Grade 1

3.2.1.D Physical Science: Waves and Their Applications in Technologies for Information Transfer

Students who demonstrate understanding can *use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.*

Clarifying Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.

Assessment Boundary: Assessment does not include technological details for how communication devices work.

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. • Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.	**Information Technologies and Instrumentation** • People also use a variety of devices to communicate (send and receive information) over long distances.	***Connections to Engineering, Technology, and Applications of Science*** **Influence of Engineering, Technology, and Science, on Society and the Natural World** • People depend on various technologies in their lives; human life would be very different without technology.

Pennsylvania Context: N/A

PA Career Ready Skills: Distinguish among a set of short-term, mid-range, and long-term goals.

Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Agriculture (AFNR)	CS.01.02.01.a: Research technologies used in AFNR systems.
Science, Environmental Literacy and Sustainability (NAAEE)	K-4 Strand 1.G. Drawing conclusions and developing explanations: Learners develop explanations that address their questions about the environment.
PA Core Standards: ELA	CC.1.4.1.W: With guidance and support, recall information from experiences or gather information from provided sources to answer a question. CC.1.5.1.A: Participate in collaborative conversations with peers and adults in small and larger groups.

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
PA Core Standards and Practices: Math	MP.5: Use appropriate tools strategically. CC.2.4.1.A.1: Order lengths and measure them both indirectly and by repeating length units.
PA Standards: Social Studies	6.5.1.E: Describe what tools (tangible assets) are necessary to complete a task.
Educational Technology (ISTE)	1.4. Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
Technology and Engineering (ITEEA)	STEL-2B: Safely use tools to complete tasks. STEL-5B: Explore how technologies are developed to meet individual and societal needs and wants.