



اَوْنَبُوْ سِيْتِي تِي كُنُو لُو كِي مَارَا  
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**INDOOR THERMAL COMFORT  
IN ACADEMIC BUILDING  
OF MRSM PARIT: TOWARDS  
STUDENT'S SATISFACTION  
AND PERCEIVED PERFORMANCE**

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## ABSTRACT

Thermal comfort in a classroom is crucial and significantly important in a students' life as it may affect the learning process as well as the academic achievement. Students spend most of their time at school and in class. Therefore, the thermal comfort in the classroom must be considered carefully because of the high negative influence that an unsatisfactorily thermal environment may have on learning and students' performance. This study aims to evaluate indoor thermal comfort in the academic building of MRSM Parit towards student's satisfaction and perceived performance. Hence, the first objective of the study is to measure the thermal comfort performance of the classroom. This was achieved through fieldwork measurement in three classes for three weeks where four parameters of thermal comfort were measured during lesson hours. The second objective is to identify students' satisfaction and students' perceived performance towards the indoor thermal comfort of their classroom. This objective was achieved through survey measurement which is distribution of questionnaires. A five-point Likert scale questionnaire was distributed using Google Form, that act as a data collection tool since the distribution and filling out was conducted online. 289 students, age between 14 to 17 years old completed the survey. Data from each method was analysed, tabulated, and graphed by using SPSS Statistic Version 26.0 and Microsoft Excel. The results of field measurement show that indoor air temperature does not adhere to the range recommended by MS1525 2019 whereas the other three parameters (air velocity, relative humidity, and mean radiant temperature) fall within the advised range. The survey measurement findings indicate there is a strong relationship between thermal comfort parameters with student's satisfaction but a weak relationship with student's perceived performance. The analysis also indicates that there is a weak relationship between the students' satisfaction and students' perceived performance. The analysis of data from two methods used in this study was then used to accomplish the third objective which is to provide the solution to enhance thermal comfort in the academic building of MRSM Parit. This research provides robust evidence that there is need a for thermal comfort studies for students of different ages and different stages of their education. Finally, this research will contribute to knowledge of thermal comfort specifically focusing on young occupants in the educational buildings.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Research Background

Sustainability is an emerging megatrend, and it has become a popular term and gained a great deal of attention (Lubin et al., 2010). The term sustainability has become so popular and become a catchphrase in so many areas. Wood (2006) even stated that we are ‘saturated’ with sustainability. Even with the ubiquitous and popularity, researchers and academicians still could not give an exact definition of sustainability (Wood, 2006; Thiele, 2016; Kuunifaa, 2021) . Hence, there is a distinct field in sustainability and it remain open to various interpretation and understanding (Purvis, Mao, & Robinson, 2019).

Brundtland Report of 1987 defines sustainability as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Since the Brundtland Report mentions future generation needs, sustainability can also relate to equity with other generation which means that individuals cannot just focus on themselves but to be concerned about upcoming generation needs too (Dresner, 2002). Kuhlman and Farrington (2010) stated that sustainability is about protecting the environment not for its own sake, but to ensure that resources are available for our generation.

Thiele (2016) and Dresner (2002) mention that in the era of global warming, climate change and depletion of resources, sustainability is a strategy of ‘saving the planet’ and ‘rescuing human civilization’. In other words, sustainability is the saviour to face the issue of the deteriorated environment. According to Boyer et al. (2016), in the last three decades, sustainability has spread and varied to the point that it now forms the foundation of plans and policy papers at all scales and sectors.

Researchers suggested that sustainability employed three conception pillars which are the social , economic and environmental ( Boyer et al., 2016; Arushanyan, Ekener, & Moberg, 2017; Purvis et al., 2019). The relationship of the three pillars with sustainability can be graphically shown by intersection circle as in the Venn diagram (Figure 1.1). The three overlapping circles represent the foundation of sustainability