

Planning Guide for *Materials and Structures*

Teaching Plans	Specific Curriculum Outcomes	Components	Materials	Literacy Place Connections
What Is a Structure? Students investigate various objects and decide whether they qualify as structures.	Skills [GCO 2] • 1.0	- Student Magazine pages 2–5 - Anchor Video: <i>Materials and Structures</i> - IWB Activity 1	- students' Science Journals - digital photos or flash cards showing natural structures (ant colony, wasps' nest, gopher hole, beaver dam, etc.) - students' Science Folders - digital cameras, tablets, or phones (optional)	
How Can We Describe Structures? Students learn terminology related to structures and use their knowledge to communicate with others.	Skills [GCO 2] • 2.0	- Student Magazine pages 6–7 - IWB Activity 2	- sheets of construction paper - markers and crayons 12–15 index cards (3 per group)	
Which Shapes and Forms Are the Strongest? Students explore various shapes and forms to determine which ones are used in structures and which ones are best suited for structures.	Skills [GCO 2] • 21.0 • 22.0 STSE/K [GCO 1/3] • 19.0 • 20.0	<i>Five Busy Beavers</i> (Read Aloud) - Student Magazine pages 8–11 - BLM <i>Results Table 1</i> - IWB Activity 3 - IWB Activity 4	- hardcover books (4 per pair of students) - rulers (1 per pair of students) - sheets of construction paper (3 per pair of students) - small plastic or paper cups (or yogurt containers) (2 per pair of students) - marbles (10 per pair of students) - students' Science Folders - pipe cleaners - computers or tablets with Internet access	

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What Makes Posts and Beams Strong? Students investigate how posts and beams help support a structure and how these elements can be made stronger and more stable.	Skills [GCO 2] • 21.0 • 22.0 STSE/K [GCO 1/3] • 20.0	• Student Magazine pages 12–15 • BLM <i>Results Table 2</i>	• 3 sheets of construction paper • markers and crayons • small containers of modelling clay (1 per pair of students) • cylindrical wooden craft sticks, all of equal diameter (4 per pair of students) • small, open milk containers (1 per pair of students) • marbles (20 per pair of students) • straws of equal diameter but of two different lengths (4 of each length per pair of students) • digital cameras (optional) • students' Science Journals • pre-cut pieces of string (1 per pair of students) • scissors (1 per pair of students) • small, open milk containers with two pre-punched holes on opposite sides, near the top • flat wooden craft sticks (1 per pair of students) • straws of two different lengths (1 of each length per pair of students) • students' Science Folders • computers or tablets with Internet access • bottles of white glue (1 per group) • several craft sticks (an equal number per group)	<i>Building a Skyscraper</i> (Guided Reading, Level N)
What Are Suitable Materials for Structures? Students explore the properties of various building materials and determine which materials are best suited for a particular structure.	Skills [GCO 2] • 6.0 • 24.0 STSE/K [GCO 1/3] • 23.0	• Student Magazine pages 16–19 • BLM <i>Placemat</i> • <i>The Little Knight Who Battled a Dragon</i> (Read Aloud) • IWB Activity 5 • BLM <i>Properties Chart</i>	• samples of various materials (blocks of wood, pieces of rubber, twigs, sheets of paper, balls of cotton, straws, pipe cleaners, wires, modelling clay, felt, aluminum foil, plastic wrap, sandpaper) • safety equipment for all students (goggles, aprons) • sheets of plastic or paper towels • various tools (e.g., spray bottles, hand-held fans, rubber mallets, scissors, sandpaper, tweezers, tongs, stir sticks, eyedroppers, hole-punch, stapler, glue gun) • computers or tablets with Internet access	

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Planning Guide for *Materials and Structures* (continued)

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How Are Building Materials Joined Together? Students explore how building materials are joined together to form structures.	STSE/K [GCO 1/3] • 25.0 • 26.0	• Student Magazine pages 20–21 • IWB Activity 6	• sheets of construction paper • index cards (1 per student) • markers and crayons • large supply of Lego blocks • samples of various fasteners (e.g., glue, different kinds of tape, staples, twist ties, pipe cleaners, string, modelling clay, brass fasteners, Velcro, elastic bands, buttons, marshmallows) • samples of various materials (e.g., wooden sticks, straws, paper, stir sticks, fabric) • various tools (scissors, hole-punch, stapler, glue gun) • safety equipment for all students (goggles, aprons) • digital cameras (optional) • students' Science Journals • foam blocks • poster-making materials	
How Can We Evaluate Structures? Students evaluate the effectiveness and appropriateness of structures, and design a model home.	Skills [GCO 2] • 28.0 STSE/K [GCO 1/3] • 27.0	• Student Magazine pages 22–25 • IWB Activity 7	• any version of <i>The Three Little Pigs</i> • various drawing materials (grid paper, sketch paper, rulers) • various model-building materials (modelling clay, blocks of wood, Lego bricks, foam blocks) • computers or tablets with Internet access	<i>Tunnel Vision: Building an Underwater Tunnel</i> (Guided Reading, Level R)
Design Challenge: Build a Structure Students use the design process to build a strong and stable structure.	Skills [GCO 2] • 29.0 • 30.0 • 31.0 • 32.0	• Student Magazine pages 26–27 • IWB Activity 8 • <i>What Is the Design Process?</i> poster • BLM <i>Isometric Grid Paper</i>	• students' Science Journals • various building materials (e.g., cardboard boxes, paper towel rolls, newspaper, construction paper, card stock, chicken wire, fabric, plastic tubs) • various fasteners (e.g., different kinds of glue, different kinds of tape, staples, twist ties, pipe cleaners, string, modelling clay, brass fasteners, Velcro, elastic bands) • various tools (e.g., hand-held fans, scissors, hole-punches, staplers, glue guns, utility knives) • aprons and goggles for all students (optional)	

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How Can We Test Our Own Structures? Students test and evaluate their structures for strength and stability.	Skills [GCO 2] • 34.0 • 35.0 STSE/K [GCO 1/3] • 33.0	• Student Magazine pages 28–29 • BLM <i>TAG Feedback</i> (1 per group)	• students' Science Journals • binder covers or squares of plywood (2 per group) • large elastic bands (2 per group) • same-sized large marbles or small balls (4 per group) • poster-making materials	
How Can We Modify and Present Our Structures? Students use feedback from others to improve their structure and write a collaborative report.	Skills [GCO 2] • 17.0 STSE/K [GCO 1/3] • 36.0	• Student Magazine pages 30–31 • IWB Activity 9	• cellphone • images of telephones over time • groups' <i>TAG Feedback</i> forms from the previous class • students' Science Journals • report-writing materials • poster-making materials	