



THE ADAPTATION OF DEFENSIBLE SPACE
THEORY FOR THE DESIGN DEVELOPMENT OF
KINDERGARTEN LANDSCAPE

BY

NUR AMALINA ALI MOHAMAD

A thesis submitted in fulfilment of the requirement for
the degree of Master of Science (Built Environment)

Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia

JANUARY 2015

ABSTRACT

This research addresses the safety of kindergarten premises in Malaysia due to improper planning of the landscape area. Crimes in Malaysia that revolve around kindergarten premises have repeatedly occurred throughout the years. Hence, this study addresses the issue with reference to Defensible Space theory. This study identifies the presence and absence of landscape principles of Defensible Space theory which are natural surveillance, territoriality, image and milieu, in the chosen effected premises and suggest modifications to the existing guideline for kindergarten landscape development in Malaysia. Through a qualitative research, this research collects data via means of document analysis, case study, interview and observation. Document analysis is adopted to determine the landscape architectural variables of Defensible Space theory and kindergarten outdoor space utilization and its elements. A case study is chosen to identify the physical deficiencies of the premises that contributed to the crime based on the absence and presence of Defensible Space principles. Structured interviews are carried out to determine demographic data. Lastly, observation is carried out at chosen case studies to recognise the spatial form and presence and absence of Defensible Space principles. Two relatively similar kindergartens with history of criminal occurrence are chosen as case studies to observe the presence and absence of the said principles in which Kindergarten 1 shows a presence of only 62.5% of defensible space while Kindergarten 2 shows 70%. The results of both kindergartens are used in the development of a general recommendation for the space utilisation of kindergarten landscape in Malaysia. The outcome will affect landscape designers in creating layouts and providing elements for the kindergarten outdoor areas and kindergarten owners in providing at least the minimum requirement for the outdoor area.

ملخص البحث

تناول هذه الدراسة قضية سلامة مباني رياض الاطفال في ماليزيا والتي يفرضها التخطيط الغير سليم لمناطق المناظر الطبيعية المحيطة بها. ان حالات الجريمة في ماليزيا والتي تدور حول رياض الأطفال حدثت بشكل متكرر على مر السنين. ومن هنا عكفت هذه الدراسة على معالجة هذه المسألة مع الإشارة إلى نظرية الفضاء الدفاعي عنها. وتحدد هذه الدراسة وجود وعدم وجود مبادئ المناظر الطبيعية لنظرية الفضاء الدفاعي وهي المراقبة الطبيعية, الاقليمية, الصورة والمحيط, في الاماكن المصابة المختارة ومدى توفر التعديل ا اللازم في قائمة المبادئ التوجيهية لتطوير المناظر الطبيعية لرياض الاطفال في ماليزيا. استخدمت هذه الدراسة أربع تقنيات في منهج البحث النوعي لجمع البيانات, وهي التحليل الوثائقي, دراسة الحالة, المقابلة و الملاحظة. التحليل الوثائقي اعتمد لتحديد متغيرات عمارة المناظر الطبيعية لنظرية الفضاء الدفاعي واستخدام المساحات الخارجية لرياض الاطفال ومقوماتها. تم اختيار اسلوب منهج دراسة الحالة للكشف عن أوجه القصور المادية للمباني التي ساهمت في حدوث الجريمة استنادا الى وجود و عدم وجود لمبادئ الفضاء الدفاعي. اما منهج المقابلات الشخصية فقد تم استخدامها من اجل جمع وتحديد البيانات الديموغرافية. واخيرا تم استخدام منهج المراقبة في دراسة الحالة المختارة للتعرف على الشكل المكاني لوجود وعدم وجود مبادئ الفضاء الدفاعي . وقد تم اختيار اثنين من رياض الأطفال متشابهة نسبيا في تاريخ الاحداث الجنائية كدراسة حالة لمراقبة وجود وعدم وجود للمبادئ المذكورة اعلاه في كل من رياض الاطفال رقم 1 والتي اظهرت وجود 62.5% فقط من المساحة القابلة للدفاع بينما رياض الاطفال رقم 2 اظهرت 70.0% . وقد تم استخدام نتائج كل من رياض الاطفال لوضع توصية عامة لاستخدام مساحة المناظر الطبيعية لرياض الأطفال في ماليزيا. المخرجات سوف تؤثر في مصمم المناظر الطبيعية الخارجية في خلق تخطيط وتوفير عناصر المساحات الخارجية لرياض الاطفال و لصاحب الروضة في توفير على الاقل الحدود الدنيا المطلوبة للمساحات الخارجية للروضة.

APPROVAL PAGE

I certify that I have supervised and read this study and that, in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Science (Built Environment)

.....
Ismawi Zen
Supervisor

I certify that I have supervised and read this study and that, in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Science (Built Environment)

.....
Nurul Syala Abdul Latip
Co- Supervisor

I certify that I have read this study and that, in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Science (Built Environment)

.....
Mohd Ramzi Mohd Hussain
Internal Examiner

.....
Ismail Said
External Examiner

This thesis was submitted to the Department of Landscape Architecture and is accepted as a fulfilment of the requirement for the degree of Master of Science (Built Environment)

.....
Zainul Mukrim Baharuddin
Head, Department of Landscape Architecture

This thesis was submitted to the Kulliyyah of Architecture and Environmental Design and is accepted as a fulfilment of the requirement for the degree of Master of Science (Built Environment)

.....
Alias Abdullah
Dean, Kulliyyah of Architecture and
Environmental Design

DECLARATION

I hereby declare that this thesis is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Nur Amalina Ali Mohamad

Signature.....

Date

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

**DECLARATION OF COPYRIGHT AND AFFIRMATION
OF FAIR USE OF UNPUBLISHED RESEARCH**

Copyright ©2015 by International Islamic University Malaysia. All rights reserved.

**THE ADAPTATION OF DEFENSIBLE SPACE THEORY FOR
THE DESIGN DEVELOPMENT OF KINDERGARTEN
LANDSCAPE**

No part of this unpublished research may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the copyright holder except as provided below.

1. Any material contained in or derived from this unpublished research may be used by others in their writing with due acknowledgement.
2. IIUM or its library will have the right to make and transmit copies (print or electronic) for institutional and academic purposes.
3. The IIUM library will have the right to make, store in a retrieval system and supply copies of this unpublished research if requested by other universities and research libraries.

Affirmed by Nur Amalina Ali Mohamad

.....
Signature

.....
Date

ACKNOWLEDGEMENTS

“*Bismillahirrahmanirrahim*: In the Name of Allah, the Most Gracious and the Most Merciful”

My gratitude to The Almighty Allah *SWT* for His blessing and guidance. *Alhamdulillah* It has been a wonderful journey with its ups and downs in seeking and understanding knowledge as to finally complete this thesis.

My deepest appreciation is to my family and friends for their absolute support and faith, emotionally and financially, that have motivated me throughout this study.

Several remarkable figures have played major roles in the passage of completing this study. Firstly, I would like to extend my appreciation to my Supervisor, Prof. Emeritus Dr. Ismawi Hj. Zen, for his attention, support and encouragement throughout the research process. Secondly, I would like to express my gratitude to my co-supervisor, Dr. Nurul Syala Abdul Latip, for her keen eyes, effort and especially her time spent on the reconstruction of this thesis.

Thank you to all related parties and individuals who may have contributed directly and indirectly for this study. All your assistance and supports are highly appreciated and may they be rewarded by Allah *SWT*.

Finally, I thank all for their continuous moral support and considerations. May this study receive *barakah* from Allah *SWT*.
Thank you.

TABLE OF CONTENTS

Abstract	ii
Abstract in Arabic	iii
Approval page	iv
Declaration	v
Copyright Page.....	vi
Acknowledgement	vii
List of Tables	xi
List of Figures	xiii
List of Abbreviations	xv
CHAPTER 1: INTRODUCTION.....	1
1.1 Introduction	1
1.2 Research Background.....	1
1.3 Significance of Issue	3
1.4 Problem Statement	5
1.5 Research Aim	6
1.6 Research Objectives	6
1.7 Research Questions	6
1.8 Scope of Research	6
1.9 Research Framework.....	7
1.10 Thesis Structure.....	10
CHAPTER 2: ENVIRONMENTAL CRIME PREVENTION.....	13
2.1 Introduction	13
2.2 Environmental Crime Prevention Measures	14
2.2.1 Crime Prevention Through Environmental Design (CPTED)	19
2.2.2 Situational Crime Prevention (SCP)	22
2.2.3 Defensible Space (DS)	24
2.2.3.1 Concept	25
2.2.3.2 Critics	25
2.2.3.3 Supports	28
2.2.3.4 Case Study	29
2.2.3.5 Principles of Defensible Space	31
2.2.3.6 Landscape Attributes and Elements.....	41
2.2.4 Comparison of CPTED, SCP and DS	45
2.3 Summary	14
CHAPTER 3: KINDERGARTN SPACE UTILIZATION	48
3.1 Introduction	48
3.2 Child Care Acts and Guidelines in Malaysia	49
3.3 Kindergarten Space Utilization	51
3.3.1 Definition	52

3.3.2 Kindergarten in Malaysia.....	52
3.3.3 Location Settings.....	53
3.3.4 Space Utilization	53
3.3.5 Physical Environment	54
3.3.6 Safety Measure and Security.....	59
3.3.7 Summary	59
3.4 Summary	60

CHAPTER 4: RESEARCH METHODOLOGY 61

4.1 Introduction	61
4.2 Research Method Employed	61
4.3 Data Collection.....	63
4.3.1 Administration	64
4.4 Investigation Methods.....	64
4.4.1 Document Analysis	64
4.4.2 Case Study.....	66
4.4.3 Structured Interview.....	68
4.4.4 Observation	70
4.5 Data Sorting	72
4.6 Summary	73

CHAPTER 5: PRINCIPLES OF DEFENSIBLE SPACE THEORY AND SPACE UTILIZATION IN THE CASE STUDIES 75

5.1 Introduction	75
5.2 Case Study: Kindergarten 1	78
5.2.1 Background	78
5.2.2 Site Inventory	80
5.2.2.1 Presence and Absence of Defensible Space Principles.....	82
5.2.2.2 Outdoor Space Utilization.....	83
5.2.3 Site Analysis	85
5.2.3.1 Presence and Absence of Defensible Space Principles.....	85
5.2.3.2 Territoriality	86
5.2.3.3 Natural Surveillance.....	91
5.2.3.4 Image and Milieu	96
5.2.3.5 Outdoor Space Utilization.....	99
5.2.4 Site Synthesis	100
5.2.5 Proposed Schematic Plan	102
5.2.6 Proposed Guideline for Space Utilization of K1.....	105
5.2.7 Example of Adaptation of the Proposed Guideline for K1	108
5.3 Case Study: Kindergarten 2	110
5.3.1 Background	111
5.3.2 Site Inventory	114
5.3.2.1 Presence and Absence of Defensible Space Principles.....	115
5.3.2.2 Outdoor Space Utilization.....	117
5.3.3 Site Analysis	118
5.3.3.1 Presence and Absence of Defensible Space Principles.....	118
5.3.3.2 Territoriality	118

5.3.3.3 Natural Surveillance.....	122
5.3.3.4 Image and Milieu	126
5.3.3.5 Outdoor Space Utilization.....	128
5.3.4 Site Synthesis	129
5.3.5 Proposed Schematic Plan	132
5.3.6 Proposed Guideline for Space Utilization of K1.....	135
5.3.7 Example of Adaptation of the Proposed Guideline for K1	138
5.4 Summary	140
CHAPTER 6: CONCLUSION AND RECOMMENDATION	141
6.1 Introduction	141
6.2 Main Research Findings.....	142
6.2.1 Landscape Attributes of the Principles of Defensible Space	142
6.2.2 Suggestions for Kindergarten Outdoor Landscape Development .	143
6.3 Limitation of Research.....	145
6.4 Significance of Research.....	146
6.5 Implication of Research	146
6.6 Recommendation and Improvements for Future Studies.....	147
6.7 Summary	148
REFERENCES.....	149
LIST OF CONFERENCES/PROCEEDINGS/PUBLICATIONS.....	154
APPENDIX A	155
APPENDIX B	157
APPENDIX C	159
APPENDIX D.....	161
APPENDIX E	167
APPENDIX F.....	190

LIST OF TABLES

<u>Table No.</u>		<u>Page No</u>
2.1	Clarke's matrix of crime opportunity reducing techniques	23
2.2	Adapted principles and applied elements in the Dight Street Redevelopment Project	30
2.3	The Three D approach	33
2.4	The summarized values and attributes of the principle of territoriality	35
2.5	The summarized values and attributes of the principle of natural surveillance	38
2.6	The summarized values and attributes of the principle of image and milieu	41
2.7	The summarized landscape attributes of the principles of Defensible Space	44
2.8	Comparison of defensible space and CPTED adapted from Newman and Crowe	47
3.1	The parts and details of Child Care Act 1984	52
3.2	Aspects of the environment that impact children's experience	58
3.3	Outdoor features and their qualities	61
3.4	Summarized spaces and elements for kindergarten outdoor space utilization and physical environment	62
4.1	The summarized data collection stages	64
4.2	Structured interview schedule	69
5.1	Demographic data for Kindergarten 1	79
5.2	Presence and absence of the indicators at Kindergarten 1	83
5.3	Total frequency and percentage of Defensible Space indicators at Kindergarten 1	87
5.4	Total frequency and percentage of territoriality indicators at	87

	Kindergarten 1	
5.5	Total frequency and percentage of natural surveillance indicators at Kindergarten 1	93
5.6	Total frequency and percentage of image and milieu indicators at Kindergarten 1	97
5.7	Weakness and strength of Kindergarten 1	101
5.8	Guidelines proposed for Kindergarten 1	107
5.9	Demographic data for Kindergarten 2	112
5.10	Presence and absence of the indicators at Kindergarten 2	116
5.11	Frequency and percentage of Defensible Space indicators at Kindergarten 2	119
5.12	Frequency and percentage of territoriality indicators at Kindergarten 2	120
5.13	Frequency and percentage of natural surveillance indicators at Kindergarten 2	124
5.14	Frequency and percentage of image and milieu indicators at Kindergarten 2	127
5.15	Weakness and strength of Kindergarten 2	130
5.16	Suggestions for Kindergarten 2	137
6.1	Landscape attributes based on the principles of Defensible Space theory	143
6.2	General suggestions for kindergarten outdoor landscape development	144

LIST OF FIGURES

<u>Figure No.</u>		<u>Page No</u>
1.1	Research Methodology Framework	9
1.2	Thesis Structure	12
2.1	Literature review framework for environmental crime prevention	13
2.2	Crime studies	17
3.1	Literature review framework for kindergarten landscape utilization	49
4.1	Research methodology frameworks	63
4.2	Flow of formulation of landscape architectural attributes	67
4.3	Flow of background setting of case studies	70
4.4	Flow of kindergarten outdoor space observation	73
4.5	Flow of data sorting	74
5.1	Flow of analysis	77
5.2	Kindergarten 1 layout plan	82
5.3	Outdoor space utilization	85
5.4	Placement of windows, doors and fence in Kindergarten 1	90
5.5	Change of level in the rear of Kindergarten 1	91
5.6	Placement of arches, signage and planting in Kindergarten 1	92
5.7	Obstructions placed in Kindergarten 1	94
5.8	Outdoor space utilization in Kindergarten 1	100
5.9	Proposed schematic plan for Kindergarten 1	104
5.10	Proposed preliminary plan for Kindergarten 1	106
5.11	Example of the application of the proposed guideline of space utilization for Kindergarten 1	109

5.12	Kindergarten 2 Layout Plan (Ground Floor)	115
5.13	Kindergarten 2 Layout Plan (First Floor)	116
5.14	Outdoor Space Utilization in Kindergarten 2	118
5.15	Planting layout at Kindergarten 2	122
5.16	Outdoor space utilization analysis of Kindergarten 2	129
5.17	Proposed schematic plan for Kindergarten 2	134
5.18	Proposed preliminary plan for Kindergarten 2	136
5.19	Example of the application of the proposed general space utilization for Kindergarten 2	139

LIST OF ABBREVIATIONS

<u>Equations No.</u>		<u>Page No.</u>
CPTED	Crime Prevention through Environmental Design	1
DS	Defensible Space	3
SCP	Situational Crime Prevention	4

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter explains the aim, goal and objectives of this study which derived from the issue stated. It also gives the basic idea of the study which relates kindergarten outdoor safety issue with Defensible Space theory as a possible measure.

1.2 RESEARCH BACKGROUND

Crime cases in Malaysia that revolve around kindergarten premises have occurred repeatedly throughout the years in which, safety aspect is mediocrely spoken of. In between January and April 2008, a five year old girl was raped at her kindergarten by the premise co-owner in Bukit Dumbar (Rape, n.d.). In March 2009, it was reported that a robbery had occurred in a kindergarten in Bandar Kinrara with the robbers armed with long knife (Robbery, n.d.). In April 2009, a 7 year old boy was abducted in front of his kindergarten premise after his mother dropped him off and released after his family paid a ransom of RM 1 million (Abduction, 2009). In March 2010, a 45 year old kindergarten operator and three six year olds children were severely hammered on the head by an unknown man who intruded into the kindergarten (Assault, n.d.).

The environment of kindergarten plays an important role in the occurrence of crime thus it should be manipulated in such a way that crimes that are caused by human actions can be eliminated (Abu Lughod, 2006). Although the crime rate at the kindergarten premises is not alarming, these few cases could be pandemic if the crisis

is left in vague. In using the environment to control crime rate, several researches and theories can be made use of. According to Schneider and Kitchen (2007), the idea of increasing the quality of social security through design has been considered as early as 1930s where the design of the site was speculated to be a manipulative variable in shaping and altering the safety issues and social interactions among residents by the public housing bureaus.

Sutton, Cherney and White (2008) explained environmental crime prevention (ECP) as altering the physical attributes to respond to the way of life of the community in a sense that will minimize crime possibility. Criminologist, C. Ray Jeffrey had come up with Crime Prevention through Environmental Design (CPTED) in 1971 that aims at creating spaces that reduce the opportunities for crime to occur and promote good social behaviour (CPTED, n.d.). Later on, Oscar Newman, an architect coined the terms Defensible Space that focuses on developing space in a residential area with the approach of giving the sense of ownership and responsibility to residents of the public spaces. Newman connected physical design, social control and behaviour together in forming the defensible space concept which was what brought the concept to a higher level of success in preventing crime using the built environment (Schneider and Kitchen, 2007). In this research the studied aspect is smaller, kindergarten landscape area.

Brown and Bentley (1993) recommended future researches on burglary vulnerability study to include all physical attributes of a house in the global judgment of its appearance together with the social characteristics of the residents. Furthermore, Mohit and Hannan (2010) concluded based on empirical evidence that further research on the setbacks of the environmental crime prevention measures need to be done on case-specific term. Hence, this study delves into the physical landscape attributes of a

kindergarten in housing area in determining the appropriate adaptation of the Defensible Space theory for the development of kindergarten landscape will be discussed further in Chapter 2. Defensible space as far as it had stretched, has been mediocly applied to a more specific used of space in the landscape area. Newman had experiment it with mixed space usage such as residential and commercial. Moreover, the main attempt of realizing this theory is by public participation. These two aspects are contradicting with the nature of study aspect of this research where it is more specific in terms of usage and participation. Thus, modification of the theory's attributes is necessary if it is to be applied in a kindergarten in improving the safety of the premise.

1.3 SIGNIFICANCE OF ISSUE

Government Transformation Program (GTP) is an effort by the Prime Minister of Malaysia in order to improve the quality of life of the people. The program has two main sections which are National Key Results Areas (NKRAs) which addresses seven key issues faces by the people and Ministerial Key Results Areas (MKRAs) which focuses on other matters not covered by NKRAs. Two of the seven key points in NKRAs are crime (Aldrin Abdullah et al., 2011; Massoomah Hedayati Marzbali et al. (2012) and education, which is in the jurisdiction of this research. GTP 1.0 was a pilot program that was implemented in 2010. GTP 2.0 started in 2013 where the program enhances the progress carried out by the GTP 1.0 with better initiatives and approach. GTP 3.0 will be implemented from 2015 to 2020 where the gradual changes of the previous programs will be further refined and implemented to sustainable solution in the sectors addressed.

In relation to the reduction of crime, GTP 1.0 aimed at reducing index and street crimes and fear of crime, develop the law system and upsurge community contentment with the Royal Malaysian Police. The GTP 1.0 proved to be a successful attempt as the index crime has plummeted by 15% and street crime is reduced by 39.7%. GTP 2.0 focused on the reduction of index and property crime especially prevention of house break-ins and vehicle theft by implementing target hardening scheme with other relevant measures. The omnipresence program of having profile policing, stop and talk and feet on the street is continued from the previous phase with the expansion to several other states. The Safe City Program which adopted the principles of CPTED is credited for the success of the overall reduction in street crime (Mazlan Che Soh, 2010). However, the development of safety level of personal space of every residence particularly in the terraced housing area where kindergarten or child care centres are placed is not under the jurisdiction of this program. Hence, the responsibility of enhancing the safety of the institution relies on the owner of the premise.

As for pre-school education, GTP 1.0 aimed at the cognitive development of children, increasing the enrolment of children, fee assistance and the number of pre-schools, all in which the program was a success with the increasing number of enrolment to 87% as off 2012. GTP 2.0 proceeded to increase number of qualified teachers and classes; provide child care grants and fee assistance and also to kick start the National Early Childhood Care Education (ECCE). Outdoor landscape specification of the pre-schools, however, is not included in the program.

Hence, this study aims at adapting defensible space principles in the development of kindergarten outdoor area.

1.4 PROBLEM STATEMENT

In essence, body of knowledge has highlighted the following:

- a. ECP method for kindergarten landscape has been highlighted minimally.

ECP has been minimally addressed in relation to kindergarten landscape especially the premises in residential area. Several researches have highlighted on the prospect of the method to deter crime. Therefore, the usage of ECP is seen as a promising venture to enhance the safety of kindergarten. Manipulation of the environment of the kindergarten landscape area can be made use to curb crime with adjustment in the attributes selected to apply the principles of Defensible Space measure.

- b. The existing kindergarten landscape development guidelines are apparently deficient in safety measure.

Kindergarten is a place to develop children's potential and senses and also to prepare them for a formal education. In realizing these, the environment plays a big role in shaping them up physically and mentally. In Malaysia, Child Care Centre Act 1984 shows insufficiency in safety measure on the development of kindergarten landscape which is discussed in Chapter 3. The act has six sections that highlighted on preliminary, registration, cancellation of registration, appointment of officers, directions and miscellaneous, whereby, the parameter on the improvement of kindergarten outdoor space falls into none. Crime cases in kindergarten in Malaysia have occurred throughout the recent years which are from January 2008 to March 2010 where traumatic incidents left parents and children scarred.

All these problems need tackling, but first; a few raised questions need to be answered. Based on the cases occurred in Malaysia, the safety aspects of kindergarten can be improved to minimize crime. Hence the addressing of the problems is necessary.

1.5 RESEARCH AIM

This study is aimed at adapting Defensible Space theory to be incorporated in the existing act of the development of kindergarten landscape in preventing crime.

1.6 RESEARCH OBJECTIVES

This study embarks on the following objectives:

1. To formulate the landscape attributes based on Defensible Space theory for the development of kindergarten landscape area.
2. To provide recommendation in the existing act for kindergarten landscape development.

1.7 RESEARCH QUESTIONS

The main questions addressed in this research are:

1. What are the landscape attributes that can be derived from Defensible Space theory for the development of kindergarten landscape area?
2. What are the recommendations based on the Defensible Space principles in the development of kindergarten landscape?

1.8 SCOPE OF RESEARCH

This research focused on the safety issue of home-based kindergarten that have adapted layout in Malaysia. This is because of the abundance of this type of kindergarten in the country. The study also focused on the kindergarten with history of criminal occurrence as to relate to the weakness and strength of the environmental attributes, which is the main agenda of the research in providing suggestion to develop

kindergarten landscape. Social parameters are limited to demographic data of studied case studies due to time and data constraint.

1.9 RESEARCH FRAMEWORK

This research employed qualitative method of research that is carried out by stages. The techniques involved are document analysis, observation, case studies and structured interview. Chapter 4 explains the details of these methods thoroughly.

Stage 1 aimed at determining the landscape principles based on Defensible Space theory for the development of kindergarten landscape area. In order to understand the topic studied, literature review on Environmental Crime Prevention Method where Crime Prevention Through Environmental Design (CPTED), Situational Crime Prevention (SCP) and Defensible Space are explained, differentiated and similarized in terms of aim, principles and application. It is done together with Kindergarten Landscape Space Utilization and Child Care Act in Malaysia that is focused on space utilization of child care centres in office building in Malaysia. This stage is particularly important in highlighting the necessities of children growth, importance of this research and the selection of case study. Document analysis is carried out on Defensible Space Principles in order to translate, form and gather the landscape principles of the theory in general. This stage is essential in this research as it provided the ground of checklist development with landscape physical attributes for case studies in Stage 2.

Stage 2 of data collection is the fieldwork/case study that is carried out through observation adapted from Newman's research method. In this stage, observation is carried out in order to determine the presence and absence of Defensible Space theory in the case studies selected. Therefore, observation checklist is formed based on the

result of Stage 1 that allowed the researcher to study the landscape physical attributes of the existing kindergarten landscape in selected kindergarten and merge the information with the outdoor space utilization formed.

The stages followed after are analysis and recommendation and conclusion whereby triangulation is used. At the end of the stage, modification of Defensible Space elements for kindergarten landscape development is suggested. Figure 1.1 summarized the framework of this research methodology.

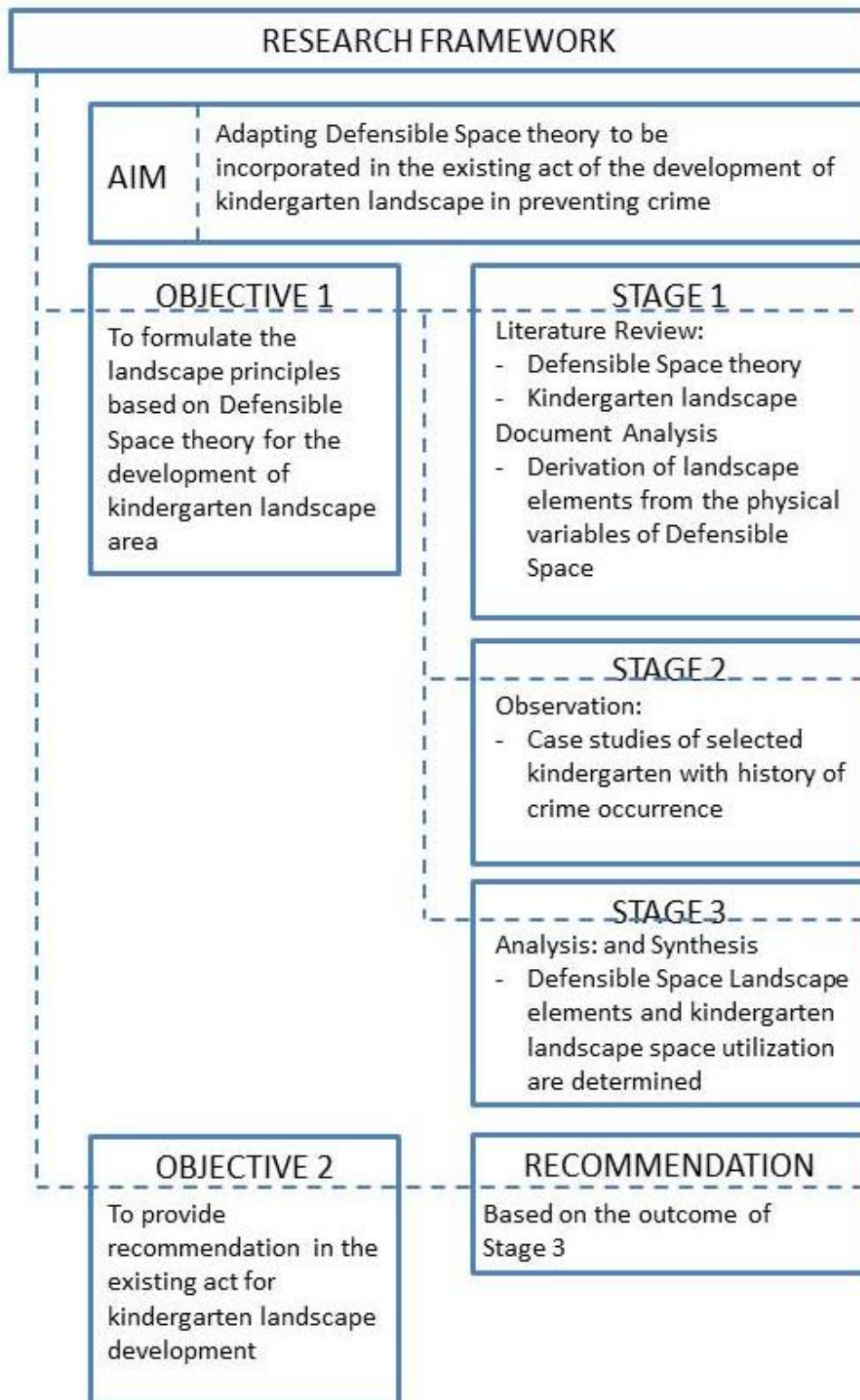


Figure 1.1: Research Methodology Framework