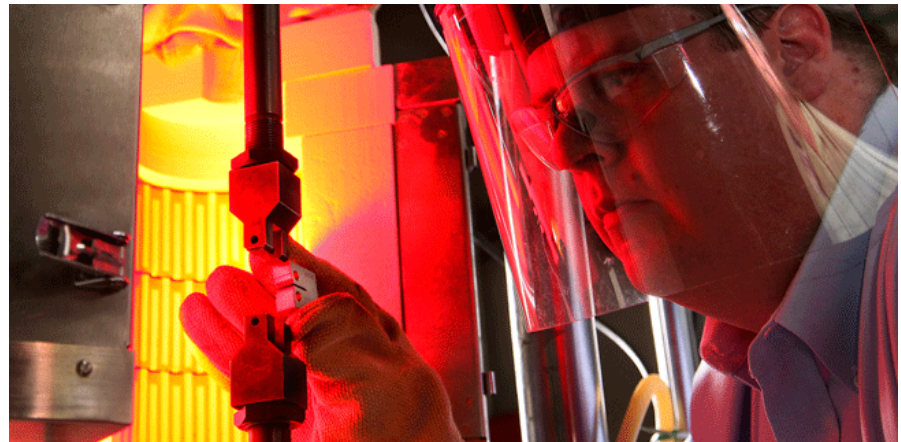




**Technology Education Curriculum
Level: Secondary**

Materials Selection



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Technology Education Curriculum

Level: Secondary

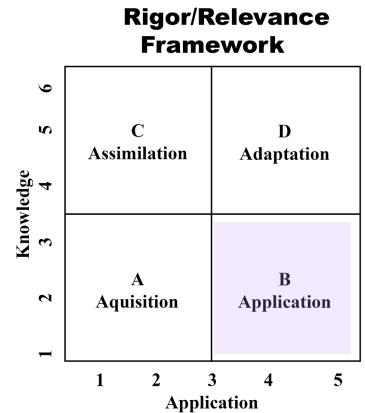
Teacher Lesson Plan

INDUSTRIAL & TECHNOLOGY EDUCATION Career & Technical Learning Activity - CTLA

Lesson Objectives & Student Expectations

Rigor/Relevance Framework: *B*

Length of lesson: 4 class periods



The student will:

1. Discover the properties of various materials.
2. Identify manufacturing processes used for differing materials.
3. Analyze the effect various materials have on the manufacturing process.

Common Core Standards Addressed

Benchmark#	Description
LACC.68.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts
LACC.68.RST.1.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions
LACC.68.RST.3.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)
LACC.68.WHST.1.1	Write arguments focused on discipline specific content
LACC.68.WHST.3.9	Draw evidence from informational texts to support analysis reflection, and research

Key Vocabulary Terms

Elicit	Specifications	Intuitively	Alloy
Annealing	Erode	Carbide	Degradation





Materials & Supplies Needed For This Activity

Article, Portfolio/Notebook Paper, Teacher PowerPoint, Projector, Student Worksheets.

Teacher Sequence To Present Lesson *Day 1 of 3*

Est. Time (minutes)	Description of Teacher Action	Notes
5	Bell work activity - Have students answer the question then review the answer. Page 2 of presentation.	Use the Materials Selection PowerPoint presentation to guide your lesson.
10	Show students the video about advanced manufacturing and materials. Have students do a think, pair, share to address the question, "Think of a device, what material is it made of? Why do you think designers have chosen that material for that specific product?"	Prepare video and groups ahead of time Link to video: https://www.youtube.com/watch?v=Yt_yhA_lFvs
5	Review vocabulary words with students Page 4 of presentation.	Prepare word boards or add words to your word wall
15	Hand out the article "Material selection versus manufacturing processes" and student worksheets. Prepare students for reading by explaining the text marking process and that students will read the article silently marking the portions of the article. Mark "M" if the text is describing a specific material. Mark "P" if the text is describing a material process or technique. Mark E if engineering skills or ability is being described.	Prepare copies ahead of time
10	Have students answer the questions from the text. Page 6 of presentation.	
5	Have students' cleanup and complete a daily reflection.	Do any type of reflection, ex. Exit slip, daily reflection log, discussion, or answering a question.

Student Procedures To Do This Lesson *Day 1 of 4*

1. Begin Bell work activity per teacher's directions.
2. Participate in Bell work discussion.
3. Watch the advanced manufacturing video.
4. Answer the discussion question.
5. Review vocabulary terms and mark paragraphs in the article.
6. Read the article and answer questions.



Teacher Sequence To Present Lesson *Day 2 of 4*

Est. Time (minutes)	Description of Teacher Action	Notes
5	Bell work activity - Have students answer the question, then review the answer. Page 7 of presentation.	Use the Materials Selection PowerPoint presentation to guide your lesson.
10	Review the answers from the text questions with the students.	
5	Direct students to the company profile worksheet. Explain that students will be using the computers to do a preview of the company they will be visiting. They will look for key elements that they should observe on the company tour.	Review searching criteria with students or direct them to the exact company website. Prepare this ahead of time.
15	Allow students to go to the computer and begin working.	Prepare copies ahead of time
10	Review the answers with the students.	
5	Discuss with students the process of taking notes while on the trip using the directed note taking worksheet.	Collect students' note taking worksheets to pass out when on the field trip.

Student Procedures To Do This Lesson *Day 2 of 4*

1. Begin Bell work activity per teacher's directions.
2. Participate in Bell work discussion.
3. Review answers from the text questions.
4. Complete the company profile worksheet and review with your instructor.
5. Discuss the directed note taking process with your teacher and prepare for the field trip.

Teacher Sequence To Present Lesson *Day 3 of 4*

Est. Time (minutes)	Description of Teacher Action	Notes
60	Pass out the students' directed note-taking worksheet. Review the procedures for asking questions while on the tour.	
5	After the tour collect the students' worksheets to redistribute in class the following day.	

Student Procedures To Do This Lesson *Day 3 of 4*

1. Ask questions while on your tour.
2. Write down notes from your tour.



Teacher Sequence To Present Lesson *Day 4 of 4*

Est. Time (minutes)	Description of Teacher Action	Notes
5	Bell work activity - Have students answer the question, then review the answer.	Use the Automation in technology PowerPoint presentation to guide your lesson.
10	Have students share their observations from the tour on the previous day. Encourage students to write additional observations based on their classmates' experiences. Instruct students to put a check mark in the box that best matches the statement.	If a note doesn't match a check box it's okay. These are for students to begin identifying topics for their writing.
20	Using their notes, have students draft an essay on the student worksheet. Remind students to use both their notes from the tour and textual evidence when writing the essay.	
5	Review and collect all student work	

Student Procedures To Do This Lesson *Day 4 of 4*

1. Begin Bell work activity per teacher's directions.
2. Participate in Bell work discussion.
3. Review and share notes from your tour.
4. Analyze notes.
5. Write an essay that includes information from the text and tour observations.
6. Turn in your essay and cleanup for dismissal.

Evidence of Student Achievement

Students will complete an essay that uses evidence from text and observations they make while on the company tour. The essay will be graded by the teacher for accuracy, punctuation, spelling and format.



Student Name _____
 Class Period _____ Date _____

Essay Grading Rubric

Category	4 Points	3 Points	2 Points	1 Point
Focus & Details	There is one clear, well focused topic. Main ideas are clear and are well supported by detailed and accurate information.	There is one clear, well focused topic. Main ideas are clear but are not well supported by detailed information.	There is one topic. Main ideas are somewhat clear.	The topic and main ideas are not clear.
Organization	The introduction is inviting, states the main topic, and provides an overview of the paper. Information is relevant and presented in a logical order. The conclusion is strong.	The introduction states the main topic and provides an overview of the paper. A conclusion is included.	The introduction states the main topic. A conclusion is included.	There is no clear introduction, structure, or conclusion.
Word Choice	The author uses technical words and phrases. The choice and placement of words seems accurate, natural, and not forced.	The author uses technical words and phrases. The choice and placement of words is inaccurate at times and/or seems overdone.	The author uses words that communicate clearly, but the writing lacks variety.	Jargon or clichés may be present and detract from the meaning.
Sentence Structure, Grammar, Mechanics, & Spelling	All sentences are well constructed and have varied structure and length. The author makes no errors in grammar, mechanics, and/or spelling.	The author makes a few errors in grammar, mechanics, and/or spelling, but they do not interfere with understanding.	The author makes several errors in grammar, mechanics, and/or spelling that interfere with understanding.	The author makes numerous errors in grammar, mechanics, and/or spelling that interfere with understanding.

Total Points: _____

A = 16 – 14, B = 13 – 11, C = 10 – 8, D = 7 – 5, F = 4 or less

