

原任老師：明白這教學方法會更生動有趣，幼兒亦更可專注及愉快學習。我們有時也用這方法，但不全面，值得參考！可是學校的課程很多、很急趕，人手亦有限。「外展隊」因沒有這些局限，可以更順暢有效地開展……

導師：若對幼兒及幼教專業有意義及有興趣的，校本課程領導及各持份者便需要正視問題，看如何在有意義的課程與教學取向及現況的問題中作出平衡、取捨及給予更多嘗試的鼓勵與支援……

「外展隊」：

此經驗能把學習與理論轉化於實踐中，導師在當中作全天候的引導、參與及支援，是一次難得的機會！當中學習與體驗了很多（例如：故事的取材、劇本的編寫、以戲劇發展為教學活動的基本知識與技巧、如何是兒童中心的表達與演繹、如何與不同教學團隊協作、道具及場景的製作、準備與安排）……

導師：「外展隊」的行動與介入是順暢收效的。期望他們從中對課程及教學技巧能鞏固、體驗及掌握更多、更深及更廣。「外展隊」在參與教學時的局限性低、可塑性及發揮性大，易收到預期成效與滿足感，而對原校老師也起著刺激性的作用。再者「外展隊」成員若能正向地應用所學於他日入職的幼稚園恆常教學中，對業界而言，此計劃也是一項長期性的課程及教學素質的培育（新思維的投放），值得持續發展與推廣……

當經驗了大雨嘩啦啦的「人戲」演繹後，亦可承接著隊員、老師對劇本的熟練而作再演策劃，以同一劇本而製作成「布偶」、「戲偶」、「皮偶」……等多元的表達方法。這樣，無論對演繹者（老師）及觀賞者（幼兒）都會有新的學習、體會與啟發。

相片 - 幼兒故事劇場 -大雨嘩啦啦



Negotiating the Meaning of the Green School 綠色學校意義的研討

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Abstract

This paper aims to discuss and analyze different interpretations of green school. Green school is a negotiable and debatable concept that there is no universal definition or set of criteria for a green school (Moore, 2008). There are two main streams of understanding of green school. One-stream views green school as architecture that is constructed in an environmental-friendly manner (Kobet, 2009; Nykos, 2012). Another stream views green school as green education (Zhang, 2004; Jiao & Zeng, 2004; Tang, 2004). Examples of organizations that follow these diverging perspectives such as United States Green Building Council and Environmental Campaign Committee Hong Kong are presented in this paper. The benefits of green school physical building and green education are also discussed.

摘要

本文旨在討論和分析對綠色學校的不同理解。綠色學校是一個有待探討的概念，此概念目前沒有通用的定義或標準（Moore, 2008）。對於綠色學校主要有兩種不同的解釋。一種觀點將綠色學校視為以環境友好的方式構造的建築（Kobet, 2009; Nykos, 2012）。另一種觀點將綠色學校解釋為綠色教育（Zhang, 2004; Jiao & Zeng, 2004; Tang, 2004）。本文例舉了遵循這些不同觀點的機構，如美國綠色建築委員會和香港環境運動委員會；並分別討論了綠色學校建築和綠色教育的好處。

Introduction

The “green school” is a negotiable and a debatable concept with no universal definition or set of criteria (Moore, 2008). In America, the green school movement is influenced strongly by major initiatives such as the U.S. Green Building Council (USGBC), Leadership in Energy and Environmental Design (LEED) for Schools, Collaborative for High Performance Schools, and the Department of Energy’s Rebuild America Schools Program (Kobet, 2009). These initiatives focus on building’s energy consumption. In China, the concept of green school is loosely defined as a school that progresses its management continuously, updates its teaching tools, and reduces its operating expenses to improve its energy efficiency gradually under the direction of sustainable development (Zhang,

2004). This paper aims to discuss and analyze various interpretations of the concept of the green school from the perspectives of different scholars and organizations.

The Overlapping Interpretation

The understanding of the green school in terms of the physical building often overlaps with the understanding of green education in terms of curriculum. The interpretation of a green school varies based on different organizations that propagate its establishment. The United States Green Building Council (USGBC) defines “green” as the physical hardware of the school. This is usually referred to as the school premises, which is designed to be environmentally friendly and to follow the LEED rating scale. On the other hand,

the Environmental Campaign Committee Hong Kong (ECC-HK) defines green school with an understanding similar to green education, that is the practice of sustainable education through curriculum, environmental management, and parents' participation.

The Interpretation of the Green School as Green Building

According to USGBC, green schools are educational institutions designed in accordance with LEED requirements. LEED is the leading U.S. green building standard that has been adopted by many federal states and local governments and private developers, not only in the U.S. but also worldwide (Nyikos et al, 2012). The idea of green schools derives from the design of green buildings. Apart from the aesthetic point of view, the architecture of a green building is the practice of assembling structures in a process both environmentally responsible and resource efficient. The building will be operated in energy-efficient manner throughout its life cycle. The building's life cycle respectfully analyzes and integrates site selection through design, construction, operation, maintenance, renovation, and deconstruction.

LEED can be applied to any building at any point in the building's lifecycle. In order to measure whether a building has reached the requirement of a high performance green building, as defined by LEED, every LEED rating system has performance criteria in seven major areas:

- Sustainable site ~ is the selected site able to maximize sustainability?
- Water efficiency ~ what can one do to save on landscaping water use and interior water use?
- Energy and atmosphere ~ how can one save energy, reduce energy costs, and encourage green energy development and use?
- Materials and resources ~ are the building materials sustainable for the environment, and where does the waste go?

- Indoor environmental quality ~ how can one increase the productivity, satisfaction, and health of the occupants?
- Innovation in design (or operations) ~ what can one discover that is not in the rating system to add even further value to the project?
- Regional priority ~ are the regionally important issues such as water conversion in the region? (Green Building Education Service, 2009).

The above major areas form the benchmark for the LEED rating system. The USGBC awarded LEED credits for incorporating sustainable designs features into the building site, energy efficiency, material use, in-door environment quality (IEQ) and water. Depending on the number of credits earned, a building can achieve a bronze, silver, gold, or platinum certification level (USGBC, 1999). The procedure starts when developers register their buildings before the commencement of the design phase to comply with the USGBC certification level. For instance, the Centennial Campus at the University of Hong Kong received LEED platinum certification.

The term "green building" is often used as a synonym for sustainable construction and high-performance building. High-performance buildings are designed and built to minimize resource consumption, reduce life cycle costs, maximize health and productivity for the building's occupants and improve environmental performance (Green Building Education Service, 2009). The practice of green building aims to reduce negative impacts on both the environment and human health and is therefore more sustainable than conventional construction methods (Johansson, 2011). The California Sustainable Building Task Force and the U.S. Green Building Council highlight the benefits of sustainable building as a cost-effective investment. They observe that:

"Integrating sustainable or 'green' building

practices into the construction of state buildings is a solid financial investment and that a minimal upfront investment of about 2 percent of construction costs typically yields life-cycle savings of over 10 times the initial investment" (Chapman, 2012, p.42).

Nykos et al. (2012) found that the operating costs in LEED certified buildings were US\$0.70 per-square foot less than those in non-LEED buildings; energy costs were 31 percent lower, and cost premiums ranged from 2.5 to 9.4 percent with a mean of 4.1 percent. This means that LEED buildings are more energy efficient in comparison with non-LEED buildings.

The LEED for schools is the recognized third party that evaluates the standard for high performance schools that are healthy for students, comfortable for teachers, and cost-effective. Its rating system was developed to address design and construction starting with K-12 schools. Based on LEED for New Construction, it focuses on classroom acoustics, master planning, environment site assessment and other issues important to these buildings. The LEED for schools provides a comprehensive tool for designers who build green with measurable results by recognizing the uniqueness of school spaces and their occupants (www.usgbc.org). Even though the upfront cost in maintaining a green building may be more expensive than for a regular building, the benefits outweigh the upfront cost. The practice expands and also complements the classical building design concerns of economy, utility, durability, and comfort (Green Building Education Service, 2009). Research shows that environmentally sustainable schools can increase academic achievement, decrease behavior challenges and attrition, improve morale, and prepare students for the 21st century workforce, while helping to restore the environment (Chapman, 2012).

Green schools can also be laboratories for children to learn in, because the building themselves can display sustainable development. Schools that are built as green buildings can provide healthier environments for children to learn in. Kobet

(2009) points out that high-performance green schools should be seen as assets to the community. According to Kobet (2009), there have been several studies indicating energy efficiency and lowering operation and maintenance costs as major factors in a district's decision to invest in a high performance green school. If the school is energy efficient, in part because it is replete with effective day lighting, and enjoys superior indoor air quality, the potential for healthier, more productive children increases (Kobet, 2009). Kobet also suggests that we should invest in high performance green schools realizing that the facility and its site can be used as an extension of the curriculum. It can be more effective to teach children about sustainability by having them experience attending a green school (building).

The Interpretation of the Green School as Green Education

Published articles on green schools from Chinese scholars have indicated that their interpretation of green school is green education. The environmental education and "green school" establishment are an important means and basic tool to enhance students' environmental awareness (Tang, 2004). According to Tang, the green school movement started more than a decade ago in China. The effort to promote green schools consists of teaching and launching environmental education, environmental protection campaigns in the community, inviting experts to visit schools to exchange experiences, offering guidance, delivering lectures and present reports, and providing resources for environmental education.

Jiao and Zeng (2004) highlight the major characteristics of green schools in China as follows:

- 1) Students must be able to master environmental protection related content in their study materials
- 2) Teachers and students should be highly conscious of the environment

- 3) A school ought to be an active participant in activities related to environmental surveillance, communications, and education that involve the entire society
- 4) Campus environments must kept clean and pleasant

Jiao and Zeng (2004) also believe that the green school campaign will play a pivotal role in raising environmental awareness in young people through establishing excellent role models in environmental ethics and behaviors through improving the quality of education in China. There are activities to introduce sustainability to children such as growing vegetables and building butterfly sanctuaries. Tang (2004) suggests that teachers should not only organize students to be involved in "green" or cleaning work but that they should also pay attention to the environmental awareness concept. She elaborates her point by arguing that only in this way students be able to internalize sustainable concepts into voluntary environmental protection behavior and sound moral quality.

One organization that interprets the green school as green education is the Environmental Campaign Committee, Hong Kong (ECC-HK). Established in 1990, ECC-HK aims at arousing public awareness and enhancing public understanding of environmental issues as well as encouraging people's active participation in working together for a better, livable Hong Kong. Over the years, ECC-HK has organized numerous territory-wide environmental activities, including the Green School Award (<http://www.ecc.org.hk>). The objectives of the Hong Kong Green School Award are to encourage schools to formulate a school environmental policy and environmental management plan for a green school; enhance environmental awareness, develop environmentally friendly attitudes and promote green practices among school managers, teachers, non-teaching staff, students, and their parents.

The winners of green school awards hosted by the ECC-HK often have nothing to do with the building design but rather with their green

education curriculum and how they create a green environment. One example is the ABC Kindergarten that won an outstanding green preschool award in 2013 for environmental management and environmental education. The three criteria they fulfilled to get the award are:

- 1) There were guidelines on waste reduction, green purchasing, water and electricity saving and no idling engine.
- 2) Environmental charters were signed by the students and teachers, and displayed in the classrooms.
- 3) Different environmental elements were incorporated into teaching according to specific grades. (http://school.ecc.org.hk/english/highlights/highlights_1.php?id=86)

Clearly, ECC-HK interprets the green school as a green curriculum, because the winners of their green preschool award are evaluated based on how they implement green education and not based on whether their building constructions follow the LEED guidelines.

Green education also embraces the understanding of sustainable development. Sustainable development was defined by the World Conversation Union as "improving the quality of human life while living within the carrying capacity of supporting ecosystems", which highlights enhancing the quality of human life while protecting the Earth's capacity for the next generations (Ozturk, Olgan, and Gulder, 2012). The term "triple bottom line" has emerged as a way to describe sustainable development. It is the approach that is encouraged and supported by the United Nations and other organizations. The triple bottom line consists of three aspects: economic, environment, and social responsibility; these are also known as the three pillars of sustainable development and can be interpreted widely to mean people, profit, and planet. The focus on "people, profit, and planet" suggests that all organizational activities should take into account the human or social impacts, economic benefits,



and consequences for the environment (Chapman, 2012).

The environmental pillar of sustainable development deals with "the drawbacks of depleting natural resources, increased greenhouse gas emissions, overflowing landfills, rising sea levels, and polluted waterways, focusing on how the poorest countries are the worst affected by these challenges in terms of poverty, migration, food, water scarcity, and health problems" (Siraj-Blatchford, Smith, & Pramling Samuelsson, 2010). The social and cultural pillar of sustainability contexts are, "Social, cultural, and political issues regarding participation, emancipation, freedom, security, solidarity, equality, and fairness that affect the quality and continuity of people's lives, between individuals and groups within and beyond national borders and between generations" (Siraj-Blatchford et al.).

The OMEP (Organisation Mondiale pour l' Education Prescolaire) World Assembly also promoted three integrated pillars into more specific dimensions (7Rs), namely: "Reduce, Reuse, Respect, Reflect, Rethink, Recycle, and Redistribute" (Duncan, 2011). OMEP promotes the 7Rs because they are essential to the application of Education for Sustainable development (ESD) in a preschool setting. Ozturk, Olgan, and Guler (2012) question whether ESD, with the three pillars and 7Rs, can be applied in early childhood centers. In their research, Ozturk, Olgan, and Guler (2012) found that preschool children were able to express ideas about reduce, reuse, recycle, and respect but did not mention redistribute, reflect, or rethink. According to these authors, it is the responsibility of the teachers and the early childhood educators to increase children's familiarity with all 7Rs aspects. Ozturk, Olgan, and Guler (2012) recommend the need to further develop existing early childhood education approaches that offer experiences for young children regarding education about sustainable development issues and involve the active participation of teachers, parents, and society in this process.

Organizations Supporting Green Education

There are many non-profit organizations that support the green education objectives. These organizations provide green education curricula to teachers and students. Some of these organizations are Facing the Future, Eco-Literacy, the Cloud Institute for Sustainable Education, and the Green School Initiative. Facing the Future allocates resources to 29 states in the United States and 42 other countries, and their curricula are used widely across several subject areas (Moore, 2008). Their mission is the creation of tools for educators who equip and motivate students to develop critical thinking skills, build global awareness, and engage in positive solutions for a sustainable future.

Eco-literacy is another non-profit organization that supports and advances education for sustainable living. It is known best for its work in school food reform and the integration of sustainable concepts into K-12 curricula. They claim to engage with educators from across North America and six other continents. Eco-Literacy offers books, film guides, and studies. It also conducts seminars, offers presentations at conferences and other events, and provides strategic consulting services to schools and neighborhood. Another organization, known as the Cloud Institute for Sustainable Education, aims to prepare K-12 school systems and their communities to educate sustainable future leaders. They try to inspire educators and engage students through meaningful learning objectives.

Lastly, the Green School Initiative is a non-profit organization with aims to support green actions by children, teachers, parents, and policy makers to reduce environmental footprints of schools by eliminating toxins, using resources sustainably, creating green schoolyards and buildings, serving healthy food, and teaching environmental literacy and stewardship.

Benefits of the Green School: Green Building and Green Education

Moore (2002) argues that the quality of the physical environments of early childhood centers

has an impact, specifically on cognitive and social developmental behaviors. Schools that are green in terms of the physical buildings, in particular provide good and healthy learning environments for young children. Green schools are healthy for children because they improve students' performances and teachers' satisfaction (Gutter, 2009). Green schools save 30 to 50 percent more energy and up to 47 percent more water than traditionally designed schools. They have excellent indoor air quality, good acoustics, and classrooms filled with sunlight. The best of all green schools educate students to become sustainability natives who are fluent in the language of sustainable technologies and thought in environmental consciousness (Gutter, 2009). The building itself acts as a teacher, offering the kinds of hand-on learning that are most effective for students. Although green schools may cost 1 to 2 percent more to build, experts say that the payoff of cheaper utilities and better student achievement far exceeds the initial expenditure. The building of green schools across the United States is expected to save \$30 billion in energy costs over 10 years and to cut carbon dioxide emissions by 33.2 million tons, according to Hooley (Newsleader, 2009). These are the advantages that our society can gain from building green schools.

Schools that incorporate green education can introduce the concept of sustainability to these young minds. Pancheri-Ambrose and Tritschler-Scali (2013) point out that when we introduce recycling to children, we invite them to think about the effects of people's actions on the earth and on other people. They suggest setting up the classroom to encourage the daily practice of reducing, reusing,

and recycling. Green schools benefit both students and teachers and the more people realize this, the more support they receive from the community. This occurs not only in the U.S and China, but also in other parts of the world. The hardware (green building) and the software (green curriculum) of a green school both benefit the children. Green school in terms of physical building provides a healthier environment for teaching and learning activity while green education will help students to gain awareness about protecting the environment.

Conclusion

The overlapping interpretations might create some confusion with regard to the implementation of the green school concept in the education field. At the same time, the open interpretation of the green school makes this field a fertile ground for research. Future research can explore the various interpretations and implementations of the green school through questionnaires and interviews. Despite the fact that there are different emphases on the architecture (hardware) and the teaching curriculum (software) of different green schools, the green school is an important concept for educators and school designers to grasp. Scholars and practitioners should be more specific about what they mean by "green school" when they propose articles or projects. At the moment, people need to evaluate green school criteria after reading further explanations of the concept, since the green school can be interpreted as both green buildings and a green curriculum. Despite the ambiguous definition, the various interpretations and implementations of the "green school" concept benefit young children.

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