DEVELOPMENT OF AN ANTHROPOMETRIC DATABASE TO DETERMINE SCHOOL FURNITURE DIMENSIONS FOR GRADE SIX STUDENTS

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Degree of Master of Engineering

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Dissertation submitted in partial fulfillment of the requirements for the degree Master of Engineering in Manufacturing Systems Engineering

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DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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ABSTRACT

Anthropometry of school children is essential for decide the dimensions of furniture. However, no students' anthropometric studies have been carried out in Sri Lanka after 1979. Thus Sri Lanka depends on anthropometric measurements of other populations when designing furniture and other components. The deviations from the expected data and the available data of anthropometry may lead to errors in making decisions for selecting suitable furniture, equipment, and other components and importing them as well. Use of such incorrect items may result in long term health effects. Therefore Sri Lanka needs to establish anthropometric data for school children. The aim of this dissertation was thus to study anthropometric measurements required to determine the dimensions of school furniture for grade six based on a study in the Sabaragamuwa province of Sri Lanka.

The research was carried out using 508 students. The results obtained from the data analysis were used to compare existing furniture dimensions available in the selected schools and standard furniture sizes specified in Indian standard IS 4837:1990 for school furniture dimensioning. A set of recommended desk and chair sizes of grade six students based on the anthropometric data taken from the students in Sabaragamuwa province have been proposed at the end of the report.

However, a comprehensive island wide anthropometric survey is recommended covering all districts, including student categories from grade 1 to grade 12 and revisit the existing furniture dimensions because no detailed study has been performed after 1979 in Sri Lanka and also students' anthropometry may have changed with the change of standard of living, food habits, intra-individual, inter-individual, and secular variation of measurements during the past 40 years.

Key words: Anthropometry, school furniture, sitting posture

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LIST OF ABBREVIATION

Abbreviation	Description
SHH	Shoulder height sitting
EHS	Elbow height sitting
TT	Thigh thickness
BPL	Buttock-Popliteal length
PH	Popliteal height
SUH	Subscapular height
HW	Hip width
S	Stature
BKD	Buttock-Knee Depth
SH	Sitting Height
EFTL	Elbow Fingertip Length
KH	Knee height
EB	Elbow to Elbow Breadth
EH	Eye Height
SH	Seat height
SD	Seat depth
UEB	Upper edge of backrest
SDC	Seat to desk clearance
DH	Desk height
UNESCO	United Nations Educational, Scientific and Cultural Organization
ISO	International Standards for Organization
BSI	British Standards Institution
BS	British Standards
SQRT	Square Route
ISI	Indian Standards Institution

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