STEM MAKER LAB® STANDARDS

Grade K-2 (Engineering Design)

- ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

- 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.

Grade 1 (From Molecules to Organisms: Structures and Processes)

- LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

Grade 2 (Biological Evolution: Unity and Diversity)

- LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

Grade 4 (From Molecules to Organisms: Structures and Processes)

- LS1-1. Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

ELA & LITERACY STANDARDS

Grade K (Speaking and Listening)

- K.SL.1 Comprehension and Collaboration: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- K.SL.1. a Comprehension and Collaboration: Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
- K.SL.1. b Comprehension and Collaboration: Continue a conversation through multiple exchanges.
- K.SL.5 Presentation of Knowledge and Ideas: Add drawings or other visual displays to descriptions as desired to provide additional detail.

Grade 1 (Speaking and Listening)

- 1.SL.1 Comprehension and Collaboration: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
- 1.SL.1.a Comprehension and Collaboration: Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
- 1.SL.1.b Comprehension and Collaboration: Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
- 1.SL.5 Presentation of Knowledge and Ideas: Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

Grade 2 (Speaking and Listening)

- 2.SL.1 Comprehension and Collaboration: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
- 2.SL.1.a Comprehension and Collaboration: Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
- 2.SL.1.b Comprehension and Collaboration: Build on others' talk in conversations by linking their comments to the remarks of others.
- 2.SL.2 Comprehension and Collaboration: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3 (Speaking and Listening)

- 3.SL.1 Comprehension and Collaboration: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
- 3.SL.1.c Comprehension and Collaboration: Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
- 3.SL.1.d Comprehension and Collaboration: Explain their own ideas and understanding in light of the discussion.

- 3.SL.2 Comprehension and Collaboration: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4 (Speaking and Listening)

- 4.SL.1 Comprehension and Collaboration: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

- 4.SL.1.c Comprehension and Collaboration: Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.

- 4.SL.1.d Comprehension and Collaboration: Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

Grade 5 (Speaking and Listening)

- 5.SL.1 Comprehension and Collaboration: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

- 5.SL.1.c Comprehension and Collaboration: Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.

- 5.SL.1.d Comprehension and Collaboration: Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

- 5.SL.2 Comprehension and Collaboration: Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade K (Writing)

- K.W.2 Text Types and Purposes: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

Grade 4 (Writing)

- 4.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

Grade K (Reading Informational Text)

- K.R.I.1 Key Ideas and Details: With prompting and support, ask and answer questions about key details in a text.

- K.R.I.7 Integration of Knowledge and Ideas: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

Grade 1 (Reading Informational Text)

- 1.R.I.1 Key Ideas and Details: Ask and answer questions about key details in a text

- 1.R.I.5 Craft and Structure: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

- 1.R.I.6 Craft and Structure: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

- 1.R.I.7 Integration of Knowledge and Ideas: Use the illustrations and details in a text to describe its key ideas.

Grade 2 (Reading Informational Text)

- 2.R.I.5 Craft and Structure: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

- 2.R.I.7 Integration of Knowledge and Ideas: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Grade 3 (Reading Informational Text)

- 3.R.I.7 Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a

text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Grade 4 (Reading Informational Text)

- 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Grade 5 (Reading Informational Text)

- 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Create Activities ✂

OBJECTIVES

- Teams invent a type of Wearable Gear—the ideal climbing shoe or the ultimate spy gear.

- Teams create the ultimate trapping contraption or a gadget to clean a room.

- Teams create one of the Living Spaces— the ultimate nest for a fantasy bird or a personalized space station.

- Teams create one of the Hi-Tech Machines— the ultimate stay dry machine or the ultimate party machine.

- Teams look to the future to create one of the Playful Designs—a jungle gym inspired by plants and animals, or a morphing toy.

KEY CONCEPTS

Science Cross-Cutting Concepts

Children will:

- Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.

- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

- Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

- Analyze data obtained by testing different materials to determine which materials have the properties that are best suited for an intended purpose.

- Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

ELA & Literacy Concepts

Children will:

- Summarize main or key ideas from a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

- Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

- Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages), and explain how the information contributes to an understanding of the text in which it appears.

NEXT GENERATION SCIENCE STANDARDS

Grade K-2 (Engineering Design)

- ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Grade 3-5 (Engineering Design)

- 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.
- ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Grade 1 (From Molecules to Organisms: Structures and Processes)

- LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

Grade 2 (Matter and its Interactions)

- PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

Grade 4 (Physical Science)

- LS1-1 PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

ELA & LITERACY STANDARDS

Grade 2 (Speaking and Listening)

- 2.SL.2 Comprehension and Collaboration: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3 (Speaking and Listening)

- 3.SL.2 Comprehension and Collaboration: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 5 (Speaking and Listening)

- 5.SL.2 Comprehension and Collaboration: Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4 (Writing)

- 4.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

Grade K (Reading Informational Text)

- K.R.I.1 Key Ideas and Details: With prompting and support, ask and answer questions about key details in a text.
- K.R.I.7 Integration of Knowledge and Ideas: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

Grade 1 (Reading Informational Text)

- 1.R.I.1 Key Ideas and Details: Ask and answer questions about key details in a text

- 1.R.I.5 Craft and Structure: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

- 1.R.I.6 Craft and Structure: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

- 1.R.I.7 Integration of Knowledge and Ideas: Use the illustrations and details in a text to describe its key ideas.

Grade 2 (Reading Informational Text)

- 2.R.I.5 Craft and Structure: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

- 2.R.I.7 Integration of Knowledge and Ideas: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Grade 3 (Reading Informational Text)

- 3.R.I.7 Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Grade 4 (Reading Informational Text)

- 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Grade 5 (Reading Informational Text)

- 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Intellectual Property Activities 🏭

OBJECTIVES

- Children explore the importance of Trademarks.

- Children find out how to protect their inventions with a utility patent.

- Participants draw their designs after hearing about how a design patent is another form of

protection for inventors.

- Children investigate another form of Intellectual Property Protection—copyrights.

- Children use triangles to build super-strong structures and hear about how Intellectual Property Triangulation protects inventions.

KEY CONCEPTS

ELA & Literacy Concepts

Children will:

- Determine the main or key ideas and supporting details of a text read aloud or information presented in diverse media and formats.

- Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

- Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate

key facts or information in a text efficiently.

- Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

- Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages), and explain how the information contributes to an understanding of the text in which it appears.

- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

ELA & LITERACY STANDARDS

Grade 2 (Speaking and Listening)

- 2.SL.2 Comprehension and Collaboration: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3 (Speaking and Listening)

- 3.SL.2 Comprehension and Collaboration: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 5 (Speaking and Listening)

- 5.SL.2 Comprehension and Collaboration: Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4 (Writing)

- 4.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

Grade K (Reading Informational Text)

- K.R.I.1 Key Ideas and Details: With prompting and support, ask and answer questions about key details in a text.

- K.R.I.7 Integration of Knowledge and Ideas: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

Grade 1 (Reading Informational Text)

- 1.R.I.1 Key Ideas and Details: Ask and answer questions about key details in a text.

- 1.R.I.5 Craft and Structure: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

- 1.R.I.6 Craft and Structure: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

- 1.R.I.7 Integration of Knowledge and Ideas: Use the illustrations and details in a text to describe its key ideas.

Grade 2 (Reading Informational Text)

- 2.R.I.5 Craft and Structure: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

- 2.R.I.7 Integration of Knowledge and Ideas: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Grade 3 (Reading Informational Text)

- 3.R.I.7 Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Grade 4 (Reading Informational Text)

- 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Grade 5 (Reading Informational Text)

- 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Tech Tools Activities ⚙

OBJECTIVES

- Teams build a 3D model of their invention and hear about the inventor of 3D printing technology (Stereolithography)–National Inventors Hall of Fame Inductee Chuck Hull.

- Participants get to know National Inventors Hall of Fame Inductee Kristina Johnson and her invention of 3D Imaging technology used in 3D movies.

- Teams explore the Electret Microphone invented by National Inventors Hall of Fame Inductee Jim West.

- Participants explore the topic of "making," as well as the technology behind the Digital Camera invented by National Inventors Hall of Fame Inductee Steve Sasson.

- Participants explore the Microprocessor, invented by a team of National Inventors Hall of Fame Inductees, including Federico Faggin (coinventor of the Microprocessor).

KEY CONCEPTS

Science Cross-Cutting Concepts

Children will:

- Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.

- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

- Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

- Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

ELA & Literacy Concepts

Children will:

- Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

- Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages), and explain how the information contributes to an understanding of the text in which it appears.

- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

- Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

Technology Concepts

Children will:

- Leverage technology to take an active role in choosing, achieving, and demonstrating competency in learning goals, informed by the learning sciences.
- Recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and ensure that they act and model in ways that are safe, legal, and ethical.
- Critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.
- Use a variety of technologies within a design process to identify and solve problems by creating new, useful, or imaginative solutions.
- Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats, and digital media appropriate to their goals.

NEXT GENERATION SCIENCE STANDARDS

Grade K-2 (Engineering Design)

- ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Grade 3-5 (Engineering Design)

- ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Grade 1 (From Molecules to Organisms: Structures and Processes)

- LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

Grade 2 (Matter and its Interactions)

- PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

ELA & LITERACY STANDARDS

Grade 2 (Speaking and Listening)

- 2.SL.2 Comprehension and Collaboration: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3 (Speaking and Listening)

- 3.SL.2 Comprehension and Collaboration: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 5 (Speaking and Listening)

- 5.SL.2 Comprehension and Collaboration: Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4 (Writing)

- 4.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

Grade K (Reading Informational Text)

- K.R.I.1 Key Ideas and Details: With prompting and support, ask and answer questions about key details in a text.
- K.R.I.7 Integration of Knowledge and Ideas: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person,

place, thing, or idea in the text an illustration depicts).

Grade 1 (Reading Informational Text)

- 1.R.I.1 Key Ideas and Details: Ask and answer questions about key details in a text.
- 1.R.I.5 Craft and Structure: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.
- 1.R.I.6 Craft and Structure: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
- 1.R.I.7 Integration of Knowledge and Ideas: Use the illustrations and details in a text to describe its key ideas.

Grade 2 (Reading Informational Text)

- 2.R.I.5 Craft and Structure: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
- 2.R.I.7 Integration of Knowledge and Ideas: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Grade 3 (Reading Informational Text)

- 3.R.I.7 Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Grade 4 (Reading Informational Text)

- 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Grade 5 (Reading Informational Text)

- 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

ISTE® STANDARDS (INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION)

1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

   - 1a. articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
   - 1c. use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
   - 1d. understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current

   technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

   - 2c. demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

3. Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and

others.

- 3c. curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.
- 3d. build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

- 4 a. know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
- 4 b. select and use digital tools to plan and manage a design process that considers design constraints and

calculated risks.

- 4c. develop, test and refine prototypes as part of a cyclical design process.
- 4d. exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

6. Creative Communicator - Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

- 6a. choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
- 6b. create works or responsibly repurpose or remix digital resources into new creations.
- 6d. publish or present content that customizes the message and medium for their intended audiences.

Marketing Activities 📣

OBJECTIVES

- Teams design marketing materials and create an exciting pitch to sell their new Wearable Gear invention.
- Teams consider the packaging design for their inventions and how it helps market their product.
- Children modify their Living Spaces to meet

the needs of a potential buyer.

- Teams discover how to take their invention to market through a process called "the middleman."
- Teams consider the costs of marketing as they design billboards on a budget.

KEY CONCEPTS

ELA & Literacy Concepts

Children will:

- Summarize a text and distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
- Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
- Use information gained from illustrations

(e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

- Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages), and

explain how the information contributes to an understanding of the text in which it appears.

- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

ELA & LITERACY STANDARDS

Grade 2 (Speaking and Listening)

- 2.SL.2 Comprehension and Collaboration: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3 (Speaking and Listening)

- 3.SL.2 Comprehension and Collaboration: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 5 (Speaking and Listening)

- 5.SL.2 Comprehension and Collaboration: Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4 (Writing)

- 4.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research

Grade K (Reading Informational Text)

- K.R.I.1 Key Ideas and Details: With prompting and support, ask and answer questions about key details in a text.

- K.R.I.7 Integration of Knowledge and Ideas: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

Grade 1 (Reading Informational Text)

- 1.R.I.1 Key Ideas and Details: Ask and answer questions about key details in a text.

- 1.R.I.5 Craft and Structure: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

- 1.R.I.6 Craft and Structure: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

- 1.R.I.7 Integration of Knowledge and Ideas: Use the illustrations and details in a text to describe its key ideas.

Grade 2 (Reading Informational Text)

- 2.R.I.5 Craft and Structure: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

- 2.R.I.7 Integration of Knowledge and Ideas: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Grade 3 (Reading Informational Text)

- 3.R.I.7 Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Grade 4 (Reading Informational Text)

- 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Grade 5 (Reading Informational Text)

• 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Entrepreneurship Activities ✪

• Teams share their pitch and marketing materials with a potential investor.

• Children calculate the Cost of Goods Sold for their inventions in order to make effective business decisions.

• Participants envision themselves as entrepreneurs when they launch a start-up business to begin selling their Living Spaces.

• Teams explore hybrid animals and use iteration to design a new prototype.

• Children determine an exit strategy to leave their business behind and take on their next invention adventure.

ELA & Literacy Concepts

Children will:

• Determine main idea and summarize written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

• Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

• Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

• Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

• Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages), and explain how the information contributes to an understanding of the text in which it appears.

• Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Mathematics Concepts

Children will:

• Consider the available tools when solving a mathematical problem, and use technological tools to explore and deepen their understanding of concepts.

• Use place value understanding and properties of operations to add and subtract.

• Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

• Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.

• Work with time and money. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ (dollars) and ¢ (cents) symbols appropriately.

ELA & LITERACY STANDARDS

Grade 2 (Speaking and Listening)

• 2.SL.2 Comprehension and Collaboration: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3 (Speaking and Listening)

• 3.SL.2 Comprehension and Collaboration: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 5 (Speaking and Listening)

• 5.SL.2 Comprehension and Collaboration: Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4 (Writing)

• 4.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

Grade K (Reading Informational Text)

• K.R.I.1 Key Ideas and Details: With prompting and support, ask and answer questions about key details in a text.

• K.R.I.7 Integration of Knowledge and Ideas: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

Grade 1 (Reading Informational Text)

• 1.R.I.1 Key Ideas and Details: Ask and answer questions about key details in a text.

• 1.R.I.5 Craft and Structure: Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

• 1.R.I.6 Craft and Structure: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

• 1.R.I.7 Integration of Knowledge and Ideas: Use the illustrations and details in a text to describe its key ideas.

Grade 2 (Reading Informational Text)

• 2.R.I.5 Craft and Structure: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

• 2.R.I.7 Integration of Knowledge and Ideas: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Grade 3 (Reading Informational Text)

• 3.R.I.7 Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Grade 4 (Reading Informational Text)

• 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

• 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Grade 5 (Reading Informational Text)

• 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

MATHEMATICS STANDARDS

Grade K-12 (Mathematical Practices)

- K-12.MP.5 Use appropriate tools strategically. Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Grade 2 (Number Operations in Base Ten)

- 2.NBT.6 Use place value understanding and properties of operations to add and subtract. Add up to four two-digit numbers using strategies based on place value and properties of operations.

- 2.NBT.9 Use place value understanding and properties of operations to add and subtract. Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

Grade 3 (Number Operations in Base Ten)

- 3.NBT.2 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. (A range of algorithms may be used.

Grade 4 (Number Operations in Base Ten)

- 4.NBT.5 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)

Grade 2 (Measurement and Data)

- 2.MD.8 Work with time and money. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ (dollars) and ¢ (cents) symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?