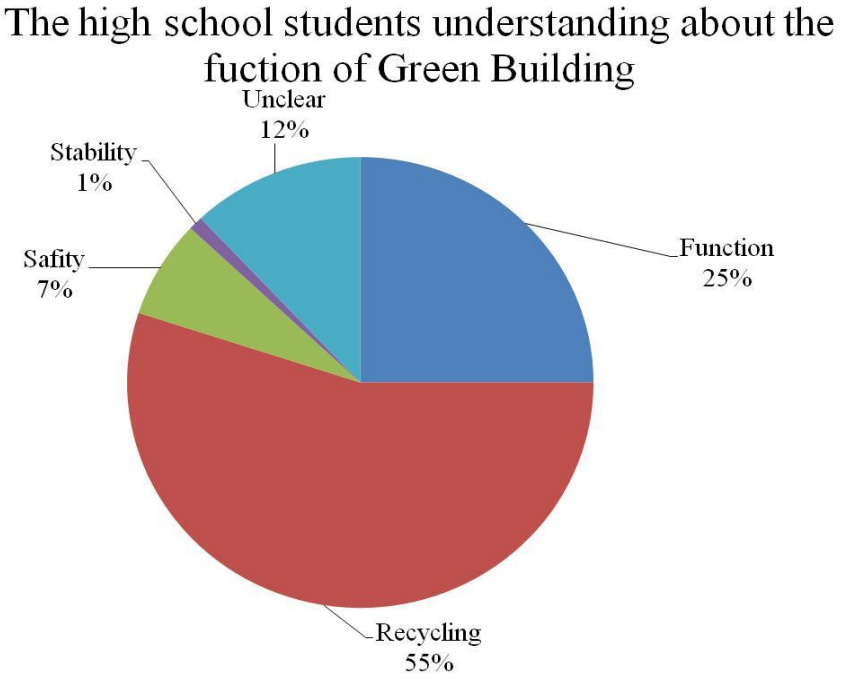
Picture	 Figure(3)Kaohsiung CKS Stadium	 Figure(4)Kaohsiung Arena
Category Date	Ordinary Building October,1986	Green Building September,2007
Name Use	Kaohsiung CKS Stadium Stadium	Kaohsiung Arena Stadium and exhibition hall
Surface area	Total surface area of 93,855 the square meters, which can accommodate up to 30,000 audiences.	Total surface area of 130,000 square meters, which can accommodate a crowd of 15,000.
Material	Steel, cement	Insulation glass, materials with Green building authentication, solar panels, making it greener by planting trees.

Table 3 (self-made)

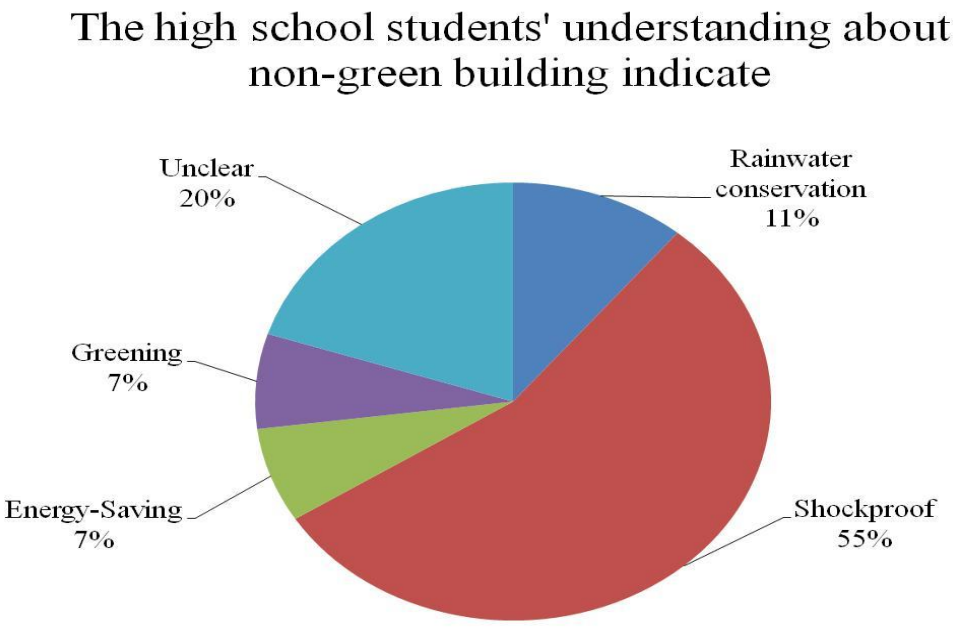
III.4.The Results of the Questionnaire



Figure(5)Greening Building's benefit of environment



Figure(6)Understanding about the function of Green Building



Figure(6)Understanding about non-green building indicate

IV.Conclusion

In the process of studying Green Buildings, We discovered that high school students don't seem to understand the concept of Green Buildings. Through the questionnaire, we discovered that they just have very little knowledge but not a very deep understanding. We hope this report can let more people understand the concept of Green Buildings, and let high school students have a better understanding of Green Buildings. The building of Green Buildings will be able to become more popular in the future, perhaps even more universal as well.

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