International Journal of Multidisciplinary Research and Growth Evaluation.

Elevation and construction of covered walkway in Caingin elementary school in the City of Malolos, infrastructure facility improvement: Resulting to better learning environment

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Article Info

ISSN (online): 2582-7138
Volume: 03
Issue: 02
March-April 2022
Received: 25-02-2022
Accepted: 12-03-2022
Page No: 183-188
DOI: https://doi.org/10.54660/anfo.2022.3.2.6

Abstract
The quality of education infrastructure, specifically its appropriate educational planning and design with a focus on child development, has been widely discussed in recent years. The Sustainable Development Goals, which are defined by the United Nations and scope the development agenda for all countries in the world, require countries to "build and upgrade education facilities that are child, disability and gender sensitive, and provide safe, non-violent, inclusive, and effective learning environments for all." This study aims to provide Infrastructure Facility Improvement that can be achieved by the Proposed Elevated and Covered Walkway of Caingin Elementary School sought to improve the campus ground to provide a safe and secure environment to all the stake holders. The researcher utilized descriptive research design using combination of qualitative and quantitative methods. The recently raised public road as solution to the recurring problem in the community has impacted directly to the campus of Caingin Elementary School as it turned the ground into catch basin. Urgent and timely action of proposing Infrastructure Facility Improvement through Elevation and Construction of Covered Walkway for comfort, safety and convenience of the stakeholders.

Keywords: Infrastructure, facility improvement, kaingin, elementary school

Introduction

Governments and societies around the world strive to improve their education systems and ensure that all children and youths can have the opportunity to go to school and acquire the knowledge and skills they need to lead healthy and productive lives. Key inputs to the education system, such as curricula, teachers, and education infrastructure, help to improve the quality of education. The quality of education infrastructure, specifically its appropriate educational planning and design with a focus on child development, has been widely discussed in recent years. The Sustainable Development Goals, which are defined by the United Nations and scope the development agenda for all countries in the world, require countries to "build and upgrade education facilities that are child, disability and gender sensitive, and provide safe, non-violent, inclusive, and effective learning environments for all." Many stakeholders around the world are seeking evidence on how various learning settings may positively or negatively affect child development.

According to School facilities do not just appear. They must have to be created, either through the construction of new buildings or the adaptation of existing ones, and this involves many people and significant challenges. To ensure that schools have the maximum impact on the learning and development of their students, planners take consider into account all the issues covered so far in this report and the implementation process needs to be characterized by dialogue, ambition, inspiration, economy, sustainability, and a long-term, holistic perspective

Recent studies have shown that students' performance is enhanced in schools with better physical learning environments. As this report will show, the empirical argument for investing in learning environment is strong.

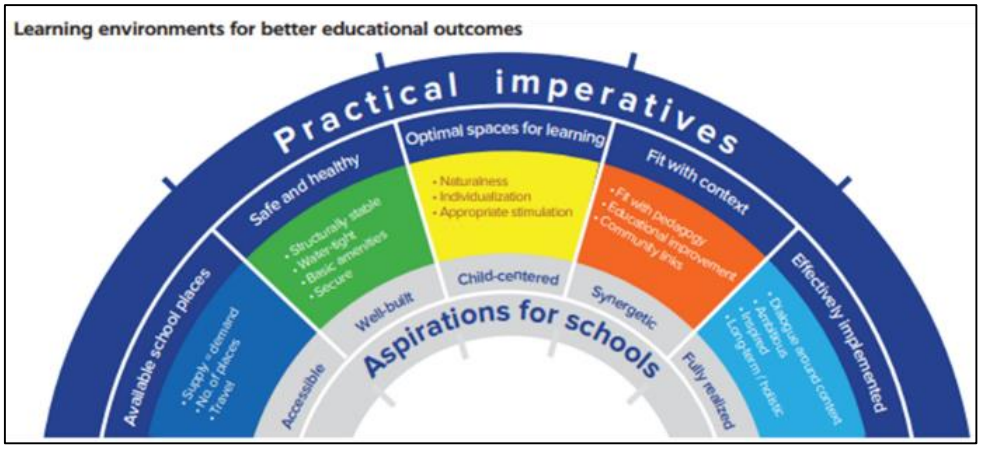
Furthermore, although causal evidence on this topic is scarce, there is a growing number of non-experimental studies—many of them compiled here—that indicate that investments in quality school infrastructure are strongly associated with improved learning outcomes even after controlling for students' socioeconomic background and other relevant covariates. New technologies and emerging pedagogical practices have created new requirements for educational buildings. As a result, new approaches to building learning environments must be developed that both create better spaces for children and increase the efficiency of investments in educational infrastructure. The planning of good learning spaces is a discipline that combines different sciences and that requires the involvement of all users of these spaces—teachers, parents, and children—in the decision-making process for infrastructure development. Policymakers could do more to include these groups in the envisioning, coordination, and planning of specific infrastructure projects.

The evidence base related to the impact of learning environments on academic outcomes is gradually growing across the world. Many studies are currently ongoing or are planned in various countries. We present this report as a contribution to the international dialogue on learning environments and as an input to the World Bank's educational infrastructure projects. The report consists of a thorough review of various studies of how physical school design affects the health, safety, and learning processes of children. The report's findings may be a useful input into project preparation in different countries, and we hope that it will stimulate greater collaboration on education topics among the various expert teams within the World Bank Group. However, our most important goal in initiating the preparation of this report was to identify the "unknowns" in terms of maximizing the efficiency of learning environments and to provide a foundation for a rigorous research program in this promising area (Barrett, P., *et.al*., 2019).

Summary of Literature Reviews on the impact of school buildings on learning

AUTHOR/DATE	TITLE	METHOD	MAIN FINDINGS/FUTURE WORK
Schneider 2002	*Do School Facilities Affect Academic Outcomes?*	Literature review of 137 sources	The review found that spatial configuration, noise, heat, cold, light, and air quality all affect learning. However, more definitive findings are needed.
Woolner et al. 2007	*A Sound Foundation? What We Know About the Impact of Environments on Learning and the Implications for Building Schools for the Future*	Team literature review of 200+ sources	The review found clear evidence that extremes of environmental elements affect learning but not as much once the elements are raised above minimum standards. It strongly recommended to involve users in the process of change. However, overall, there was not enough empirical evidence to inform the design of future infrastructure projects.
US National Research Council Committee 2006	*Green Schools: Attributes for Health and Learning*	Team literature review of 392 sources (general—applied to green design).	Generally, the review found that pupils' health and learning were positively affected by good indoor air quality, thermal comfort, good acoustics, well-maintained systems, and clean surfaces. The study's main focus on health highlighted problems associated with excessive moisture. More research is needed at the individual level of analysis.
Blackmore et al. 2011	*Research into the Connection between Built Learning Spaces and Student Outcomes*	Literature review of 700+ varied sources	The review found very little empirical evidence specifically linking design elements of learning spaces to student outcomes. The review found that studies tended to over-emphasize the design stage and not pay enough attention to how it interacts with users, to the dynamics of implementation, or to the relevance of the design to types of educational practice.
UNESCO Institute for Statistics 2012	*A Place to Learn: Lessons from Research on Learning Environments*	Literature review of 91+ sources	The basics of IEQ are well known, but the "learning environments research" field is developing rapidly. However, its conclusions are hard to apply in practice outside the developed world.
Davies et al. 2013	*Creative Learning Environments in Education: A Systematic Literature Review*	Literature review of 210 sources (including how the physical environment affects creativity)	The review highlighted the importance of light, color, sound, and micro-climate in engendering creativity but also space, flexibility, the availability of resources, and links to outside actors. It stresses the link between design elements and pedagogical issues such as how to strike the right balance between freedom and structure in learning.
Bluyssen 2016	*Health, Comfort, and Performance of Children in Classrooms*	Literature review of 100+ sources	The review found evidence that design elements have affected learning, absenteeism, and, mainly, health. It concluded that there is a need for more experimental and/or longitudinal research with parameters for children.

Note: IEQ = Indoor Environmental Quality.



Source: The impact of school infrastructure on learning a synthesis of the evidence, 2019

Fig 1: Concept of Practical Imperatives/ Aspirations for Schools

Statement of the Problem

The Compound of Caingin Elementary School has been suffering from high tide and flooding during rainy days. In 2021, the public road infront of the school urdergone improvement and raised by 70 cm. This perplexing scenario cause to recurring flood with the campus and damage the surface of the campus pavement. Floods cause cancellation and disruption of regular classes and threat to the health and safety of the pupils, teachers and personnel. The need for the campus ground to be elevated is badly needed.

Project Goal

Infrastructure Facility Improvement through A Better Learning Environment can be achieved by the Proposed Elevated and Covered Walkway of Caingin Elementary School sought to improve the campus ground to provide a safe and secure environment to all the stake holders.

Methodology

This research used a combination of qualitative and quantitative methods (concurrent triangulation strategy; mixed methods). This method was used in collecting data. Furthermore, each result underwent comparison to verify all data. The stages in this study involved an assessment model (literature selected, extracted keyword, groupings), which was tested using qualitative and quantitative methods.

Results, Analysis and Discussion

Caingin Elementary School is one of the Gabaldon Schools situated in Enriquez Street, Barangay Caingin in the Historical Town of Malolos. Caingin Elementary School has Department of Education School ID 104867. It has a total land area of 4,780 sqm. Donated by Dalmacia Benedictos during the 1930. The school operates official in 1938 as primary school as Gabaldon with four classrooms. It was built under the Philippine War Commission with the aid of the PEOPLE OF THE UNITED STATES OF AMERICA under the Rehabilitation Act of 1946. and became Elementary School in 1951 under the leadership of the first School Principal in the name of Loleng Venturina. At present Caingin Elementary School has 20-Classrooms. Caingin Elementary School is presently catering a total of 350 pupils for 17 Teachers and 2 Utility wokers, S.Y. 2021-2022.

Fig 2: Caingin Elementary School Grade III Class of 1972-1973

Due to the current public road develop in the school frontage, it resulted to its physical location to be the catch basin within the area. The School Compound for the past 10 years has been suffering to flood due to high tide and most specifically during rainy days. With the mentioned public road developed which was raised by 60 centimeters, it adds up to the problem of the campus during rainy days. Floods caused cancellation and disruption of regular classes, physical damage to schools, and adverse effects on teachers at home and in school. Floods also cause illnesses to the pupils and school personnel such as leptospirosis, dengue, skin deceases, as well as fever and flu. Campus grounds when exposed to prolong flood can cause algae that make the surface slipper and eventually permanent damage to the pavement that became threat to the safety of the school occupants.

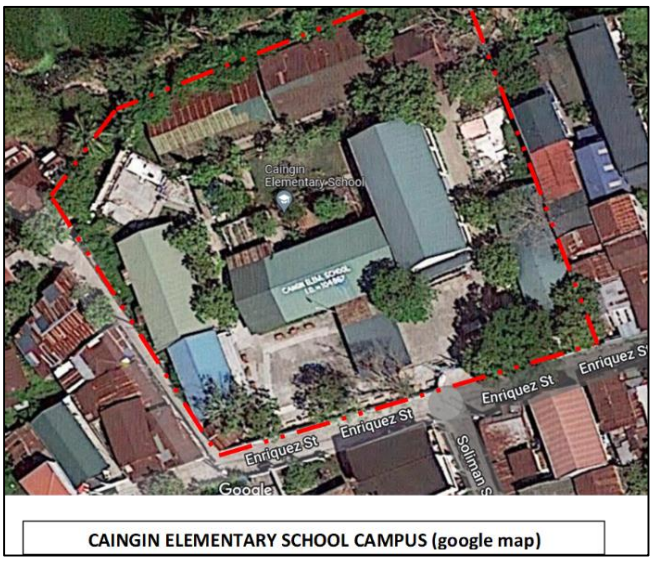
Photo documentation of the current condition

Fig 3: The recurring flood with the newly renovated Administration Building of Caingin Elementary School (2021)

(On the same site where the demolished Gabaldon Building was standing)

Fig 4: The stagnant flood water during rainy days in Caingin Elementary School

Fig 5: The condition of Caingin Elementary School with 60 centimeters deep flood.



CAINGIN ELEMENTARY SCHOOL CAMPUS (google map)

Fig 6: Aerial View of Caningin Elementary School Campus

Fig 7: Mayor Gilbert Gatchalian during his visit at Caingin Elementary School last February 2022 to personally see the existing condition and to discuss the need assessment.

Fig 8: Mayor Gilbert Gatchalian with the Caingin Elementary School Stakeholders during conduct of campus physical condition assessment.

Fig 9: Mayor Gilbert Gatchalian accommodating the concern of the stakeholders of Caingin Elementary School.

Fig 10: Mayor Gilbert Gatchalian during the actual inspection of the condition of the perimeter fence of Caingin Elementary School.

Fig 11: Stake Holders Meeting conducted for the Proposal Elevation and Covered walk in Caingin Elementary School

Seated from left: GPTA President Edgardo Cajucom, Kagawad Corazon Sandoval (Education Committee Chair), City Mayor Engr. Gilbert Gatchalian, Caingin Elemenetary

Fig 12: Hon Mayor Engr. Gilbert Gatchalian and Mrs. Madonna R. Estacio (Principal Caingin Elementary School) during the need assessment of the school.

Summary of Findings

- Recurring flood in the months of June, July, August, September, October, November, December during hightide and "Habagat".
- Classrooms, Canteen and Home Economics were submerged in flood water causing deterioration of flooring and walls.
- Stagnant rainwater all over the place produces stingy order, algae, and mosquitos.
- Classes were suspended due to flood during rainy season.
- Septic tanks, comfort rooms used to clogged and severe damage are evident cause by excessive submerged in flood.
- Snakes, rats and other health threatening animals causing disease are thriving.

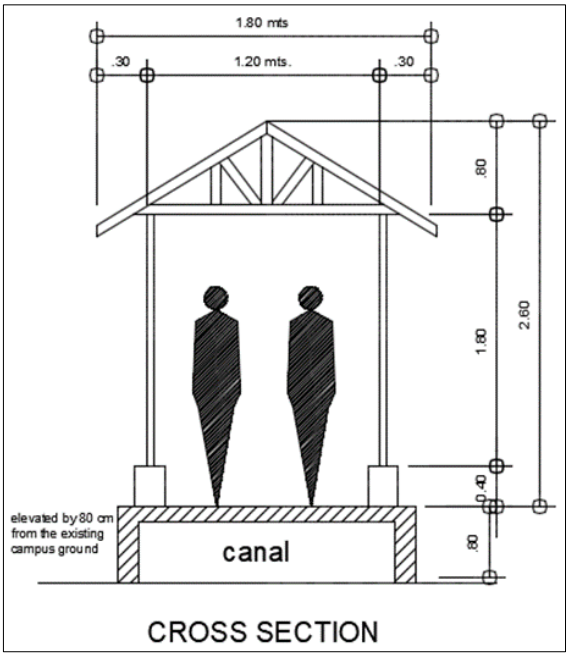
Source of fund

City of Malolos 2022 Special Education Fund.

Acknowledgement

Hon Mayor Gilbert Gatchalian, City Government of Malolos, Caingin Barangay Council, headed by Hon. Brgy. Capt. Tomas Reyes, SDO City of Malolos, Dr. Norma P.

Fig 13: Proposed elevated covered walkway



PROJECT TITLE: **PROPOSED ELEVATED AND COVERED WALKWAY OF CAINGIN ELEMENTARY SCHOOL**
PROJECT LOCATION: **Caingin ES, Enriquez Street, Barangay Caingin, Malolos City**
SCHOOL PRINCIPAL: **MRS. MADONNA R. ESTACIO**

Fig 14

Table 1

Bills of Materials		
Item no.	**Description**	**Amount**
1	Eartworks	20,587.50
2	Rebar Works	258,160.50
3	Concrete Works	191,875.50
4	Masonry Works	246,996.00
5	Steel Works	245,700.00
6	Carpentry Works	65,461.50
7	Plumbing Works	41,175.00
8	Electrical Works	55,795.50
9	Painting Works	107,055.00
10	Roofing	117,153.00
	Total Labor and Materials Cost	1,349,959.50
	Estimated Labor Cost	550,040.50
	Estimated Total Project cost	1,900,000.00

Esteban, CESO V-Schools Division Superintendent. Cristina S. Castillo, District IV, PSDS., Engr. Angelina Alcaraz, Engineer III, and Arch. Dennis L. Estacio, Asst Director-Committee on Education, UAP Barasoain.

Conclusion

Caingin Elementary School is one of the eldest surviving Elementary School originally started as Gabaldon Type. Due to age, the campus facilities are no exemption to numerous wear and tear. External factor, such as the recently raised public road as solution to the recurring problem in the community has impacted directly to the campus of Caingin Elementary School as it turned the ground into catch basin. An urgent and timely solution need to be implemented, as the appropriate planning regarding infrastructure must be executive in coordination with the stakeholders.

Things change. It is a fact of life and of school facilities planning. The luster of new buildings and equipment are sure to fade over time. And as facilities age, their condition changes as well. But change isn't always a bad thing. Effects of an attractive school facility reach much further than the pupils themselves. Imagine relatively uneducated parents seeing their children being educated in good quality school buildings, having access to exciting educational resources, and, in some cases, gaining more skills and knowledge than the parents themselves. If parents feel that the attractive school environment gives them opportunities as well, then this will increase the development impact of the school on the community as a whole.

Recommendations

- Provide elevated and if possible covered walkways. Gradually, once sufficient budget became available, the entire campus ground can be elevated through earthfill and concrete of the surface as solution to the problem in flooding.
- Improve canal and sewerage system in the campus.
- Improve electrical lines and capacity as additional load may be used for the lighting of the walkways and the entire campus for security especially at night.
- Always involve community stakeholders in the planning and use of school facilities because it has proven that their involvement resulted to better campus facility.

References

1. Amaratunga D, Baldry D. Theory Building in Facilities Management Research: Case Study Methodology; c2000. Available from: https://www.researchgate.net/publication/46419211
2. Barrett P, Treves A, Shmis T, Ambasz D, Ustinov M. The Impact of School Infrastructure on Learning: A Synthesis of the Evidence. International Bank for Reconstruction and Development / The World Bank; c2019. DOI: 10.1596/978-1-4648-1378-8
3. Creswell JW. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications: Thousand Oaks, CA, USA; c2003.
4. Coffey H. Guidelines for Planning Future Public School Facilities: A Trends-oriented Approach. Electronic Theses and Dissertations, School of Graduate Studies, East Tennessee State University; c1992.
5. Estacio DL. Assessment of Master Development Plan of La Consolacion University Philippines: From the Stakeholders' Perspective. International Journal of Innovative Science and Research Technology. 2020;5(6):155-162. ISSN No: 2456-2165.
6. Lefrandt L, Sulistio H, Wicaksono A. Model Movement Pedestrian Satisfaction in Manado Using Structural Equation Modeling. Journal of Applied Environmental and Biological Sciences. 2016;6(1):31-37.
7. Moura F, Cambra P, Gonçalves AB. Measuring walkability for distinct pedestrian groups with a participatory assessment method: A case study in Lisbon. Landscape and Urban Planning. 2017;157:282-296.
8. Murwadi H, Dewancker B. Study of Quassessment Model for Campus Pedestrian Ways, Case Study: Sidewalk of the University of Lampung. Sustainability. 2017;9(12):2285. DOI: 10.3390/su9122285
9. Turk YA, Sen B, Ozyavuz A. Students Exploration on Campus Legibility. Procedia - Social and Behavioral Sciences. 2015;197:339-347.
10. US Department of Education, National Center for Education Statistics, National Forum on Education Statistics. Planning Guide for Maintaining School Facilities. NCES 2003-347, prepared by Szuba T, Young R, and the School Facilities Maintenance Task Force. Washington, DC; c2003.