Design and Development of a Range of Nursery Furniture

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Abstract:

Furniture is one of the important physical facilities provided in classrooms where the children spend most of their time working with different learning activities. Poorly designed furniture in school fails to accommodate anthropometric characteristic and has a negative influence on child's health. Musculoskeletal stress resulting from efforts to maintain stability and comfort of seating may make for a fidgety individual, a condition not conducive to focused learning. Good designed furniture should facilitate perfect match with the individual body dimensions which would help to reduce, eventually eliminate stress during learning period in preschoolers. To focus on this issue the present study is conducted with an objective to identify the gap in the existing nursery classroom furniture design and to eliminate those gaps through design, by considering usability, functionality and aesthetics for comfort, safety and a fun learning experience.

To carry out the objective, Gemba study was conducted followed by product benchmarking to observe how the user is interacting with the product at site, capture customer needs and to target current features, technology and trend in the product. Customer voices were translated into technical specifications through QFD for design analysis and to arrive at expected product design specifications for concept generation. Form exploration of concept was generated from image boards to arrive at four concepts. One final concept was selected for rendering and detailing in CATIA using concept scoring matrix. Principles and guidelines on design for manufacturing and assembly and design for safety were considered in selecting material, manufacturing and in assembly process.

The information that emerged out of the study revealed that the furniture provided in nursery school did not match with body dimensions of the users. Thus it was essential to make classroom furniture user friendly, designing each component of the furniture by considering the body dimensions of user carefully and meet to their style and taste. A full scale prototype was built for validation and the results were positive.

Concept 1 **Concept 2** **Concept 3** **Concept 4**

Various concepts of nursery furniture

Final rendered concept **Full scale model**