

**UNIVERSITI TEKNOLOGI MARA**

**EVALUATION OF  
ANTHROPOMETRIC DATA  
OF  
PRIMARY SCHOOL  
CHILDREN IN  
PENINSULAR MALAYSIA  
FOR  
THE DEVELOPMENT OF  
ERGONOMIC  
SCHOOL CHAIR STANDARD**

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**PhD**

**December 2021**

## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


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## ABSTRACT

There is evidence that showed children in Malaysia suffers musculoskeletal disorders at an early age due to many problems, one of which was because mismatches of furniture with body. The objective of this study was to evaluate anthropometric data of Malaysian children in order to propose dimensions for school chair standard that are ergonomic compliant. This quantitative study was done by collecting 2400 school children anthropometrics using equipment such as an anthropometer, stadiometer, and a custom made sitting measurer. After the collection of the data, assessments were done with variables that were considered which consisted of differentiations of anthropometrics among regions, provinces and gender. Alongside, children's growth pattern between gender and grades was also observed to obtain grouping of grades. The results showed differences of anthropometrics between regions and gender. But when comparison was made between provinces of rural and urban, there were no significant differences, and hence there is no need to develop a school chair that is different in sizes between the two provinces. Meanwhile, gender differences showed females have wider buttocks and longer legs which showed a need in proposing a larger chair, following the female size. Growth pattern that was evaluated in the study showed a pattern where groupings can be made using the data obtained, which as a result, two types of chair standards were proposed in order to provide ergonomic school chairs for Malaysian school children. These two chairs were Level 1 chair, for children in grade 1 and 2, meanwhile, Level 2 chair was meant for children in grade 3, 4 and 5. In order to validate the proposed chairs, mismatch equations and prototype alongside with observation and ergonomic checklist analysis was undergone. The findings showed there was a better match of anthropometric to chair dimension with the newly proposed chair measurements. This study would benefit furniture designers and manufacturers as a guideline for producing suitable size of chair for children and most importantly enabling school children to have better health and performance in school.

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