An Opportunity to Develop a Montessori Classroom Manipulative for Teaching Mechanical Concepts

Abstract

This Request for Proposal presents an opportunity to develop a Montessori manipulation-based classroom teaching tool for students in grade one to three to model one or more mechanical scientific concepts at the Blaisdale Montessori Village Campus in Ajax, Ontario.

The Montessori educational philosophy promotes students’ independence and responsibility on their own distinct learning path, incorporating unique, carefully engineered tools which communicate important educational concepts. Though Blaisdale teachers provide students with math, language and ecology tools, a design opportunity exists to develop materials that both integrate community values and build students’ understanding of physical and mechanical principles. This includes, but is not limited to, dynamics, structural stability, motion, and simple machines.

Responding design teams are required to develop designs that effectively communicate age-appropriate educational topics and permit students to tangibly assemble, disassemble, and reassemble components in multiple different ways. The tool should encourage creativity and the active exploration of mechanical concepts. Designers must consider aspects of usability, durability, and industry and commercial standards for toy safety.

Existing designs, such as LEGO products, KiwiCo STEM crates, and Meccano Erector sets, all fail to fully satisfy community expectations, most frequently failing to implement Montessori’s preference of durable, natural materials like wood as well as not providing enough meaningful opportunity for students to creatively reassemble designs.

Resultantly, designers have the unique and impactful opportunity to generate proposals for designs that let students explore these mechanical principles in truly interactive, engaging, safe, and usable ways that follow the Montessori philosophy.