Mass and Density of Materials: Built Environment Students’ Knowledge and Perceptions

Introduction

The construction industry in South Africa and worldwide generates a disproportionate number of fatalities, injuries and is associated with disease, the direct and indirect cost of which contributes to the cumulative cost of construction. Furthermore, many injuries are musculoskeletal related in the form of sprains and strains arising from the handling of materials, which process is managed by construction managers.

Method

The purpose of the paper is to present the results of a study conducted among honours (fourth year) level built environment students in two South African universities, the objectives being to determine their knowledge and perceptions relative to the mass and density of materials and construction ergonomics.

The study was conducted using a self-administered questionnaire at the inception of a lecture, which effectively constituted a captive convenience sample, and which precluded access to the internet. Descriptive statistics in the form of frequencies and a mean score, a measure of central tendency, were computed to enable interpretation of the empirical findings.

Results

The following constitute the salient findings: knowledge relative to the mass and density of materials is limited; to a degree, students appreciate that the mass and density of materials impacts on construction ergonomics; students rate their knowledge of the mass and density of materials as limited as opposed to extensive, and students appreciate the potential of the consideration of the mass and density of materials to contribute to an improvement in construction ergonomics.

Discussion

The paper concludes that students lack knowledge and awareness relative to the mass and density of materials; students are precluded from conducting optimum design hazard identification and risk assessments, and built environment education must be reviewed in terms of addressing / referring to construction health and safety, and ergonomics in other subjects.

Recommendations include that: tertiary built environment education address / refer to construction health and safety and ergonomics; professional associations raise the level of awareness relative to construction ergonomics, and design practices should include a category mass and density of materials in their practice libraries.

Keywords: construction, ergonomics, mass, materials