Transformation of Technology Education in Africa: The Development of New Ergonomic-Based Curriculum

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ABSTRACT

The purpose of this study was to examine the transformation of technology education in Africa in terms of the development of new ergonomic-based curriculum. Case study design was used in this study where selected Nigerian universities were involved. The theoretical framework in this study was based on several theories and models namely Maslow's needs theory, Billett's situational learning theory, Fullan's curriculum change theory and Wilson's mental model. The main variables in this study were: (a) awareness of ergonomics, (b) needs of ergonomics, (c) perception for the introduction of ergonomics, and (d) the constructs for ergonomics-based technology education curriculum. There were two phases in this study – phase one was the needs analysis and phase two was the modified Delphi technique. Participants in this case study were 119 lecturers of technology education from four selected Nigerian universities. Data were collected using a set of questionnaires, open-ended questions and interview protocol. Descriptive statistics such as frequency, percentage, means and standard deviation were used to describe the empirical data. The main result of the first phase of the study revealed that the respondents concurred that a new ergonomics-based curriculum was needed. In fact, the majority of the lecturers perceived the incorporation of ergonomics into technology education of the Nigerian universities was timely. Several factors were identified as the reasons for the needs of ergonomics-based technology education by lectures such as the incorporation of ergonomics would enhance employment opportunity for the graduates, broaden technology educators' knowledge and to produce competent graduates. It has been confirmed that ergonomics-based education technology would improve design skills, creativity, thinking skills as well as workplace safety awareness. In the second phase, the results of Delphi interview with 11 experts found that, in the final found (third-round), the experts achieved a final consensus on 18 topics, 42 sub-topics and 4 objectives. The elements listed in the final round were unanimously accepted based on 90% experts' agreement, and the mean of 4.18 and above, and the IQR $\leq$ 1. Thus, based on the empirical data, a new curriculum of ergonomics-based technology education for Nigerian universities was proposed.

Keywords: Needs analysis, curriculum development, ergonomics-based technology education, Africa, Nigeria