Stage 1 – Desired Results	
CCS: 7.G.B.6, RI.7.3, W.7.6 **NGSS:** MS-ETS 1.1, 1.2, 1.3, 1.4 **Technology:** 8.1.8.C.1; 8.1.8.D.1-5; 8.1.8. E.1; 8.1.8.F.1; 8.2.8.A.1-5	**Unit:** Why Inventors Do What They Do
Enduring Understandings: **Students will understand that…** Inventors identify problems and create solutions to those problems. Creativity is a process that can be learned.	**Essential Questions:** Why invent? What is creativity?
Students will know… That brainstorming activities enhance creative and innovative thinking in individual and group goal setting and problem solving. How to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time. How to gather and evaluate knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. That collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency. How to advocate and practice safe, legal, and responsible use of information and technology. How to demonstrate personal responsibility for lifelong learning. Exhibit leadership for digital citizenship. Plan strategies to guide inquiry. Locate, organize, analyze, evaluate, synthesize, and	**Students will be able to…** 8.2.8.A.1 Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs). 8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system. 8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts. 8.2.8.A.4 Redesign an existing product that impacts the environment to lessen its impact(s) on the environment. 8.2.8.A.5 Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system. 8.1.8.C.1 Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries.

ethically use information from a variety of sources and media.	8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.	8.1.8.D.2 Demonstrate the application of appropriate citations to digital content.
Process data and report results.	8.1.8.D.3 Demonstrate an understanding of fair use and Creative Commons to intellectual property
Identify and define authentic problems and significant questions for investigation.	8.1.8.D.4 Assess the credibility and accuracy of digital content.
Plan and manage activities to develop a solution or complete a project.	8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse.
Collect and analyze data to identify solutions and/or make informed decisions.	8.1.8.E.1 Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
Use multiple processes and diverse perspectives to explore alternative solutions.	8.1.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
How to analyze how ideas influence individuals or events, or how individuals influence ideas or events.	7.G.B.6 Use mathematical, physical, and computational tools to build conceptual-based models and to pose theories.
Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.	RI.7.3 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).
Scientific models and understandings of fundamental concepts and principles are refined as new evidence is considered.	W.7.6 Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
Predictions and explanations are revised to account more completely for available evidence.	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.
Core scientific concepts and principles represent the conceptual basis for model building and facilitate the generation of new and productive questions.	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-ETS1-3 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-ETS1-4 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.

Stage 2 – Assessment Evidence

Required Performance Assessment:	Other Evidence:
You are a young inventor looking for information about the invention process. The task is to select a famous inventor and his/her invention and examine his/her process. The challenge involves research and reporting about the problem addressed by the invention, and the steps to the solution the inventor followed to bring his/her invention to the point of patent. You need to develop a visual and oral presentation so that you can show as well as tell your audience about the inventor and invention. Your performance needs to include your thoughts about the merits of the invention and an assessment about its impact on technology, society or industry.	Inventor's Notebook Impromptu Problems Short-Term Problems Quizzes Web Searches and Activities

Stage 3 - Learning Plan

Suggested Learning Activities:
Introduction- Review Weekly

Students will discuss/review Essential Questions/ Enduring Understanding
Students will encounter and explore pertinent vocabulary and create a vocabulary "word wall" section in

their notebooks. (i.e., ergonomic, aesthetic, etc.)

Regular Daily Activity

Creative Problem Solving for a Lifetime: Students will form self-selected teams and engage in impromptu problem solving using a variety of different kinds of tasks and materials: Hands–on, verbal, or verbal hands-on.

Unit Lessons

 1. What is an Inventor? : Students will work in pairs, small groups and whole class to identify the range of inventions and their inventors in their own experiences using web resources chart paper and informal brainstorming techniques. They will create a class "timeline" of inventors and inventions from which they will choose the topic for their Unit 1 performance assessment topics.

2. Introduction to Creative Thinking: Students will be introduced to and practice various forms of impromptu problem solving in pairs, small groups and whole class groupings using

3. Introduction to Inventive Thinking
Note taking: Students will be introduced to the formal Design Process
    They will learn how to:
    - **Identify** a problem
    - Explore, and practice the **brainstorming** process with specific tasks
    - Identify what is possible to **design** given time, materials and skills
    - **Test**, **evaluate and redesign** to achieve a goal
    - **Share:** practice the skills for giving and receiving constructive criticism as they develop teamwork strategies

4. Students will engage in the steps to build an Inventor's Notebook to track their design process.
    They will learn how to keep track of their thinking and their creative process to document their work

5. Students will do a task analysis of a short-term invention challenge in a whole group, small group, pair, or individual and complete self-assessments.

Performance Assessment

Introduce and complete performance task

Possible Technology Integration for this Unit

- Use of ActivBoard
- Use of Web Resources/Web Searches
- Use of Google Chrome Applications in student presentations and challenge solutions (Presi, Vimeo, etc.)
- PBWorks Wiki
- Video Clips
- PechaKucha, PowerPoint

Unit Strategies/Modifications:

Special Education Students:
Development of target vocabulary
Scaffolding comprehension and content-area reading
Decreasing the amount of work presented or required
Using videos, illustrations, pictures, and drawings to explain or clarify graphic organizers
Teaching key aspects of a topic. Eliminating nonessential information
Providing study guides
Allowing students to correct errors (looking for understanding)
Marking students' correct and acceptable work, not the mistakes
Allowing products (projects, timelines, demonstrations, models, drawings, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
Modifying tests to reflect selected objectives
Using true/false, matching, or fill in the blank tests in lieu of essay tests
Reducing the number of answer choices on a multiple choice test
Allowing the use of note cards or open-book during testing
Utilizing graphic organizers
Providing visuals
Strategic grouping

Gifted Students:
Guided Reading Groups
Literature Circles
Flexible grouping in content areas
Independent projects
Differentiated product assignments
Student Choice
Multiple texts
Multiple intelligence options
Group investigation
Research
Bloom's Taxonomy - Stress higher order thinking skills
Habits of Mind
Webb's Depth of Knowledge – Emphasis on Level 3 and 4

Students at Risk of Failure:
Adjust time for completion of assignments
Allow frequent breaks
Preferential seating
Reduce/minimize distractions
Emphasize teaching (auditory, visual, auditory, tactile)
Individual/small group instruction
Emphasize critical information/key concepts
Pre-teach vocabulary
Provide visual cues
Adjust length of assignment
Break assignments into smaller units
Read directions to student
Positive reinforcement
Frequent checks for understanding
Adapt assessments

English Language Learners:
WIDA Can-Do Descriptors http://www.wida.us/standards/CAN_DOs/
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Graphic organizers
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Modifying tests to reflect selected objectives;
Using true/false, matching, or fill in the blank tests in lieu of essay tests;
Reducing the number of answer choices on a multiple choice test;
Allowing the use of note cards or open-book during testing;
Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student.

Stage 1 – Desired Results

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Enduring Understanding(s): **Students will understand that…** Solutions to problems are the result of the creative design process.	**Essential Questions:** How does creative thinking improve problem solving? How does the design process vary to address different problems?
Students will know… That brainstorming activities enhance creative and innovative thinking in individual and group goal setting and problem solving. How to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time. How to gather and evaluate knowledge and information from a variety of sources, including	**Students will be able to…** 8.2.8.A.1 Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs). 8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.

global perspectives, fosters creativity and innovative thinking.	8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts.
That collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency.	8.2.8.A.4 Redesign an existing product that impacts the environment to lessen its impact(s) on the environment.
How to advocate and practice safe, legal, and responsible use of information and technology.	8.2.8.A.5 Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.
How to demonstrate personal responsibility for lifelong learning.	8.1.8.C.1 Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries.
Exhibit leadership for digital citizenship.	
Plan strategies to guide inquiry.	
Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.	8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.	8.1.8.D.2 Demonstrate the application of appropriate citations to digital content.
Process data and report results.	8.1.8.D.3 Demonstrate an understanding of fair use and Creative Commons to intellectual property
Identify and define authentic problems and significant questions for investigation.	
Plan and manage activities to develop a solution or complete a project.	8.1.8.D.4 Assess the credibility and accuracy of digital content.
Collect and analyze data to identify solutions and/or make informed decisions.	8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse.
Use multiple processes and diverse perspectives to explore alternative solutions.	8.1.8.E.1 Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
How to analyze how ideas influence individuals or events, or how individuals influence ideas or events.	8.1.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.	7.G.B.6 Use mathematical, physical, and computational tools to build conceptual-based models and to pose theories.
Scientific models and understandings of fundamental concepts and principles are refined as new evidence is considered.	RI.7.3 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or
Predictions and explanations are revised to account more completely for available evidence.	

Core scientific concepts and principles represent the conceptual basis for model building and facilitate the generation of new and productive questions.	how individuals influence ideas or events). W.7.6 Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources. 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-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. 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-ETS1-4 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.

Stage 2 – Assessment Evidence

Required Performance Assessment:	Other Evidence:
You are working for a "think tank," a research institute employed to solve complex problems. The goal is for your team to choose an invention challenge and create a solution. You have been asked to work as a team to prepare the final presentation. The target audience is your supervisors who will score your presentation. The challenge involves working collaboratively with your team to meet all the criteria in the chosen challenge in a unique and creative manner. You must keep within a time limit. You will create a performance piece in order to present your solution to the invention challenge. Your performance needs to meet the scoring criteria incorporated in the invention challenge and all of the	Inventor's Notebook Impromptu Problems Short-Term Problems Quizzes Web Searches and Activities

individual elements within the challenge will be scored collectively. All members of the team will be assessed individually on your participation and contribution to the final product.	

Stage 3 - Learning Plan

Suggested Learning Activities:

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Students will continue to encounter and explore pertinent vocabulary to add to a vocabulary "word wall" section in their notebooks.

Regular Daily Activity

Creative Problem Solving for a Lifetime: Students will form self-selected teams and engage in impromptu problem solving using a variety of different kinds of tasks and materials: Hands–on, verbal, or verbal hands-on.

Individual Lessons

1. Students will investigate the importance of teamwork through a series of team building short- term challenges, where they will engage in the formation of self-selected teams, identification of individual strengths, collaborative brainstorming, and task sharing.

2. Students will be introduced to a variety of tools and materials that could be used in the implementation of invention challenge solutions, and identify how they would/could be used.

3. Students will practice troubleshooting for a variety of simple tools/processes and develop a troubleshooting chart for the device, machine or process selected. Students will work individually, in pairs or in small groups using web resources.

4. Student teams will select a long-term invention challenge from a selection of challenges (mechanical, structure, vehicle, etc.) designate roles and begin to develop a solution based on the criteria, using the Design Process.

Performance Assessment

Introduce and complete performance task

Possible Technology Integration for this Unit

- Use of ActivBoard
- Use of Web Resources/Web Searches
- Use of Google Chrome Applications in student presentations and challenge solutions (Prezi, Vimeo, etc.)
- Video Clips
- PechaKucha, PowerPoint

Unit Strategies/Modifications:

Special Education Students:
Development of target vocabulary
Scaffolding comprehension and content-area reading
Decreasing the amount of work presented or required
Using videos, illustrations, pictures, and drawings to explain or clarify graphic organizers
Teaching key aspects of a topic. Eliminating nonessential information
Providing study guides
Allowing students to correct errors (looking for understanding)
Marking students' correct and acceptable work, not the mistakes
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Reducing the number of answer choices on a multiple choice test
Allowing the use of note cards or open-book during testing
Utilizing graphic organizers
Providing visuals
Strategic grouping

Gifted Students:
Guided Reading Groups
Literature Circles
Flexible grouping in content areas
Independent projects
Differentiated product assignments
Student Choice
Multiple texts
Multiple intelligence options
Group investigation
Research
Bloom's Taxonomy - Stress higher order thinking skills
Habits of Mind
Webb's Depth of Knowledge – Emphasis on Level 3 and 4

Students at Risk of Failure:
Adjust time for completion of assignments
Allow frequent breaks
Preferential seating
Reduce/minimize distractions
Emphasize teaching (auditory, visual, auditory, tactile)
Individual/small group instruction
Emphasize critical information/key concepts
Pre-teach vocabulary
Provide visual cues
Adjust length of assignment
Break assignments into smaller units
Read directions to student

Positive reinforcement
Frequent checks for understanding
Adapt assessments

English Language Learners:
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Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student

Stage 1 – Desired Results

CCS: 7.G.B.6, RI.7.3, W.7.6 **NGSS:** MS-ETS 1.1, 1.2, 1.3, 1.4 **Technology:** 8.1.8.C.1; 8.1.8.D.1-5; 8.1.8. E.1; 8.1.8.F.1; 8.2.8.A.1-5	**Unit 3: Developing an Innovative Idea & The Patent Process**
Enduring Understanding(s): **Students will understand that…** The invention process requires an organized approach.	**Essential Questions:** What is the patent process? What is Universal Design? How do innovators get their ideas out there?
Students will know… That brainstorming activities enhance creative and innovative thinking in individual and group goal setting and problem solving. How to recognize a problem and apply critical	**Students will be able to…** 8.2.8.A.1 Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs).

thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time.	8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.
How to gather and evaluate knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.	8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts.
That collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency.	8.2.8.A.4 Redesign an existing product that impacts the environment to lessen its impact(s) on the environment.
How to advocate and practice safe, legal, and responsible use of information and technology.	8.2.8.A.5 Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.
How to demonstrate personal responsibility for lifelong learning.	
Exhibit leadership for digital citizenship.	8.1.8.C.1 Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries.
Plan strategies to guide inquiry.	
Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.	8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
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Process data and report results.	8.1.8.D.3 Demonstrate an understanding of fair use and Creative Commons to intellectual property
Identify and define authentic problems and significant questions for investigation.	
Plan and manage activities to develop a solution or complete a project.	8.1.8.D.4 Assess the credibility and accuracy of digital content.
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How to analyze how ideas influence individuals or events, or how individuals influence ideas or events.	
Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.	8.1.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
Scientific models and understandings of fundamental	7.G.B.6 Use mathematical, physical, and computational tools to build conceptual-based

concepts and principles are refined as new evidence is considered. Predictions and explanations are revised to account more completely for available evidence. Core scientific concepts and principles represent the conceptual basis for model building and facilitate the generation of new and productive questions.	models and to pose theories. RI.7.3 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events). W.7.6 Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources. 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-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. 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-ETS1-4 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.

Stage 2 – Assessment Evidence

Required Performance Assessment:	Other Evidence:
You are a young inventor who has been selected to redesign an existing product for your employer. Your task is to make an already useful item more aesthetically or ergonomically functional or apply Universal Design for someone with a disability to use. Your audience is the head of the Research and Development Department of your company who is looking for an innovative new way to market an "old standby". You will create an updated version in order to increase sales. You will design and present	Inventor's Notebook Impromptu Problems Short-Term Problems Quizzes Web Searches and Activities

either a prototype or a detailed graphic representation and you will be judged by the "elegance" and functionality of your redesign.

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Regular Daily Activity

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Unit Lessons

1.Students will explore the patent process through web-based patent searches: including utility patents, design patents, and plant patents, and the viewing of examples of existing patents. They will engage in activities individually, in pairs, in small groups and in whole group.

2. Students will discuss and engage in a series of exercises using case studies and examples to explore attitudes and laws about proprietary rights.
       a. Fair Use
       b. Copyright
       c. Citation
       d. Intellectual Property

3. Students will revisit the creative process, brainstorming protocols and the use of the Inventor's Notebook to initiate exploration of different designs and devices to consider for re-imagining.

4. Students will select the commonly used item for the Performance Assessment and set up the Inventor's Notebook.

Performance Assessment

Introduce and complete performance task

Possible Technology Integration for this Unit

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Webb's Depth of Knowledge – Emphasis on Level 3 and 4

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Enduring Understanding(s): **Students will understand that…** Using a design process informs the development of an invention by helping the inventor to make decisions about needs.	**Essential Questions:** What makes a good invention? What criteria do inventors use when deciding on an idea for an invention?
Students know that… That brainstorming activities enhance creative and innovative thinking in individual and group goal setting and problem solving. How to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time. How to gather and evaluate knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. That collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency. How to advocate and practice safe, legal, and responsible use of information and technology. How to demonstrate personal responsibility for lifelong learning. Exhibit leadership for digital citizenship. Plan strategies to guide inquiry. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.	**Students will be able to…** 8.2.8.A.1 Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs). 8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system. 8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts. 8.2.8.A.4 Redesign an existing product that impacts the environment to lessen its impact(s) on the environment. 8.2.8.A.5 Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system. 8.1.8.C.1 Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries.

Evaluate and select information sources and digital tools based on the appropriateness for specific tasks. Process data and report results. Identify and define authentic problems and significant questions for investigation. Plan and manage activities to develop a solution or complete a project. Collect and analyze data to identify solutions and/or make informed decisions. Use multiple processes and diverse perspectives to explore alternative solutions. How to analyze how ideas influence individuals or events, or how individuals influence ideas or events. Results of observation and measurement can be used to build conceptual-based models and to search for core explanations. Scientific models and understandings of fundamental concepts and principles are refined as new evidence is considered. Predictions and explanations are revised to account more completely for available evidence. Core scientific concepts and principles represent the conceptual basis for model building and facilitate the generation of new and productive questions.	8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media. 8.1.8.D.2 Demonstrate the application of appropriate citations to digital content. 8.1.8.D.3 Demonstrate an understanding of fair use and Creative Commons to intellectual property 8.1.8.D.4 Assess the credibility and accuracy of digital content. 8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse. 8.1.8.E.1 Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem. 8.1.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision. 7.G.B.6 Use mathematical, physical, and computational tools to build conceptual-based models and to pose theories. RI.7.3 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events). W.7.6 Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources. 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-ETS1-2 Evaluate competing design solutions using a systematic process to

determine how well they meet the criteria and constraints of the problem.

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-ETS1-4 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.

Stage 2 – Assessment Evidence	
Required Performance Assessment: You are a young inventor who has been asked to design and build a prototype invention based on an observed need. The target audience will be the person or persons who will benefit from your invention and you will identify them in your presentation. The challenge is to identify the need, implement the solution and present it to your peers. You will create a prototype and a multi-media presentation in order to demonstrate your solution to the perceived problem. Your solution will be assessed based on the use of the design process, the creativity of your solution and whether the invention solves the perceived problem.	**Other Evidence:** Inventor's Notebook Impromptu Problems Short-Term Problems Quizzes Web Searches and Activities

Stage 3 - Learning Plan

Suggested Learning Activities:

Introduction- Review Weekly

Students will discuss/review Essential Questions/ Enduring Understanding
Students will continue to encounter and explore pertinent vocabulary to add to a vocabulary "word wall" section in their notebooks.

Regular Daily Activity

Creative Problem Solving for a Lifetime: Students will form self-selected teams and engage in impromptu problem solving using a variety of different kinds of tasks and materials: Hands–on, verbal, or verbal hands-on.

Individual Lessons: The Invention Process

1. Working individually, in pairs or in small groups:
 Students will practice the creative parts of inventive thinking: focusing on fluency, flexibility, originality, and elaboration. Students will develop their invention idea. While using the Design Process, students will brainstorm, research, design, budget, construct, experiment and redesign their own invention.

2. Students will explore the process of branding, naming, and marketing their inventions: creating a commercial presentation for an advertising campaign.

Performance Assessment

Introduce and complete performance task

Possible Technology Integration for this Unit
- Use of ActivBoard
- Use of Web Resources/Web Searches
- Use of Google Chrome applications in student presentations and challenge solutions (Presi, Vimeo, etc
- Video clips/film clips
- PechaKucha, PowerPoint

Unit Strategies/Modifications:

Special Education Students:
Development of target vocabulary
Scaffolding comprehension and content-area reading
Decreasing the amount of work presented or required
Using videos, illustrations, pictures, and drawings to explain or clarify graphic organizers
Teaching key aspects of a topic. Eliminating nonessential information
Providing study guides
Allowing students to correct errors (looking for understanding)
Marking students' correct and acceptable work, not the mistakes
Allowing products (projects, timelines, demonstrations, models, drawings, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
Modifying tests to reflect selected objectives
Using true/false, matching, or fill in the blank tests in lieu of essay tests
Reducing the number of answer choices on a multiple choice test
Allowing the use of note cards or open-book during testing
Utilizing graphic organizers
Providing visuals
Strategic grouping

Gifted Students:

Guided Reading Groups
Literature Circles
Flexible grouping in content areas
Independent projects
Differentiated product assignments
Student Choice
Multiple texts
Multiple intelligence options
Group investigation
Research
Bloom's Taxonomy - Stress higher order thinking skills
Habits of Mind
Webb's Depth of Knowledge – Emphasis on Level 3 and 4

Students at Risk of Failure:
Adjust time for completion of assignments
Allow frequent breaks
Preferential seating
Reduce/minimize distractions
Emphasize teaching (auditory, visual, auditory, tactile)
Individual/small group instruction
Emphasize critical information/key concepts
Pre-teach vocabulary
Provide visual cues
Adjust length of assignment
Break assignments into smaller units
Read directions to student
Positive reinforcement
Frequent checks for understanding
Adapt assessments

English Language Learners:
WIDA Can-Do Descriptors http://www.wida.us/standards/CAN_DOs/
Development of target vocabulary
Scaffolding comprehension, content-area reading
Decreasing the amount of work presented or required;
Using videos, illustrations, pictures, and drawings to explain or clarify.
Graphic organizers
Teaching key aspects of a topic.
Eliminating nonessential information.
Allowing students to correct errors (looking for understanding);
Marking students' correct and acceptable work, not the mistakes;
Showing products (projects, timelines, demonstrations, models, drawings, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
Modifying tests to reflect selected objectives;
Using true/false, matching, or fill in the blank tests in lieu of essay tests;
Reducing the number of answer choices on a multiple choice test;
Allowing the use of note cards or open-book during testing;
Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student.