

**CENTRE OF STUDIES BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA**

**THE INFLUENCE OF DWELLING DESIGN ON THE PERFORMANCE
OF INDOOR VENTILATION**

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**“I hereby declare that this academic project is the result of my own
research
except for the quotation and summary which have been acknowledged”**

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ABSTRACT

The factor of hot-humid climate in Malaysia makes the people mostly spent their time inside the building and 65% of their indoor time is in house. The comfortable environment inside dwelling is really needed to achieve comfort level for occupant. A building should be designed to fulfil the comfort level either by using natural ventilation, mechanical ventilation or both of it. This study is to investigate the correlation between building design and the performance of indoor ventilation to achieved good thermal comfort for dwelling in Malaysia. Natural ventilation in dwelling allows the fresh air that can increase the comfortable level. To provide adequate fresh air inside dwelling, types opening used at dwelling can be affected. To achieve the investigation, some equipment is used to easily get accurate data reading. The data reading must directly get from site observation towards chosen types of dwelling types. It was found that the uses of side hung window types can be better option for achieved natural ventilation inside dwelling. But in this modern living, people more preferred to use mechanical ventilation system such as fan or air-conditioning system to achieve comfort inside their dwelling. The factor of low air flow rate enter the house can contribute to increase of temperature level that can trap heat inside house. By this problem, occupants choose to use mechanical ventilation system for reducing temperature. Buildings should be designed to maximize the use of natural ventilation and minimise the use of mechanical ventilation, because the use of natural ventilation is better option to give fresh air inside the building.

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CHAPTER 1

INTRODUCTION

1.1 Study Background

A comparative study of the environment in terms of natural indoor ventilation in modern dwelling design is a study highly significant scientific context of the built environment at present. Malaysian modern dwelling must be designed to be fit for tropical humid weather. According to Abdul Malek (2000), the size of the building openings such as windows and doors is slightly bearable to be in the fresh air and get remove heat from indoor air. Directly, have shows the importance of building design with natural cross ventilation.

The study influence of dwelling design on the performance of indoor ventilation led to the identification of the level of cross ventilation for buildings or dwelling of through field studies and a thorough interviewing the satisfaction by user. According to Thomas R. (1996), comfort is a subject matter and will vary with individuals. Classically, for thermal comfort they include:

- a. air temperature and temperature gradients
- b. radiant temperature
- c. air movement
- d. ambient water vapour pressure
- e. amount of clothing worn by occupants
- f. occupants level activity

Human need a thermal comfort in their living to give a comfort in their daily activities. According to Thomas R.(1996), to be thermally comfortable a person must feel balance, not feel too hot or too cold, or have any part of the body too hot or too cold. The physiological basis for this is that the amount of heat loss, comfortably within the body's control mechanism. Furthermore, there should be no parts of the body having to operate outside the comfortable limits of the control systems.

According to Smith P.F. (2005), air flow in the interior of buildings may be created by using natural ventilation or mechanical ventilation. Addition, natural ventilation is possible due to the fact that warm air is lighter than cold air and