

**DEPARTMENT OF BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
MARA UNIVERSITY OF TECHNOLOGY**

**THERMAL COMFORT IN COLONIAL AND MODERN SCHOOL
BUILDINGS**

Submitted in partial fulfillment of the requirement of the Bachelor of
Building Surveying (Hons),
Mara University of Technology

**PREPARED BY : SYED HAZLAN IZHAM B. SYID ABDULLAH
SESSION : MARCH 2004**

**DEPARTMENT OF BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
MARA UNIVERSITY OF TECHNOLOGY**

DISSERTATION (BSV 695)

APPROVAL OF AMENDMENT.

"Hereby it is notify that this student has amended his dissertation as ordered and therefore is given permission to bind his dissertation"

STUDENT SYED HAZLAN IZHAM B. SYID ABDULLAH
UiTM I/C NO. 2002234705
DISSERTATION
TITLE THERMAL COMFORT IN COLONIAL AND
MODERN SCHOOL BUILDINGS
SESSION MARCH 2004
SUPERVISOR ASSOC. PROF.S&TI MARIAM AYOP

SIGNATURE

DATE 0^4 ^ 5 - c?4

CERTIFIED BY

<ABSTRACT>

This research is to measure the comfort level at colonial and modern schools in Klang Valley area. Three schools were selected for each type. Colonial schools were represented by Victoria Institution, St. John Institution and Methodist Boys School. For the modern type schools, they are represented by Sekolah Agama Menengah Bestari Jais USJ 5, Sekolah Menengah Kebangsaan USJ 4 and Sekolah Menengah Kebangsaan Seafield. The thermal comfort level measurement is carried out using the Comfy Meter instrument and all the result will be calculated by Comfy Meter software and presented in table and graph forms in NEC laptop computer. Then, all the data are transferred into more compact form as can be seen in Chapter 6.

In achieving the objectives of this study, both internal and external aspect for each school are takerrinto accountTThe comfort level instrument measured internal comfort level (all fans are being switched off) and then the results are analysed with consideration of surrounding area of the schools. The final result showed that the St. John Institution is the best and the most comfort to study followed by Sekolah Agama Menengah Bestari Jais and the-Methodist Boys School is in the last position. St. John Institution has an average of Predicted Mean Vote (PMV) rating 1.2, which is slightly warm that gives Predicted Percentage of Dissatisfied (PPD) 35 percent while Methodist Boys School has an average of PMV rating 2.2, which is warm that gives PPD 81 percent.

<ACKNOWLEDGEMENT>

Ahead of all, I give Almighty Allah the glory, Alhamdulillah.

I would like to take this opportunity to express my sincere thank to Building Surveying Department of Faculty of Architecture, Planning and Surveying for giving me a chance to do this dissertation on the topic that I keenly to explore and study.

Next, I also would like to express my first class gratitude to my supervisor Assoc. Prof. Seti Mariam Binti Ayop for her support and willingness to spend her precious time discussing and improving my research from the beginning. Her handouts and other important data were helping me to fulfil this research.

My deepest gratitude also goes to all the individuals and parties that participate in granting permission and encouraging my study. They are:

- i. Dr. Mohd. Sahandri Gani Bin Hj. Hamzah, on behalf of Director of Planning and Educational Research Department, Education Ministry of Malaysia.
- ii. Tuan Hj. Taslim Bin Sarbini, Principal of Victoria Institution, Kuala Lumpur.
- iii. Principal of St. John Institution, Kuala Lumpur.
- iv. Mr. Loo Wan Yong, Principal of Methodist Boys School Kuala Lumpur.

<CONTENTS>

ABSTRACT	i
ACKNOWLEDGEMENT	ii
CONTENTS	iv
LIST OF PHOTOGRAPHS	viii
LIST OF FIGURES	x
LIST OF TABLES	xii
LIST OF APPENDICES	xiv
CHAPTER 1	
1.0 INTRODUCTION	1
1.1 Introduction	1
1.2 Objectives of the Study	3
1.3 Scope of Study	4
1.4 Methodology of Study	4
1.5 Limitation of the Study	7
CHAPTER 2	
2.0 THERMAL COMFORT	8
2.1 Human Body Temperature	11
2.2 Thermal Comfort Conditions	12
2.3 Metabolic Rate	13
2.4 Clo. Value	14
2.5 The Measuring Parameters	15
2.5.1 Air Temperature	16
2.5.2 Mean Radiant Temperature	17
2.5.3 Air Velocity	17
2.5.4 Humidity	19
2.6 The PMV and PPD Scale	20
2.6.1 Predicted Mean Vote	20
2.6.2 Predicted Percentages of Dissatisfied	22
2.7 Local Thermal Discomfort	26
2.8 Draught	27
2.9 Asymmetry of Thermal Radiation	29
2.10 Vertical Air Temperature Difference	31
2.11 Floor Temperature	32