**Lesson Information**

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| Lesson: (1 of 4) Concrete, Reinforcing Materials, and Forms Length: 90 minutes  Unit: (2 of 4) Concrete and Framing  Course: Carpentry |

**Content Assumptions**

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| Prior to this class, students have taken math, chemistry, and safety courses. |

**Essential Questions**

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| 1. How are previously-learned skills and concepts (e.g., those of math, chemistry, and safety) applied in concrete construction? 2. How is concrete used as a structural component? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Demonstrate their knowledge of terms associated with concrete, reinforcing materials, and forms. 2. Demonstrate safe and effective procedures for working with concrete. | 1. Jeopardy! game — Instructor observation 2. Presentation/video — rubric, Instructor observation |

**Activities/Instruction**

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| **Jeopardy!** (30 minutes)  Using one or both of the Jeopardy! games listed in the Materials section, Instructor introduces the material to the students by playing through a round of the game(s). This first time, when students do not know an answer, Instructor provides the answer and any background information s/he deems appropriate (e.g., when talking about the components of concrete, Instructor could give background information about the chemical interactions between components, or how relative quantities of components affect the resulting strength of the concrete). After the first round, Instructor divides the students into three groups to play for points. The first-place team gets to choose their assignment first for the next section, the second-place team gets to choose second, and the third-place team gets what is left.  **Teach Each Other — Concrete, Footings, and Forms** (60 minutes)  Using classroom textbooks, selected library resources, and/or websites (like those listed in the Materials section), each group of students researches one of the following topics:   * How to select and mix concrete from its components (Instructor may choose to add conditions to this, such as “in wet conditions” or “at high temperature”) * How to select/design and erect a wall footing (Instructor may choose to add stipulations to this, such as assigning a specific type of footing) * How to erect, plumb, and brace a concrete form with reinforcement (Instructor may choose to add stipulations to this, such as assigning a specific type of form)   Students are to spend a total of 35 minutes researching their structure AND planning a presentation or making a video demonstrating what they learned. The last 25 minutes of class is used to show students’ presentations/videos. Instructor can require that students take notes on others’ presentations/videos as another formative assessment. |

**Materials**

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| For students:   * http://jeopardylabs.com/play/concrete6 * http://jeopardylabs.com/play/all-about-concrete * http://construction.about.com/od/Materials/a/Concrete-Mix-Concrete-Mix-Basics.htm * http://www.basiccarpentrytechniques.com/index.html * Classroom/library resources (e.g., textbooks, tool manuals, etc.)   For Instructor:   * [PRESENTATION-VIDEO RUBRIC] |