

## 摘要

永續校園能夠讓學校的學習者透過教育的過程及校園的生活，配合環境議題的探討，以改善生活及環境品質，並達到環境教育目標。為達上述目標永續校園在校園的環境上，應如何規劃以達到節省能源、永續發展、乾淨健康；同時永續校園設施是否能夠發揮環境教育之目的，獲得教師充分使用融入教學之中，成為本研究探討的課題。

本研究以 2002 年與 2003 年 99 所永續校園為研究對象，共發出 99 份調查問卷與 1009 份研究問卷，調查問卷部分共回收 89 份，問卷回收率達 89.9%，而研究問卷則回收 740 份，有效問卷為 729 份，可用問卷比例為 72.2%。訪談對象則訪問兩所永續校園的規劃人員。最後將文獻探討、問卷調查和訪談結果的發現，歸納出以下結論：

- 一、國民小學參與永續校園環境規劃動機主要為「改善學校環境」、「發展學校特色」、「協助學生親近自然」。
- 二、國民小學申請永續校園環境規劃最主要的項目為「透水鋪面」、「生態景觀教學水池」、「落葉堆肥」、「教學農園」、「多層次生態綠化」，且使用狀況良好。
- 三、永續校園環境規劃主要是由「總務主任」以及「校長」進行規劃。
- 四、國民小學參與永續校園環境規劃模式以整合案較佳。
- 五、永續校園環境設施主要是由「總務主任」、「工友」及「教師」進行維護，但學校人力、經費以及專業知能不足，設施維護不易。
- 六、國民小學推動永續校園發展主要遇到的困難為「所需經費不足」、「缺乏適當空間」、「行政者生態知識不足」、「缺乏整體規劃」以及「教師參與度低」。
- 七、教師參與永續校園環境規劃主要的項目為「資源回收利用」、「落葉堆肥」、「生態景觀教學水池」，而教師最常使用的永續校園設施為「資源回收在利用」、「生態景觀教學水池」、「落葉堆肥」。
- 八、教師將永續校園環境規劃融入教學主要遇到的困難為「耗費時間太多」、「相關資訊不充裕」、「學校環境資源不足」。而教師將校園環境融

入教學的原因主要為「落實推動環境教育」、「採用多元教學方式」以及「實做學習效果較佳」。

九、有參與永續校園環境規劃的教師對永續校園環境規劃與使用認同感較高。

十、學校行政人員對永續校園環境規劃與使用認同感高於一般教師。

十一、大規模學校之教師對永續校園環境規劃與使用認同感較低。

十二、不同任教科目教師對永續校園環境規劃與使用態度沒有差異。

十三、不同年資對於學校實施永續校園環境規劃的態度沒有差異。

最後綜合研究結果提出以下建議：

一、永續校園環境規劃應繼續實施並予以推廣

二、「生態景觀教學水池」可多加推廣

三、規劃「生態景觀教學水池」與「教學農園」應審慎考量設置地點

四、設計時考慮建設經費以及後續維護費用

五、宜針對學校環境擬定整體且長期的環境規劃內容

六、鼓勵教師參與永續校園環境規劃

七、學校宜多舉辦相關環境教育研習以充實教師專業知能

**關鍵詞：**國民小學、永續校園、永續校園環境規劃

## **Abstract**

Sustainable schools can help students improve quality of life and environment through education, the school life, and discussion about the environmental topics; at the same time they can implement the goal of the environmental education. In order to achieve these goals, how should sustainable schools design school environment and does these sustainable school environmental facilities bring environmental education into play are this study's purpose.

99 sustainable schools in 2002 and 2003 are the research objects. 99 copies of the questionnaire survey and 1009 copies of the research questionnaire are distributed to randomly-sampled schools. Out of 99 surveys 1009 research questionnaires, 89 surveys and 729 questionnaires are valid. The retrieval rate are 89.9% and 72.2%. There are two interviewees who are familiar with sustainable school environment planning. Finally, the conclusions of study have been made by analyzing the literature review, the questionnaire, and the interview's result. Some findings and suggestions are described as below:

1. The main motivations that elementary schools join the sustainable school environment planning are 'improve school environment', 'develop school characteristic', and 'allow student to enjoy the nature'.
2. The main projects of sustainable school environment planning for elementary schools application are 'permeable pavement', 'ecological pond', 'fallen leaf compost', 'agricultural garden of teaching', and 'the multi-layers ecological green-making'. Moreover, they have to be in good condition.
3. In most cases, sustainable school environment planning is planned by 'the director of general affairs' or 'the principal'.
4. The combing model is better when elementary schools participate sustainable school environment planning.

5. Sustainable school environmental facilities are mainly maintained by 'the director of general affairs', 'workers' and 'teachers'. However the manpower, funds and professional knowledge of schools are insufficient, it is difficult to maintain facilities.
6. The main problems for elementary schools to develop sustainable school are 'insufficient funds', 'lack of space', 'ecological knowledge in administration is insufficient', 'lack proper plan' and 'low participation of teachers'.
7. The main projects that teacher participate sustainable school environment planning are 'resource recycle', 'the fallen leaf compost', 'the ecological pond'; facilities teachers use most frequently are 'resources are retrieved and utilized', 'the ecological pond' and 'the fallen leaf compost'.
8. Main difficulties that teachers incorporate sustainable school environmental facilities into teaching are 'too time consuming', 'insufficient information', and 'environmental resources of schools are insufficient'. Teachers incorporate sustainable school environmental facilities into teaching are 'implement and promote the environmental education', 'adopt multiple teaching method' and 'learning by doing has better effects'.
9. Teachers who participate in sustainable school environment planning have higher identification in planning and using sustainable school environmental facilities than teachers who do not participate.
10. School administrative personnel have higher identification in planning and using sustainable school environmental facilities than general teachers.
11. Teachers of big scale schools have lower identification in planning and using sustainable school environmental facilities than other scale schools' teachers.
12. There is no differentiation of the identification in planning and using sustainable school environmental facilities among different subject

teachers.

13. There is no differentiation of the identification in planning and using sustainable school environmental facilities among teachers' seniorities.

After the study, some suggestions are made as follows:

1. Continue to develop sustainable school environment planning and keep implement and popularized it.
2. Promote the ecological pond.
3. Carefully plan where to build the agricultural garden of teaching and the setting place of ecological pond.
4. Budget construction costs and maintenance expenses during the designing phase.
5. Draft the whole and long-term environmental program of the school.
6. Encourage teacher participating in the sustainable school environment planning.
7. Schools should provide more relevant environmental education study to improve teacher's professional knowledge.

**Keywords: Elementary school, Sustainable School, Sustainable School Environment Planning**