



**Grades 6–8**

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

**Students who demonstrate understanding can** *evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.*

**Clarifying Statement:** Students assess quality in designs based in part upon the principles and elements of design. With teacher guidance, students in this grade band can articulate reasons why they believe some designs are more effective than others.

**Assessment Boundary:** N/A

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Technology and Engineering Practices (TEP)
<p><b>Engaging in Argument From Evidence</b></p> <p>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).</p> <ul style="list-style-type: none"> <li>Respectfully provide and receive critiques about one’s explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail.</li> </ul>	<p><b>ETS1.B: Developing Possible Solutions</b></p> <ul style="list-style-type: none"> <li>There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.</li> </ul>	<p><b>Optimism</b></p> <ul style="list-style-type: none"> <li>Critiques technological products and systems to identify areas of improvement.</li> </ul>

**Pennsylvania Context:** N/A

**Pennsylvania Career Ready Skills:** Analyze various perspectives on a situation.



**Connections to Other Standards Content and Practices**

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
<p><b>PA Core Standards: Reading and Writing in Science and Technical Areas</b></p>	<p>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.</p>
<p><b>PA Core Standards and Practices: Math</b></p>	<p>MP.3: Construct viable arguments and critique the reasoning of others.</p>
<p><b>Integrated Standards for Science, Environment &amp; Ecology, and Technology &amp; Engineering Standards Grades K-12</b></p>	<p>N/A</p>