

W11: EDD Element C3.0: Customer Design Requirements

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Project Name/Topic : Open STEM Project
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Problem Statement: How do we make toys more inclusive and encourage parental engagement?

- Analyze the data gathered from your survey. What feedback do the customers provide?
- Provide at least five requirements that are specific, data-driven, measurable, and to the point.
- You may have more than **FIVE** customer requirements.
- Prioritize in Order of Importance

Data Analysis -Voice of Customer

What feedback do the customers provide?

Our October 2025 survey and expert interviews revealed:

- 60.8% of participants stated STEM toys are highly important for child development
- 61.1% of participants believe toys are NOT marketed equally toward boys and girls (validates our core problem)
- 44.2% of participants identified affordability as a top priority
- 83.6% of participants had building sets as children (shows familiarity with construction toys)
- Expert consultations emphasized that parents play the largest role in how kids use STEM toys
- Customers expressed frustration with existing products that prioritize aesthetics over authentic educational content
- Consumer reviews highlighted issues with fragile components, unclear instructions, and limited replay value

Minimum of FIVE Requirements:

Order of Importance	Requirements Voice of Customer	Justification or explanation for each requirement.
1	The product must be affordably priced between \$30-50	44.2% of our survey respondents prioritized affordability as a top concern. Our market analysis revealed current offerings create artificial price barriers—budget sets around \$13-23 lack educational depth, while premium kits at \$100-150 exclude many families. Our target price point delivers genuine educational value while remaining accessible to the majority of potential customers. This directly addresses the equity gap the team identified in Element A.
2	The product must include structured co-play guidance materials	Both expert interviews (Dr. Grace Paradis and Dr. Nancy Dayne) consistently emphasized that parental guidance is the primary driver of sustained engagement with STEM toys. While 60.8% of respondents value STEM toys, existing products fail to scaffold guardian participation. The team's research shows customers want toys that enable meaningful parent-child interaction, not just isolated child play. Providing accessible co-play frameworks removes expertise barriers and extends learning value.
3	The product must use gender-neutral, mechanics-first design language and avoid stereotyped themes or 'pink marketing	61.1% of our survey respondents confirmed toys are not marketed equally toward boys and girls, directly validating our problem statement. Expert feedback emphasized that neutral or mixed-color packaging is recommended to avoid reinforcing stereotypes. Our research (including the Coyle & Liben study) demonstrates that gendered packaging influences both parent purchasing decisions and child engagement patterns. Neutral design ensures universal appeal and breaks down identity barriers in STEM.
4	The product must feature durable,	Consumer reviews of existing products (Sillibird Solar Robot, Lucky Doug Metal

	high-quality construction with replaceable components designed for extended play cycles	Kit) consistently cited fragility and short lifespan as major disappointments. Customers want long-term value that justifies their investment, which directly connects to the 44.2% who prioritize affordability. Parents need assurance the toy won't break after weeks of use. The team's cost-effectiveness criterion requires durable materials that provide sustained value, not disposable plastics.
5	The product must enable multiple build configurations and progressive challenge pathways	83.6% of respondents had building sets as children, indicating strong familiarity with modular construction play. However, our product analysis revealed existing toys limit creativity through single-use scenarios (like the Goldieblox Spinning Machine's low creativity). Customers want versatility that supports both independent exploration and guided learning. Expert feedback emphasized authentic inquiry requires repeatable experiments and progressive complexity. Multiple configurations prevent the "build once, done" problem while accommodating diverse skill levels.