

**POST OCCUPANCY EVALUATION OF WORKPLACE CHILD
CARE CENTERS IN MALAYSIA**

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To my family

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ABSTRACT

The increasing need of workplace child care centers has brought up the quality issue of its built environment. The importance of conducive built environment for childhood development is widely documented in the literature. It is through active interaction with the physical environment that children learn about themselves and the world in which they live, thereby developing their knowledge and cognition. PERMATA program has established a very comprehensive physical setting guideline which serves as the reference for service provider. But, too often child care center providers only pay attention at the pre-occupancy stage but overlook the importance of Post Occupancy Evaluation (POE). Author filtered building performance parameters identified by Malaysia academicians with POEs done in overseas child care centers and obtained a list of 22 performance parameters under 11 different performance criteria. A questionnaire survey was conducted to seek opinions of workplace child care center users which consist of both child care center staffs and parents on the built environment performance. 2 analyses were conducted on collected data and results show that generally users are satisfied with the built environment. Although air quality, lighting, colors and safety on using centers equipment are among performance parameters with higher criticality indices but they are still fallen in the normal range.

ABSTRAK

Keperluan pusat penjagaan kanak-kanak di tempat kerja menjadi semakin meningkat dan telah membawa isu kualiti terhadap alam bina. Kepentingan persekitaran terbina yang kondusif bagi pembangunan kanak-kanak telah didokumenkan secara meluas dalam kesusasteraan. Interaksi aktif dengan persekitaran fizikal membantu kanak-kanak belajar tentang diri mereka dan dunia di mana mereka tinggal, dan dengan itu mengembangkan ilmu dan kognisi mereka. Program PERMATA telah mewujudkan garis panduan fizikal yang komprehensif. Garis panduan ini telah menjadi rujukan kepada pembekal perkhidmatan. Tetapi, terlalu kerap pembekal pusat penjagaan kanak-kanak hanya memberi tumpuan pada peringkat pra-penghunan tetapi terlepas pandang kepentingan Penilaian Post Penginapan (Post Occupancy Evaluation, POE). Pengarang menapis parameter prestasi bangunan yang dikenal pasti oleh ahli akademik Malaysia dengan POEs yang dijalankan di pusat-pusat penjagaan kanak-kanak di luar negara dan mendapatkan senarai yang mengandungi 22 parameter prestasi, di mana semua parameter prestasi ini di bawah 11 kriteria prestasi yang berbeza. Satu kajian soal selidik telah dijalankan untuk mendapatkan pendapat dari pengguna-pengguna pusat jagaan kanak-kanak di tempat kerja yang terdiri daripada kedua-dua kakitangan pusat penjagaan kanak-kanak dan ibu bapa mengenai prestasi alam bina. 2 analisis telah dijalankan atas data yang terkumpul dan keputusannya menunjukkan bahawa secara umumnya pengguna-pengguna berpuas hati dengan kualiti alam bina taman asuhan tempat kerja. Walaupun kualiti udara, lampu, warna dan keselamatan menggunakan peralatan pusat adalah antara parameter-paramter prestasi yang mendapat indeks kritikal yang lebih tinggi, tetapi masih terjatuh dalam julat yang normal

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LIST OF ABBREVIATIONS

BPE	–	Building Performance Evaluation
CCC	–	Child Care Center
ECCE	--	Early Childhood Care and Education
GSA	–	General Services Administration
KEMAS	–	<i>Jabatan Kemajuan Masyarakat</i>
LEED	–	Leadership in Energy & Environmental Design
MOH	–	Ministry of Health
MWFCD	–	Ministry of Women, Family and Community Development
NGO	–	Nongovernmental Organization
POE	–	Post Occupancy Evaluation
QIAS	–	Quality Improvement Accreditation System
SIDS	–	Sudden Infant Death Syndrome
SSM	–	<i>Suruhanjaya Syarikat Malaysia</i>
TASKA	–	<i>Taman Asuhan Kanak-kanak</i>
Unicef	–	United Nations Children's Fund

CHAPTER 1

INTRODUCTION

1.1 Introduction

Work force for a developing country like Malaysia is extremely important. According to the Labor Force Survey Report 2010, Malaysia's female participation rate is 44%, which is the lowest in South East Asia region. But, married women especially those have children tend to stay home and take care their children has thwarted their participation in employment. While male parent will be the sole income earner in most of the households, despite the increasing living cost.

In order to strengthen Malaysian work force, the government of Malaysia has taken tangible steps to encourage greater female participation. Firstly, the government provides subsidy to parents who enroll their children in childcare center. For instances, government servants with their household income below RM5,000 per month (Pekeliling Perkhidmatan Bilangan 38 Tahun 2013), who enroll their children into child center will receive subsidy amount of RM180 per child. Secondly, the government has agreed to provide subsidy of RM80,000 to government sectors that set up childcare centre in their respective government buildings (*Bernama*, 2014, March 5).

More enrollments of children into child care center signify the higher demand of child care center. Child care centers especially at workplace have given a great convenience to parents due to its proximity. As a result, the government of Malaysia has been putting in a lot of efforts in facilitating childcare centers especially at the workplace. According to Datuk Fatimah Abdullah, the nation's Minister of Welfare, Women and Family Development, Sarawak, one of the country states currently has 3 registered workplace child care centers while the other 2 were being set up and has been operating since January 2014 (The Borneo Post, 2013, Nov 13). Without requiring any imagination, child care centers at workplace are expected to be set up slowly one after one throughout the nation.

Despite the recognition of the importance of child care center towards children's early education, similar efforts in rating and evaluating the quality of the center especially its physical setting are still far from satisfactory. Currently more emphasis are placed on the initial design, courtesy of comprehensive guidelines such as "Garis Panduan Kemudahan Fizikal Untuk Pusat Anak PERMATA Negara", while lack of assessments in child care center including the physical settings in the post occupancy stage is an act of backsliding which could produce further issues. Feedbacks from center users such as child care staffs and parents are equally important to complete a holistic early child care education.

1.2 Problem Statement

Children in high quality centers scores higher on developmental indices than children in lower quality centers, while physical environment is one of the categories that decides the quality of child care centers to promote cognitive, language, social-emotional, self-help and physical growth. According to Gallagher *et al* (1999), there is a positive relationship between quality of child care center and child development. For specific development goals, environment should include adequate space for indoor and outdoor activities, materials that suit the age of children, privacy, and activities with designated objectives.

Working parents enroll their children into child care center until they reach the age that they can manage their life on their own. Children may spend up to 12,500 hours in child care centers if they starts as an infant and continues until entering school (US Child Care Center Design Guide, 2003). Since children spend substantial time in their early age at the center, the design of the built environment has to be essentially critical. Failure of caregiver to promote cognition and develop interest of learning of children will draw negative effects in the later stage of the children. The design effort must allow for, and be sensitive to, the differences in space attributes for children and those for adults as well as the differences in space usage by the children in different age groups.

A built environment is designed and built by architect, designer and builder to fulfill the owner's preferences or the users' needs. A costly design of premises is meant for offering superior architecture and outstanding functionalities, but, high investment does not guarantee high return all the time. Design flaw could happen and cost the premises owner on the future work of maintenance, modification or even rebuild. Performance of the premises should be evaluated to gather information, which will be the reference for architects to improve on the future design (Izran, 2011) or implemented as the tool by the stakeholders on decisions such as disposal, refurbishment or sale (University of Westminster *et al*, 2006).

Evaluation of the building from the aspects of functionality and reliability should be periodically performed to assure the premises condition and performance. Too often the evaluations have ignored the occupants' opinions, since, most of the time, a premises is built according to the occupants' needs. Criteria and parameters for premises performance evaluation are important to be identified, these criteria and parameters should include not only technical aspects but also from the occupants' points of view (Izran, 2011).

It can be deduced that considerations for the physical environment aspects both indoor and outdoor, are highly relevant towards generating quality child care center. Workplace child care center should identify criteria to evaluate the built environment performance. Actions can be taken such as post-occupancy evaluation which will be very much beneficial to research, policy guidance, and a shorthand

design guide for new early childhood educational facilities or the modification of existing centers. This is important to pinpoint faults in post-construction or post-occupancy situations. The results could lead to programs or briefs for minor design interventions or major renovations as well (Gary and Sugiyama, 2007).

Different rating tools have been widely implemented to conduct POE. Below are examples of rating widely used in English speaking countries, which currently in Malaysia, still does not have any rating tool or tangible actions done by either government or child care center administrator.

Table 1.1: Ratings used in English speaking countries (Source: Gary and Sugiyama, 2007).

Scale	Year of Establishment
NAEYC Accreditation Procedures	1986
Early Childhood Assessment Profiles	1992
Caldwell's HOME Observation for Measurement of the Environment	1984
Purdue Home Stimulation Inventory	1990
Trickett and Moos' Classroom Environment Scale	1995
Infant/Toddler Childhood Environment Rating Scales	1990

the Early Childhood Environment Rating Scales	1998
Children's Physical Environment Rating Scale (CPERS)	2007

In Malaysia, building performance evaluated using Post Occupancy Evaluation still remains at the research level. From the numbers of academicians that have been devoted in this area, it tells that POE is likely still in its infancy. The most notable of implementation of POE in the industry would still be the work done by a collaboration team called Evaluation Unit formed by Ministry of Health (MOH) which has done 12 structured POEs which include hospitals and clinics. The last POE conducted by this team was in year 2002 (Saiful and Norhati, 2010). Which can be said, currently there are no any POE of child care center in Malaysia have ever been done.

The awareness of the importance of POE in Malaysian construction industry especially among practitioners is arguably negligible. The 3 categories of practitioners involved in constructions are architects, developers and the facilities manager. According to pilot survey done by Izran (2011), most of the practitioners in Malaysian construction industry perceive that audit done on building performance is insignificant. That has fostered a low knowledge level among practitioners who are heavily involved in the design and development of buildings. What would be the negative effects produced undesirably from this scenario?

The principles and practices of injury prevention serve as a foundation for ensuring children's safety. In British Columbia, Canada, each year more than 260 children are killed and over 12,000 children are hospitalized as a result of unintentional injuries (Preventing Injury in Child Care Settings 2003). Precautions are needed in child care centre at workplace of Malaysia. Safety precaution in child care center should be evaluated strictly to prevent undesired incidents.

The physical environment affects the behavior and development of children, as well as the efficient functioning and sense of well being in child care staffs. A pleasant functional environment is bound to influence the way caregivers react to the children. To reduce turnover of child care center staffs, creating an environment that comfortably accommodates the needs of well qualified staff in order to attract and retain them, which most of the current child care centers either from private or government are vulnerable on (US Child Care Center Design Guide, 2003).

Lack of proper planning could be the root cause to failure of sustainable development, whilst comprehensive evaluation could be the savior. Most of the child care centers do not seek for occupants' opinion when proceeding on procurement since most durable and cost effective materials could be achieved base on users or occupants' feedback. At the same time, the administrators are ignoring energy consumption and current physical design which does not optimize the energy use since they do not pay attention on evaluating the post occupancy performance of their centers.

From the points of view of cost efficiency, administrator always set up the centers mainly follow lowest cost policy which always will result child care centers in low quality. Occupied child care centers that have never been evaluated or been evaluated without clear evaluating criteria or parameters are hardly assessable as evaluating guidelines could be widely diversified. Rating policy will be hard to be applied since the evaluations have never been following any curtained guidelines and parents might have hesitation enrolling their children to an unrated center.

In daily activities or during the work operations, the design, fittings and fixtures, of the child care center will have to reflect its suitability and eligibility to child care staffs. Children as the main users in the child care center will practically feel the textures, finishing and spatial arrangement of the premises, but users at such a young age will not possible to tell how the built environment performs. Child care center in workplace offer the caring service to employees' children at their most convenience, but the quality of the center is one of the parents' biggest concern. Parents and child care staffs are the two categories that could best describe the built environment.

Child care center performance evaluation serve as a valuable resource for child care providers, their services should be well informed in the design and application. The child care center performance evaluation should include criteria about an environment that is well designed to ensure children are safe, and provide the opportunity to develop to their full potential.

In tropical country like Malaysia, most of the time children will be accommodate in an indoor environment. Indoor condition such as ventilation and temperature could cause asthma, allergies and respiratory problems (Zuraimi and Tham, 2008) if they are not attended well. Evaluation criteria or parameters should include ventilation and indoor temperature. Thus, caregiver will pay attention at these aspects when setting up the indoor environment.

Infections among children are common especially when children are placed in a place they come into contact with far greater numbers of other children than might otherwise be possible, providing greater opportunity to be exposed to a range of infections. To reduce appreciably the risk, strict observance of simple hygiene measures known as standard precautions, vaccination against certain diseases and exclusion of symptomatic children and staff are necessary.

Workplace is a place that people visit and leave quite often, it makes child care center at workplace to have even better security more than just necessary. Comprehensive security measures are needed to keep children safe within the center, to safeguard them from outside intruders, and to protect them from hazards to the fullest extent possible. Apparently, in the performance evaluation, security should be one of the important criteria.

The cleaner the child care place is, the lower the risk of illness for children and the staff, thus, the administrators need sanitary standards. For example, the most important practice to follow is hand washing on a regular basis. Following daily intra-day sanitizing and disinfecting processes for toys, diaper-changing areas, and table surfaces is an excellent way to reduce the spread of illness. Cleanliness of child care center should be even more emphasized due to its proximity to workplace which might have higher chance of pollution.

Evaluation of building performance is essential to validate efficiency and effectiveness of premises design in built environment. Kao *et al* (2005) suggested Post Occupancy Evaluation (POE) is the efficient approach to evaluate building performance of occupied premises. It helps to solve existing building design issues with academic approach, which are accumulated and unsolvable through traditional problem solving methods.

1.3 Research Question

The main purpose of conducting this research is to answer below question:

“What is the satisfaction level of users at workplace child care centers in Malaysia?”

To answer this question, author will conduct post occupancy evaluation at workplace child care centers, to get users’ feedback and analyze the gathered data.

1.4 Research Objectives

Correspond to the issues addressed in 1.2, this research is plotted in 3 phases by meeting objectives below:

- I. To identify the satisfaction level of users on workplace child care centers in Malaysia.
- II. To identify the critical performance aspects for workplace child care centers in Malaysia.

1.5 Scope of Research

Scope of this research will focus mainly on 2 subjects, the premises and the respondents. From these 2 subjects, author will be able to collect sufficient information to answer issues addressed in section 1.2.

Firstly, the target premises will be workplace child care centers in Malaysia, the focus will be on those in Putrajaya region. This region has the most workplace child care centers in Malaysia. The centers are within different stratified government buildings.

Secondly, child care center staffs are the users who spend equivalent or even more time than children in the center, they can provide very comprehensive users' opinions on most of the aspects of the physical design. Also, parents who enroll their children into the center will be the 2nd target group of respondents. Parents' concern on their children's safety and development will result in producing intense observation and supervision on center's quality. According to the graduate students from North Carolina University, in their POE done on several daycare facilities, the success of the center in implementing energy efficiency strategy in the built environment was evaluated through the staffs and parents' feedbacks. In another report, Balga Tafe Child Care Centre POE, the facility users and interested groups were pointed to child care provider, staffs and parents. Also, it is affirmative that the research can get creditable evaluation through child care center staffs and parents from the literature done on the POE at Sure Start, children centers in London, United Kingdom.

Below 2 tables are registered workplace child care centers in government and private sectors of Malaysia:

Table 1.2: Quantity of workplace child care centers in different categories of government sector.

Number	Category	Quantity
1	Hospital/Department of Health	16
2	Institutes of Higher Education	26
3	Office of State Secretary	1
4	Ministry	18
5	Agency under ministry	33
6	School	6
Total		100

Table 1.3: Quantity of workplace child care centers of private sector in different states.

Number	State	Quantity
1	Selangor	7
2	Kuala Lumpur	8
3	Negeri Sembilan	1
4	Johor	2
5	Pahang	2
6	Kelantan	1
7	Terengganu	4
8	Perak	1
Total		100

In Table 1.2, Ministry category is highlighted, which was where author's target respondents located. Workplace child care centers at Putrajaya were selected by author due to below few reasons:

- I. More cooperative with academic research

- II. Child care centers in Putrajaya is exemplar for others
- III. Location of centers are more centralized

1.6 Significance of Research

Identified critical performance criteria and performance parameters which could be useful reference:

- 1) To improve future workplace child care center design
- 2) To establish rating system for child care center

1.7 Research Methodology

The research flow will be presented through the figure below:

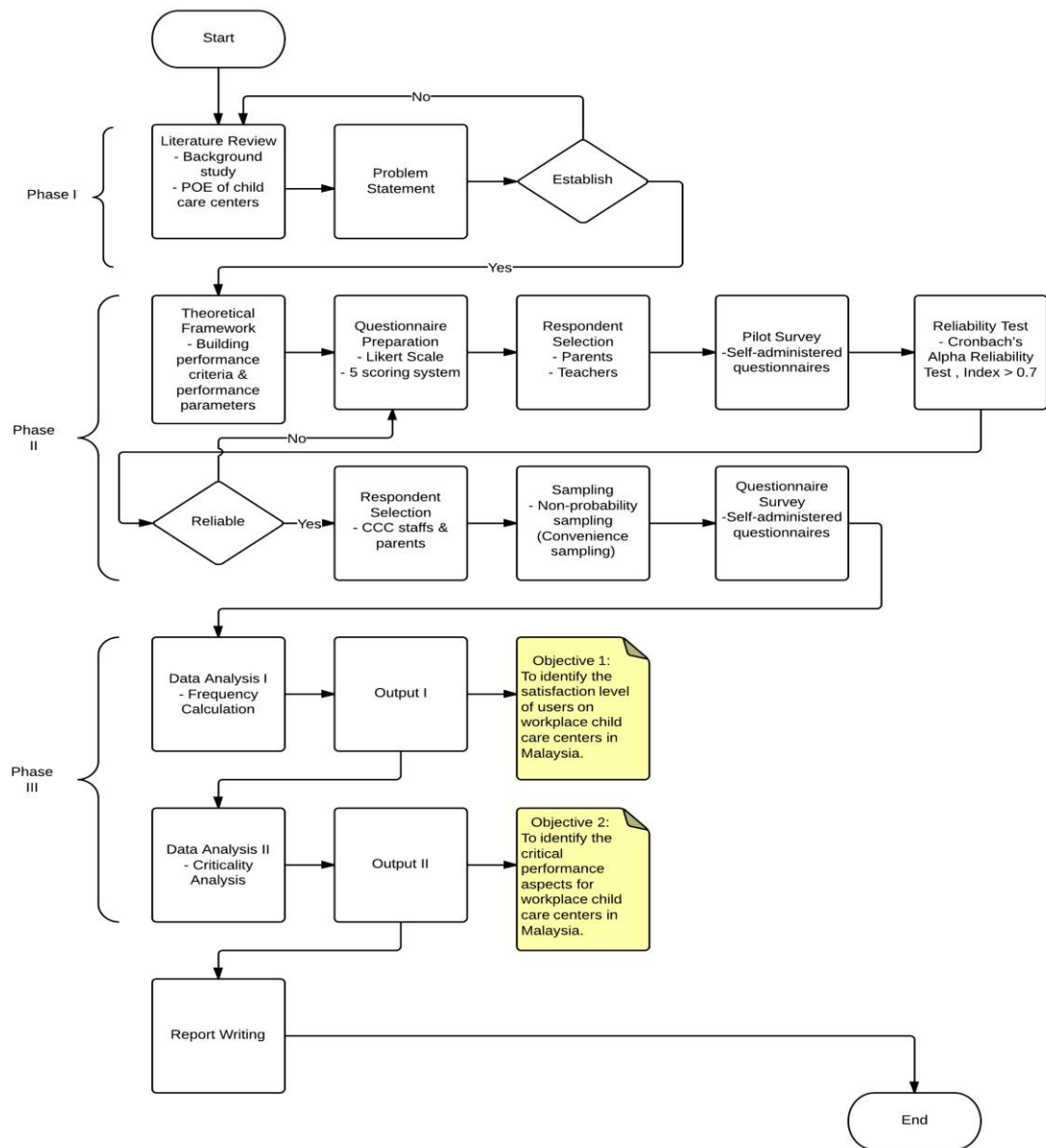


Figure 1.1 Overall research methodology.

1.8 Organization of Chapters

Chapter 1 (Introduction): The very first chapter of the research will discuss the background of the research such as the problem statement , research objectives, research scope, the significance of the research, and a the overall methodology used in the research.

Chapter 2 (Child Care Center in Malaysia): The second chapter focuses on the history of early childhood care and education in Malaysia followed by the description on the current child care center scenario in Malaysia. Also, the physical setting ratings policy in child care centers overseas and the evaluation practice in Malaysia. Lastly, the chapter will discuss about the current situation of workplace child care centers in Malaysia.

Chapter 3 (Post Occupancy Evaluation): The third chapter focuses on Post Occupancy Evaluation that includes the process involved in POE, the performance criteria and performance parameters considered in POE. This chapter ends with the theoretical framework for post occupancy evaluation of child care center and summary of the findings from chapters 3.

Chapter 4 (Research Methodology): Chapter 4 discusses the methodology employed in this research. The chapter talks about the design of the questionnaire developed from the theoretical framework established in Chapter 3. This chapter subsequently discusses the selection of respondents, data collection works and analysis methods employed.

Chapter 5 (Data Analysis): This chapter explains the analyses undertaken for achieving the two objectives of this research. The satisfaction level of users and criticality of performance parameters of workplace child care centers are discussed in the final part of this chapter.

Chapter 6 (Results and Discussion): This chapter discusses the results obtained and the extent to which the results fulfill the objectives of this research.

Chapter 7 (Conclusion and Recommendations): The final chapter concludes the findings and the overall research works that have been undertaken. The contribution and implications of the findings towards the implementation of post occupancy evaluation in particular are explained. The limitations and possible improvements for future undertakings will also be discussed. Suggestions for future studies shall be conveyed in the final part of this chapter.

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