

Sustainable School Furniture Manufacturing: A Case of a Basic Workshop Innovation in Zimbabwe

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Abstract

Designing and developing furniture and equipment in educational institutions is essential for creating optimal learning environments that meet students' ergonomic, functional, and educational needs. Implementing import substitution industrialization in schools, universities, colleges, growth points, and resettlement areas can revitalize Zimbabwe's economy, aiding its transition to a middle-income status. This can be achieved by establishing mechanical workshops in these areas to produce basic school furniture. Collaborations between these workshops and educational institutions can lead to cost-effective production, reducing reliance on imports from major cities and towns. Such partnerships also promote innovation and business incubation through knowledge and technology exchange, supporting the implementation of Education 5.0 across all centers, colleges, and universities. This study employs a participatory approach, involving students and staff in workshops to design and develop innovative, sustainable furniture. The experimental methodology includes collaborative brainstorming sessions, prototyping, and feedback loops conducted within an educational setting to assess the practicality and functionality of various designs. The participatory workshop approach serves as a model for future initiatives in educational product design and manufacturing. Import substitution industrialization, particularly at universities, colleges, growth points, and resettlement areas, offers a promising pathway to elevate Zimbabwe's economic status. By establishing mechanical workshops and fostering collaborations between startups and educational institutions, local manufacturing of essential goods like school furniture can be stimulated. This approach not only reduces reliance on imports but also promotes innovation, technology transfer, and the adoption of industry 5.0 principles, ultimately contributing to a more self-sufficient and prosperous Zimbabwe.