

**Mount Laurel Township Schools
STEM Curriculum
Grade 5**

Stage 1: Desired Results		
STEM UNIT: 5th Grade	Unit: Time To Invent	
Enduring Understanding(s): <ul style="list-style-type: none"> • Engineers use scientific knowledge, mathematics, and ingenuity to develop solutions for technical and practical problems. • Using a design process helps engineers/inventors understand a client’s needs and devise appropriate solutions. 	Essential Questions: <ul style="list-style-type: none"> • What is engineering? • Who should be an engineer? • How do you invent things? • What makes a good invention? • Why invent? 	
Students will know...		Students will be able to...
The attributes of design.	8.2.5.C.1	Collaborate with peers to illustrate components of a designed system.
The attributes of design.	8.2.5.C.2	Explain how specifications and limitations can be used to direct a product’s development.
The attributes of design.	8.2.5.C.3	Research how design modifications have lead to new products.
The application of engineering design.	8.2.5.C.4	Elaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
Apply the design process.	8.2.5.D.1	Identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and

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		trade-offs to be considered.
Apply the design process.	8.2.5.D.2	Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process to evaluate potential solutions.
Use and maintain technological products and systems.	8.2.5.D.3	Follow step by step directions to assemble a product or solve a problem.
Use and maintain technological products and systems.	8.2.5.D.4	Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.
Use and maintain technological products and systems.	8.2.5.D.5	Describe how resources such as material, energy, information, time, tools, people and capital are used in products or systems.
Assess the impact of products and systems.	8.2.5.D.7	Explain the impact that resources such as energy and materials used in a process to produce products or system have on the environment.
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	

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3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-5-ETS1-3	Plan and carry out fair test in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Stage 2: Assessment Evidence:

<p>Suggested Performance Task(s):</p> <p>Students will survey their family/community members for real problems that need something designed to create a solution. Students will use The Design Process to solve a local/community problem.</p>	<p>Assess students' ability of each mini-challenge.</p>
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Stage 3: Learning Plan

<p>Learning Activities:</p> <p>Discuss Engineering - Definition, different types, etc., Model The Design Process Mini-Challenges</p> <ul style="list-style-type: none"> • Trophy Tower – Make a strong structure out of straws • Hit the Target – Explore levers by making a ball launcher • Paper Bridge-Paper Chair – Use folds to make 	<ul style="list-style-type: none"> • Buzz Board – Learn about circuits by making a buzzer game • Rapid Response – Solve a bunch of quick invention challenges • Rescue 911 – Invent a tool to rescue a ball from a tube • Pinball Party – Invent a pinball-like game • Newspaper Clothes – Design and make outfits from newspaper • Circuit Board – Invent a game to teach other kids about circuits
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<p>paper stronger</p> <ul style="list-style-type: none">• Green Loungers – Design and build chairs out of cardboard	<ul style="list-style-type: none">• FUN-Raising Games – Invent carnival games, using some wacky equipment
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