DRAFT ALTERNATE CONTENT EXPECTATIONS FOR ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE – MIDDLE SCHOOL (GRADES 6-8)

Topic Bundle: Engineering Design

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	**Medium Range**	**Low Range**
Michigan K-12 Science Content Standards: MS-ETS1-1 **MS-ETS1-1.** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.			
MS-ETS1-1: Determine a simple solution to a design problem that reflects a need or want.	MS-ETS1-H.1: Determine a simple solution to a design problem that reflects a need or want.	MS-ETS1-M.1: Identify appropriate materials for a given solution to a design problem.	MS-ETS1-L.1: Participate in activities that demonstrate finding a solution to a simple design problem (in order) to identify one action/material.

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Michigan K-12 Science Content Standards: MS-ETS1-2 **MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.			
MS-ETS1-2: Given a simple problem generate and/or compare possible solutions to the problem based on how well each solution is likely to meet the specified desired results.	MS-ETS1-H.2: Given a simple problem generate and/or compare possible solutions to the problem based on how well each solution is likely to meet specified desired results.	MS-ETS1-M.2: Given a simple problem, compare multiple solutions to identify the solution that meets specified desired results	MS-ETS1-L.2: Participate in testing and comparing two solutions to a simple problem to identify the solution that best meets specified desired results.

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Michigan K-12 Science Content Standards: MS-ETS1-3. **MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.**			
MS-ETS1-3: Use Data to inform changes needed to a given design to improve the design's ability to meet the desired results.	**MS-ETS1-H.3:** Use data to inform changes needed to a given design to improve the design's ability to meet the desired results.	**MS-ETS1-M.3:** Determine whether or not an engineering design product meets the desired results.	**MS-ETS1-L.3:** Identify whether a specific product is working (broken) or not.

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Michigan K-12 Science Content Standard: MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.			
EE.MS-ETS1-4: Compare data of two or more test design models to determine which model would best lead to improved design.	**EE.MS-ETS1-H.4:** Compare data of two or more test design models to determine which model would best lead to improved design.	**EE.MS-ETS1-M.4:** Given two or more modification options, participate in testing to identify the option that shows the best result for a specified criterion.	**EE.MS-ETS1-L.4:** Identify the function of a given tool or object.

DRAFT Alternate Content Expectations for Engineeriing Design – MS Gr 6-8