Unit: Applying Multimedia Knowledge and Skills	Concept: Troubleshooting

Standard

- 3.5.9-12.O Apply appropriate design thinking processes to diagnose, adjust, and repair systems to ensure precise, safe, and proper functionality.

Key Learning

- (LTTG) Students will be able to demonstrate integrity and conscientiousness, considering ethical issues involved.

Unit Essential Question

- How can I demonstrate integrity and conscientiousness, considering ethical issues involved?

Essential Question

- What is the value of iteration within the design process?

Key Vocabulary

- Design Thinking, Diagnose, Adjust, Repair, Precise, Safe, Proper, Functionality, Monitor, Maintenance, and Iterate

Learning Experience

- Students who demonstrate understanding can apply appropriate design thinking processes to diagnose, adjust, and repair systems to ensure precise, safe, and proper functionality.
- Clarifying Statement: For many consumer products, federal and state laws require safety information. Tools are used by students for diagnosis, adjustments, and repair. Monitoring the operation, adjusting the parts, and regular maintenance of a system are part of keeping systems in good working order and maintaining safety.

(Big Idea) Technology & Engineering Curriculum Framework Big Ideas

- Design in technology and engineering is iterative.

(SEP) Science and Engineering Practices

- Constructing Explanations and Designing Solutions - Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and trade-off considerations.

(DCI) Disciplinary Core Ideas

- ETS1.C: Optimizing the Design Solution - Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed.
- NAEP D.12.18 - Analyze a complicated system to identify ways that it might fail in the future. Identify the most likely failure points and recommend safeguards to avoid future failures.

(TEP) Technology and Engineering Practices

- Making and Doing - Demonstrates the ability to regulate and improve making and doing skills.
- Systems Thinking - Designs and troubleshoots technological systems in ways that consider the multiple components of the system.

Terms

- (ETS) Engineering, Technology, and Applications of Science – Standards applicable across the Science, Environmental Literacy & Sustainability, and Technology & Engineering content areas.
- (LTTG) PDE Technology & Engineering Long Term Transfer Goals
- (Learning Experience) A learning experience refers to any interaction, activity, or other experience in which students acquire new understanding, knowledge, behaviors, or skills.
- (Big Idea #) PDE Technology & Engineering Curriculum Framework Big Ideas
- (SEP) PDE Science and Engineering Practices
- (DCI) PDE Disciplinary Core Ideas
- (TEP) PDE Technology and Engineering Practices