



Activity Connections to Common Core State Standards (CCSS)

English Language Arts	
Standards	Activity Tasks
Reading: Informational Text	
<p>Craft and Structure: RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.</p>	<p>Activity 4, Sheet D: Build a Better Bridge—Kids will read how engineers make strong bridges, design and build a bridge with index cards, and load-test it with pennies.</p>
Writing	
<p>Text Types and Purposes W.6.1 Write arguments to support claims with clear reasons and relevant evidence.</p>	<p>Activity 3, Optional Extension: Connect With the Community—Kids will write a letter to the editor explaining the need for a particular engineering innovation.</p> <p>Activity 6, Optional Extension: Connect With the Community—Kids will write a letter to a city council representative explaining why their innovation should be considered as a solution to a community need.</p>
<p>Text Types and Purposes W.6.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p>	<p>Activity 9, Optional Extension: Connect With the Community—Kids will write a letter to the mayor describing how their innovation solves a community need.</p>
Speaking and Listening	
<p>Presentation of Knowledge and Ideas SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	<p>Activity 5, Sheet F: Talk About It!—In teams, kids will debate which community issues are of the greatest importance.</p> <p>Activity 9, Optional Extension: Culminating Presentation Using Sheet K: Presentation Guide—Kids will share the final model of their innovations with peers, family, community members, and government officials.</p>

English Language Arts	
Standards	Activity Tasks
Science and Technical Subjects	
<p>Key Ideas and Details RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>	<p>Activity 2, Sheet B: Map It—Kids will use Google Maps as a guide to map an assigned portion of a neighborhood to scale.</p> <p>Activity 3, Sheet C: 3D City—Kids will use the neighborhood map to create a 3D model, keeping scale in consideration.</p> <p>Activity 4, Sheet D: Build a Better Bridge—Kids will read how engineers make strong bridges, design and build a bridge with index cards, and load-test it with pennies.</p> <p>Activity 6, STEM Challenge!—Using Community Survey responses, kids will design an innovative structure to meet a particular neighborhood need.</p> <p>Activity 8, STEM Challenge!—Kids will use the Simple Flow Chart app to create a flow chart on the tablet to show how their innovation will function.</p>
<p>Integration of Knowledge and Ideas RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).</p>	<p>Activity 8, STEM Challenge!—Kids will use the Simple Flow Chart app to create a flowchart on the tablet to show how their innovation will function.</p>
Mathematics	
Standards	Activity Tasks
Mathematical Practice	
<p>6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems.</p>	<p>Activity 2, Sheet B: Map It—Kids will use Google Maps as a guide to map an assigned portion of a neighborhood to scale.</p> <p>Activity 3, Sheet C: 3D City—Kids will use the neighborhood map to create a 3D model, keeping scale in consideration.</p>



Activity Connections to Next Generation Science Standards (NGSS)

Engineering Design	
Standards	Activity Tasks
<p>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.</p>	<p>Activity 5, Sheet F: Talk About It!—Kids will work with peers to identify engineering needs to make their community a better place to live.</p> <p>Activity 6, STEM Challenge!—Using Community Survey responses, kids will design an innovative structure to meet a particular neighborhood need.</p>
<p>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.</p>	<p>Activity 4, Sheet D: Build a Better Bridge—Kids will test designs and modify them to create the strongest structure possible.</p> <p>Activity 7, Sheet H: Troubleshooting—Kids will troubleshoot how their group’s innovation will work and make design revisions to resolve any issues they discover.</p>
<p>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.</p>	<p>Activity 7, Sheet H: Troubleshooting—Kids will revise their team’s design based on a troubleshooting activity.</p> <p>Activity 8, STEM Challenge!—Kids will use the Simple Flow Chart app to create a flow chart on the tablet to show how their innovation will function.</p> <p>Activity 9, Sheet I: Construction Checklist—Kids will follow general instructions to build a model of their innovation designs.</p>

Activity Connections to National Research Center’s “A Framework for K–12 Science Education”

Science and Engineering Practices	
Framework Elements	Activity Tasks
<p>Asking Questions and Defining Problems</p> <p>Define a design problem that can be solved through the development of an object, tool, process, or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions. (MS-ETS1-1)</p>	<p>Activity 1, Sheet A: Engineering in My Community—Kids will list and categorize types of engineering they see in their neighborhoods, adding ideas for improvement projects.</p> <p>Activity 5, Sheet F: Talk About It!—Kids will work with peers to identify engineering needs to make their community a better place to live.</p> <p>Activity 6, STEM Challenge!—Using Community Survey responses, kids will design an innovative structure to meet a particular neighborhood need.</p>
<p>Engaging in Argument From Evidence</p> <p>Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. (MS-ETS1-2)</p>	<p>Activity 5, Sheet F: Talk About It!—Kids will debate which community issues are of the greatest importance.</p>
Crosscutting Concepts	
Framework Elements	Activity Tasks
<p>Interdependence of Science, Engineering, and Technology</p> <p>Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. (MS-PS1-3)</p>	<p>Activity 4, Engineering in the Community—Kids will review examples of STEM projects designed to improve lives.</p> <p>STEM Career Flip Book—Kids will use tablets to explore the STEM Career Flip Book focusing on what specific STEM careers entail and the skills needed to work in those fields.</p>
<p>Influence of Science, Engineering, and Technology on Society and the Natural World</p> <p>The uses of technologies and limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. (MS-ETS1-1)</p>	<p>Activity 1, Sheet A: Engineering in My Community—Kids will list and categorize types of engineering they see in their neighborhoods, adding ideas for improvement projects.</p> <p>Activity 4, Engineering in the Community—Kids will use tablets to review three examples of innovative engineering designed to fulfill the specific purpose of helping people in diverse communities around the globe.</p>



Activity Connections to Texas Essential Knowledge and Skills (TEKS) Standard

English Language Arts and Reading	
Standards	Activity Tasks
Reading/Comprehension	
<p>110.18 (b) (12) Informational/Procedural Texts.</p> <p>(A) Follow multi-tasked instructions from text to complete a task, solve a problem, or perform procedures.</p> <p>(B) Interpret factual, quantitative, or technical information presented in maps, charts, illustrations, graphs, timelines, tables, and diagrams.</p>	<p>Activity 2, Sheet B: Map It—Kids will use Google Maps as a guide to map an assigned portion of a neighborhood to scale.</p> <p>Activity 4, Sheet D: Build a Better Bridge—Kids will read how engineers make strong bridges, then design and build a bridge with index cards and load-test it with pennies.</p>
Writing/Persuasive Texts	
<p>110-18-20 (b) (18) Students write persuasive texts to influence the attitudes or actions of a specific audience on specific issues.</p>	<p>Activity 3, Optional Extension: Connect With the Community—Kids will write a letter to the editor explaining the need for a particular engineering innovation.</p> <p>Activity 6, Optional Extension: Connect With the Community—Kids will write a letter to a city council representative explaining why their innovation should be considered as a solution to a community need.</p>
Research/Organizing and Presenting Ideas	
<p>110-18-20 (b) (25) Students organize and present their ideas and information according to the purpose of the research and their audience.</p>	<p>Activity 9, Optional Extension: Culminating Presentation Using Sheet L: Presentation Guide—Kids will share the final model of their innovations with peers, family, community members, and government officials.</p>
Listening and Speaking	
<p>110-18-20 (b) (26) Listening.</p> <p>(A) Listen to and interpret a speaker’s messages (both verbal and nonverbal) and ask questions to clarify the speaker’s purpose and perspective.</p> <p>(28) Teamwork. Students work productively with others in teams. Students are expected to participate in student-led discussions by eliciting and considering suggestions from other group members and by identifying points of agreement and disagreement.</p>	<p>Activity 5, Sheet F: Talk About It!—Kids will debate which community issues are of the greatest importance.</p> <p>Activity 7, Sheet H: Troubleshooting—Kids will role-play how their group’s innovation will work to test for design flaws.</p>

Mathematics	
Standards	Activity Tasks
Knowledge and Skills	
<p>111.26.Grades 6–8 (b) (1) (A) Apply mathematics to problems arising in everyday life, society, and the workplace.</p> <p>111.26.Grade 6 (b) (5) Proportionality. Students apply mathematical process standards to represent and solve problems involving proportional relationships.</p>	<p>Activity 2, Sheet B: Map It—Kids will use Google Maps as a guide to map an assigned portion of a neighborhood to scale.</p> <p>Activity 3, Sheet C: 3D City—Kids will use the neighborhood map to create a 3D model, keeping scale in consideration.</p>
Social Studies	
Standards	Activity Tasks
Knowledge and Skills	
<p>113.18-20 (b) (3) Geography. (D) Create thematic maps, charts, and models.</p> <p>(20) Science, Technology, and Society. (A) Give examples of scientific discoveries and technological innovations, including the roles of scientists and inventors, that have transcended the boundaries of societies and have shaped the world.</p>	<p>Activity 3, Sheet D: 3D City—Kids will use Google Maps to create a 3D model of their neighborhood.</p> <p>Activity 4, Engineering in the Community—Kids will use tablets to review three examples of innovative engineering designed to fulfill a specific purpose to help people in diverse communities around the globe.</p>
<p>113.19 (b)(23) and 113.20 (b)(31) Social Studies Skills. (A) Use a problem-solving process to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.</p>	<p>Activity 5, Sheet F: Talk About It!—Kids will complete a group survey about engineering needs to make their community a better place to live.</p> <p>Activity 6, Sheet G: Brainstorm!—Kids will develop design ideas for potential innovations to meet an important community need.</p> <p>Activity 7, Sheet H: Troubleshooting—Kids will troubleshoot how their group’s innovation will work and make design revisions to resolve any issues they discover.</p>

Technology Applications	
Standards	Activity Tasks
Knowledge and Skills	
<p>126.14-16 (c) (1) Creativity and Innovation.</p> <p>(B) Create, present, and publish original works as a means of personal or group expression.</p>	<p>Activity 6, Sheet G: Brainstorm!—Kids will create diagrams of original design ideas with group members.</p>
<p>2) Communication and Collaboration.</p> <p>(B) Communicate effectively with multiple audiences using a variety of media and formats.</p>	<p>Activity 3, Optional Extension: Connect With the Community—Kids will write a letter to the editor explaining the need for a particular engineering innovation.</p> <p>Activity 5, Sheet F: Talk About It!—Kids will debate which community issues are of greatest importance.</p> <p>Activity 6, Optional Extension: Connect With the Community—Kids will write a letter to a city council representative explaining why their innovation should be considered as a neighborhood improvement solution.</p>
<p>(4) Critical thinking, problem solving, and decision making.</p> <p>(D) Use multiple processes and diverse perspectives to explore alternative solutions.</p>	<p>Activity 6, Sheet G: Brainstorm!—Based on an important community need, kids will diagram potential innovations to solve the problem.</p> <p>Activity 7, Sheet H: Troubleshooting—Kids will role-play how their group’s innovation will work to test for design flaws.</p>
<p>(6) Technology operations and concepts.</p> <p>(D) Understand and use software applications, including selecting and using software for a defined task.</p> <p>(L) Create and edit files with productivity tools.</p>	<p>Activity 6, STEM Challenge—Kids have the option of using the tablet Picasso app to create a group design.</p> <p>Activity 8, STEM Challenge—Kids will use the Simple Flow Chart app to illustrate how their innovation will function on the tablet.</p>
Career Development	
Standards	Activity Tasks
Exploring Careers	
<p>127.3 (c) (7) (A) Demonstrate effective verbal, nonverbal, written, and electronic communication skills.</p>	<p>Activity 9, Optional Extension: Culminating Presentation Using Sheet L: Presentation Guide—Kids will share the final model of their innovations with peers, family, community members, and government officials.</p>
<p>(8) Identifies and explores technical skills essential to careers in multiple occupations, including those that are high skill, high wage, or high demand.</p>	<p>Activity 1, STEM Careers—Kids will learn what STEM encompasses and review engineering careers.</p> <p>Activity 1, Sheet A: Engineering in My Community—Kids will list and categorize types of engineering they see in their neighborhoods, adding ideas for improvement projects.</p>