



SCHOOL PLANT MANAGEMENT GUIDELINES ON LANDSCAPE DESIGN FOR PRIMARY SCHOOL AT XUCHANG EXPERIMENTAL PRIMARY SCHOOL, CHINA*

¹Wang Yuqing ²Aree Ussavanuphap

^{1,2}Faculty of Education, Dhonburi Rajabhat University, Thailand

Corresponding Author E-mail: areeup99@gmail.com

Abstract

The objectives of this research were: 1) to investigate problems and needs of school plant management on landscape design for a primary school. 2) to develop school plant management guidelines on landscape design for a primary school. The respondents in this research were 255 students, 134 teachers and 37 administrators, obtained through stratified random sampling at Xuchang Experimental Primary School. The research instruments employed in this study were questionnaires and a set of questions for semi-structured interviews. The information and data collected were analyzed through the quantitative and qualitative research methods, and presented in terms of percentage, mean value, and standard deviation. The findings indicated that problems and needs of school plant management on landscape design for a primary school were at a high level. School plant management guidelines on landscape design for a primary school included 1) Enhancing school plant management, 2) Focus and management of school landscape, 3) Education and landscape design integration, 4) Meeting student growth and learning needs, and 5) Creating harmonious school environment. All five units were evaluated and possessed the IOC values of 0.67-1.00. Therefore the school plant management guidelines on landscape design could be used in a primary school.

Keywords: School Plant Management, Landscape Design, Guidelines, Primary School

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Introduction

With the continuous updating of educational concepts and the transformation of the teaching mode, the current society attaches great importance to the educational environment and the growth conditions of students, and the requirements for the management and construction of schools are also increasing. School administrators should not only pay attention to such explicit content as student performance but also pay attention to do a good job in landscape design of these implicit works. Take students' behavioral characteristics and behavioral demands as the starting point of campus outdoor space landscape design, in order to truly meet the needs of students (Jiang, 2020).

School landscape design and school plant management are developing in the direction of deeper integration with education. School plant management involves a number of on-going and related activities-determining the need for school plants, educational programmer planning, school facility or building design, building construction, furnishing and equipping the school, school plant operation, utilization and maintenance, and school plant modernization. Utilization and maintenance, and school plant modernization or renovation if and when the need arises (Chidubem, A, 2014). School campus is a specialized place of education, based on the special nature of its function its landscape is a special landscape, based on this feature, the landscape itself contains rich educational significance and educational value. If the space represented by ordinary classrooms and laboratories is the important formal learning space of the school, then the school landscape is the important informal learning space of the school (Shao et al., 2023). Landscape design not only focuses on beautifying the environment but also devotes itself to providing rich educational resources, combining educational concepts and needs to create campus environments that can promote students' learning, and physical and mental development. In summary, through school landscape design and school plant management can realize the integrated management of school infrastructure and the careful design of campus landscape. This integrated management and design can create an ideal environment that promotes student learning and growth, and enhances the diversity, functionality and sustainability of the campus. At the same time, in conjunction with educational concepts and needs, landscape design can become a teaching resource that enriches students' learning experience and promotes their holistic development.



Objectives of this Research

1. To investigate problems and needs of school plant management on landscape design for primary school.
2. To develop school plant management guidelines on landscape design for primary school.

Research Methodology

1. Population and Sample groups

1.1. Population: This study was conducted at Xuchang Experimental Primary School in Xuchang City, Henan Province, China. The research population for this research project was 700 students in the sixth grade, 200 teachers and 40 administrators.

1.2. Sample groups: The samples in this study were obtained through stratified random sampling technique and then were divided into 3 groups; namely, 1) 255 students in the sixth grade, 2) 134 teachers, and 3) 37 administrators (Yamane, T. 1973).

2. Research Instruments

2.1. Questionnaires: In this research project, a questionnaire was employed for the data collection. The questionnaire was divided into 3 parts; namely, 1) general information, 2) problems of school plant management on landscape design for primary school, and 3) needs of school plant management on landscape design for primary school. The questionnaires were written in both English and Chinese, as the majority of the sample group was Chinese, and were evaluated for validity through IOC (index of item-objective congruence) by the three specialists. Each question in the questionnaire was in the range of IOC 0.67 to 1.00. The reliability of the questionnaire was evaluated in terms of the Cronbach Alpha Coefficient at 0.80, The Cronbach coefficient values were analyzed by George & Mallery (2020) as ≥ 0.9 =excellent, ≥ 0.8 =good, and ≥ 0.7 =acceptable. (Cronbach, L. J. 1951).

2.2. A set of questions for semi-structure interviews: The three specialists in the field of landscape design were invited to share their thoughts and provide their comments and suggestions. The guidelines were evaluated by the three specialists, Moreover, the specialists also gave comments concerning the correctness and suitability of the guidelines, the results then were presented in terms of IOC (index of item-objective congruence).

3. Data Collection

3.1. Data and information were collected online through a software of Sojump.

3.2 The questionnaires were sent to 255 students in the sixth grade, 134 teachers, and 37 administrators of Xuchang Experimental Primary School on the issues related to the school plant management guidelines on landscape design for primary school. The respondents were informed the purpose and benefits of the survey.



4. Data Analysis

4.1. The data and information collected were analyzed, interpreted and then presented in terms of frequency count, percentage, mean (\bar{X}), and standard deviation (S.D.). The five point Likert rating scale was used to evaluate the respondents' problems and needs of school plant management on landscape design for primary school.

4.2. The criteria and define at the range of the mean scores as the following:

4.51 – 5.00 = the highest level of problems and needs

3.51 – 4.50 = the high level of problems and needs

2.51 – 3.50 = the moderate level of problems and needs

1.51 – 2.50 = the low level of problems and need

1.00 – 1.50 = the lowest level of problems and needs

4.3 The ideas and comments from the 3 specialists obtained from the focus group discussion meeting were analyzed by using quantitative research method and then used to correct and improve the contents of the management guidelines.

Research Results

1. Research Results from Research Objective 1 found that;

Table 1 problems of school plant management on landscape design for primary school

Items	n=225 (students)		n=134 (teachers)		n=37 (administrators)		Level of problems
	\bar{X}	S.D.	\bar{X}	S.D.	\bar{X}	S.D.	
Planning							
1. The school lacks a plan to link landscape design to education.	4.86	0.47	4.79	0.52	4.78	0.53	Highest
2. The school lacks a plan to enrich the diversity of the landscape design.	4.76	0.58	4.14	1.04	4.54	0.77	High
3. The school lacks a plan for additional outdoor teaching space.	4.71	0.62	4.66	0.64	4.62	0.76	Highest
4. The school lacks a plan to improve the functionality of the landscape design.	4.71	0.57	4.39	0.93	4.62	0.59	Highest
5. The school lacks a plan for landscape design to reflect the school culture character.	4.62	0.75	4.460	0.77	4.27	0.87	High

**Implementation**

6. You are not satisfied with the current situation of school plant management in your school.	4.73 0.62	4.60 0.77	4.43 0.84	Highest
7. The school does not emphasize on landscape design management.	4.62 0.70	4.81 0.49	4.68 0.63	Highest
8. The school's spatial layout doesn't make sense.	3.27 1.03	4.34 0.90	3.19 0.97	High
9. The maintenance of school facilities is not updated in time.	4.36 0.84	3.22 1.00	3.16 0.93	High
10. The management of school elements such as green areas, roads, squares, etc. is messy.	3.23 0.98	4.25 0.92	3.68 0.85	High

Evaluation

11. The school landscape design does not help students' education and growth.	4.60 0.79	4.40 0.86	4.62 0.72	Highest
12. The school landscape design has not been improved with feedback from students and teachers.	4.03 0.92	3.99 0.87	4.24 0.76	High
13. The school landscape design does not meet the standards of education policy.	3.90 1.04	3.39 1.61	3.97 0.96	High
14. The administrators have not monitored the school plant and landscape design.	4.30 0.97	3.99 0.95	4.41 0.98	High
15. The school does not provide various channels for students and teachers to send their feedback on school plant and landscape design.	4.19 1.15	3.97 0.93	4.39 1.01	High

Total	4.33 0.67	4.24 0.88	4.24 0.81	High
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According to table 1, it can be indicated that most of the students, teachers, and administrators rated the problems of school plant management on landscape design for primary school at a high level ($\bar{X} = 4.33$, S.D. = 0.67, $\bar{X} = 4.24$, S.D. = 0.88 and, $\bar{X} = 4.24$, S.D. = 0.81, respectively). Most respondents agreed that the school lacks a plan to link landscape design to education at the highest level.

2. Research Results from Research Objective 2 found that;

Table 2 needs of school plant management on landscape design for primary school

Items	n=225		n=134		n=37		Level of needs
	\bar{X}	S.D.	\bar{X}	S.D.	\bar{X}	S.D.	
Planning							
1. The school needs to plan to link landscape design to education.	4.82	.057	4.78	0.57	4.84	0.44	Highest
2. The school needs to plan to enrich the diversity of landscape design.	4.69	0.61	4.39	1.01	4.65	0.63	Highest
3. The school needs to plan for additional outdoor teaching spaces.	4.82	0.52	4.75	0.70	4.70	0.52	Highest
4. The school needs to plan to improve the functionality of the landscape design.	4.78	0.57	4.67	0.69	4.68	0.75	Highest
5. The school needs to plan for the landscape design to reflect the school culture character.	.478	0.55	.458	0.89	4.30	0.97	Highest
Implementation							
6. The schools need regular school plant management.	4.77	0.62	4.74	0.57	4.81	0.52	Highest
7. The school needs to emphasize landscape design management.	4.83	0.49	4.83	0.45	4.19	1.15	Highest
8. The school space needs to be rationally planned and organized.	3.34	1.06	3.99	0.95	3.46	0.77	High
9. The maintenance of school facilities needs to be updated in	4.61	0.78	4.61	0.78	3.41	0.80	High



time.

10. The school elements such as green space, roads, plazas, etc. need to be enhanced and managed.

Evaluation

11. The school landscape design needs to help with the education and growth of students.

12. The school landscape design needs to be improved based on feedback from students and teachers.

13. The school landscape design needs to meet the standards of education policy.

14. The administrators need to monitor the school plant and landscape design.

15. The school provides various channels for students and teachers to send their feedbacks on school plant and landscape design.

Total	4.43 0.59	4.35 0.83	4.29 0.81	High
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According to table 2, it can be indicated that most of the students, teachers, and administrators rated the needs of school plant management on landscape design for primary school at a high level ($\bar{X} = 4.43$, S.D. = 0.59, $\bar{X} = 4.35$, S.D. = 0.83, and $\bar{X} = 4.29$, S.D. = 0.81, respectively). Most respondents agreed that the school needs a plan to link landscape design to education, and needs to plan for additional outdoor teaching spaces at the highest level.

Research Discussion

1. The problems of school plant management on landscape design for primary school perceived by students, teachers and administrators at Xuchang Experimental Primary School were at a high level. It is correspondent with He Wenbin's findings (2022). He



mentioned that the landscape design for a primary school exists as follows: There are problems such as chaotic spatial layout and lack of planning and management, which affect the quality of the school environment. Besides, most respondents agreed that the school lacks a plan to link landscape design to education. Whereas, Liu Jingge, Li Shulin, and Li Fangying's findings (2022) mentioned that the school landscape design should combine with the concept of natural education, optimize the landscape space and the needs of teachers and students, and consider the principles of school landscape design under the concept of natural education in the preliminary plan and design positioning. At the same time, the design scheme is refined, more reasonable to follow and extends the building space, enriches the teachers' and students' outdoor teaching and communication and other activities and forms of education, to create an outdoor classroom where they can fully explore the nature and feel the nature. This research has put forward corresponding solutions and suggestions for the existing problems and provides guidelines for school plant management guidelines on landscape design for primary school at Xuchang Experimental Primary School.

2. The needs of school plant management on landscape design for primary school perceived by students, teachers and administrators at Xuchang Experimental Primary School were at a high level, indicating their interest in and emphasis on school plant management on landscape design. It is correspondent with Hu Jing's findings (2020). She mentioned that the landscape design for primary school needs to allow the school to strengthen the campus management so that the landscape is integrated with education, provides a complement to education, stimulates students' innovation and curiosity, and promotes the practical application of knowledge. This study has proposed appropriate solutions and recommendations to address the needs that exist and provide a guide to school plant management for the landscape design of primary schools in Xuchang Experimental Primary School.

3. School plant management guidelines on landscape design for a primary school for the students, teachers and administrators at Xuchang Experimental Primary School

School plant management guidelines on landscape design for a primary school comprised five units; namely, 1) Enhancing school plant management, 2) Focus and management of school landscape, 3) Education and Landscape Design Integration, 4) Meeting student growth and learning needs, and 5) Creating harmonious School environment. The design concepts and educational methods in the school plant management guidelines on landscape design are based on a comprehensive analysis of landscape design concepts, school management methods and landscape education experiences. The methods in these guides have been carefully selected to help administrators understand and flexibly apply the contents of the guides to successfully complete the school landscape design and school plant

management, they help administrators achieve scientific planning and effective management of school landscapes, and provide teachers and students with a comfortable and safe learning and living space. It is correspondent with Qi Wenhua's findings (2024). He mentioned that with the progress of the times and the continuous updating of the concept of education, the construction of new school campuses in China is developing rapidly. The construction of the new school environment is no longer limited to the construction of basic facilities, but begins to pay more attention to the relationship between overall planning and landscape environment, and is committed to realizing the sustainable development of the school ecological environment.

Research Body of Knowledge

The research utilized the three phases of the PIE management model: planning, implementation, and evaluation. The researchers investigated the problems and needs of students, teachers, and administrators, then analyzed and identified the challenges and requirements of school plant management on landscape design. This research was intended to integrate landscape design with education to enhance the quality of the school environment and educational experience, promote student growth and learning, and create a harmonious school environment.

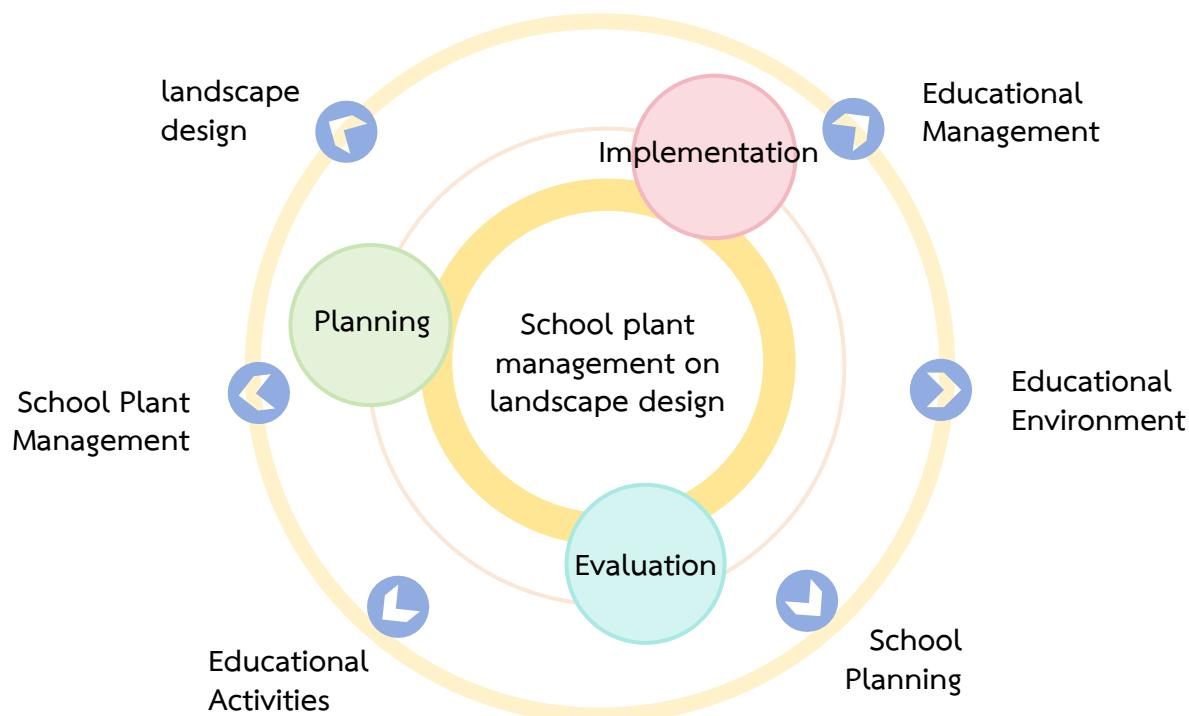


Figure 1 Research Body of Knowledge



Research Suggestion

1. Suggestions in practice

1.1. Strengthening management and maintenance: It is recommended that schools should strengthen management and maintenance by formulating appropriate management systems and division of responsibilities to ensure the normal operation and long-term maintenance of school plant facilities. Students, teachers and parents can be organized to participate in management to cultivate their sense of responsibility and teamwork.

1.2. Focus on educational functions and provide diversified school environments: landscape design should focus on educational functions and provide students with educational resources in nature, ecology and culture through the selection and layout of landscape elements. School plant should create diverse environments, including gardens, green belts, outdoor classrooms, etc., to enrich students' learning experience.

1.3. Developing school plant management guidelines on landscape design plan: School administrators should work with relevant education specialists and landscape architects to develop school plant management on landscape design plan that is appropriate for the school. This plan should take into account factors such as the characteristics of the school, the needs of the students, and feasibility, and ensure that the school plant management on landscape design promotes students' learning, health and creative development.

1.4 The training should be provided to those who use the "School Plant Management Guidelines on Landscape Design for Primary School at Xuchang Experimental Primary School, China" to ensure that they understand and can use the guidelines correctly and effectively, and to ensure that the guidelines are implemented effectively.

2. Suggestions for research

2.1 Further research on evaluating the effectiveness of the "School Plant Management Guidelines on Landscape Design for Primary School at Xuchang Experimental Primary School, China" is recommended to assess their implementation and effectiveness.

2.2 Further research on the factors affecting the effectiveness of the implementation of the "School Plant Management Guidelines on Landscape Design for Primary School at Xuchang Experimental Primary School, China" is recommended to optimize the contents and methods of the guidelines in order to better guide practical work.



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