Grades 9–12

3.5.9-12.Z Technology and Engineering: Design Thinking in Technology and Engineering Education

Students who demonstrate understanding can *recognize and explain how their community and the world around them informs technological development and engineering design.*

Clarifying Statement: Technological developments are best achieved through experiences and interactions within a given context. For example, design of buildings should take into account local conditions including soil type, wind, and snow loads, and should also match local building codes and building styles.

Assessment Boundary: N/A

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Technology and Engineering Practices (TEP)
Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in 9–12 builds on K–8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs. • Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.	**Build Knowledge** • Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.	**Attention to Ethics** • Assesses technological products, systems, and processes through critical analysis of their impacts and outcomes. **Systems Thinking** • Designs and troubleshoots technological systems in ways that consider the multiple components of the system.

Pennsylvania Context: Examples of Pennsylvania context include but are not limited to Pennsylvania's manufacturing businesses and industry.

Pennsylvania Career Ready Skills: Explain how you situate yourself in a diverse community.

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	N/A
Integrated Standards for Science, Environment & Ecology, and Technology & Engineering Standards Grades K–12	N/A