

| Unit: Testing, Evaluating, and Refining | Concept: Optimization |
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| <p>Standard</p> <ul style="list-style-type: none"> 3.5-9-12.W Optimize a design by addressing desired qualities within criteria and constraints while considering trade-offs. | |
| <p>Key Learning</p> <ul style="list-style-type: none"> (LTTG) Students will be able to investigate better solutions through a belief that opportunities can be found in every challenge. | <p>Unit Essential Question</p> <ul style="list-style-type: none"> How can I investigate better solutions through a belief that opportunities can be found in every challenge? |
| <p>Essential Question</p> <ul style="list-style-type: none"> How do criteria and constraints drive design? | |
| <p>Key Vocabulary</p> <ul style="list-style-type: none"> Making, Criteria, Constraints, Optimal, Optimize, Approach, Solution, and Trade-off | |
| <p>Learning Experience</p> <ul style="list-style-type: none"> Students who demonstrate understanding can optimize a design by addressing desired qualities within criteria and constraints while considering trade-offs. Clarifying Statement: Students evaluate criteria and constraints in the technology and engineering design process to select optimal approaches for their design solutions. Students at this level should be able to articulate a rationale (e.g., design matrix) for their decisions in the design, construction, and implementation of their solution. | |
| <p>(Big Idea) Technology & Engineering Curriculum Framework Big Ideas</p> <ul style="list-style-type: none"> Design optimization is driven by criteria and constraints. | |
| <p>(SEP) Science and Engineering Practices</p> <ul style="list-style-type: none"> 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. | |
| <p>(DCI) Disciplinary Core Ideas</p> <ul style="list-style-type: none"> 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. | |
| <p>(TEP) Technology and Engineering Practices</p> <ul style="list-style-type: none"> Optimism - Shows persistence in addressing technological problems and finding solutions to those problems. | |

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