Grades 6–8

3.5.6-8.X Technology and Engineering: Design Thinking in Technology and Engineering Education

Students who demonstrate understanding can *defend decisions related to a design problem.*

Clarifying Statement: By requiring students to defend their actions and communicate their findings after attempting to solve a problem, students develop empathy, flexible thinking, accountability, and metacognition skills (i.e., awareness and understanding of their own thought processes). Helping students develop technology and engineering habits of mind involves the teacher explicitly modeling, teaching, and providing students with opportunities to demonstrate expected behaviors.

Assessment Boundary: N/A

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Technology and Engineering Practices (TEP)
Engaging in Argument From Evidence Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). • Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.	**Developing Possible Solutions** • There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.	**Critical Thinking** • Defends technological decisions based on evidence.

Pennsylvania Context: N/A

Pennsylvania Career Ready Skills: Explain how expressive communication strategies can affect others.

Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
PA Core Standards: Reading and Writing in Science and Technical Areas	CC.1.2.3.G: Use information gained from text features to demonstrate understanding of a text. CC.1.2.4.G: Interpret various presentations of information within a text or digital source and explain how the information contributes to an understanding of text in which it appears. CC.1.2.5.G: 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. CC.1.4.3.V: Conduct short research projects that build knowledge about a topic. CC.1.4.4.V: Conduct short research projects that build knowledge through investigation of different aspects of a topic. CC.1.4.5.V: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. CC.1.4.3.W: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. CC.1.4.4.W: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. CC.1.4.5.W: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
PA Core Standards and Practices: Math	MP.3: Construct viable arguments and critique the reasoning of others.
Integrated Standards for Science, Environment & Ecology, and Technology & Engineering Standards Grades K–12	N/A