



# Technology Education Curriculum Level: Secondary

# Assembly



All content © 2014 FLATE. This material is based upon work supported by the National Science Foundation (NSF) under Grant No. 1204751. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the NSF.



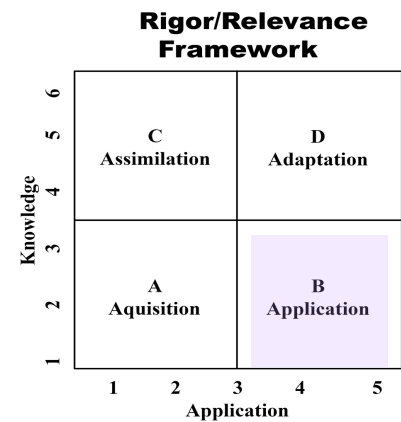
## Technology Education Curriculum Level: Secondary Teacher Lesson Plan

### 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. Explore the history of the assembly line process.
2. Identify how manufacturing assembly has been made more efficient.
3. Analyze the effect new technologies have on the modern assembly line 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

Assembly line	Crude	Economy	Efficient	Hydraulic
Innovation	Leisure	Manufacture	Monotonous	Productivity
Precise	Quality	Reliable	Specialization	Standardize



### Materials & Supplies Needed For This Activity

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

### Teacher Sequence to Present Lesson *Day 1 of 4*

Est. Time (minutes)	Description of Teacher Action	Notes
10	Bell work activity – Have students come up with a plan of how to quickly assemble 100 mechanical pencils. Have students do a think, pair, share to address the question.	Use the Assembly PowerPoint to guide your lesson. Prepare groups ahead of time
5	Ask students to list at least 5 products made using an assembly line process.	Page 3 of presentation
5	Review vocabulary words with students.	Prepare word boards or add words to your word wall
15	Hand out the “Ford Assembly Line” article, student worksheet. 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 “H” if the text is describing the history of assembly lines. Mark “M” if the text is describing modern methods or new technology. Mark “E” if the text is referencing making things more efficient.	Prepare copies ahead of time
10	Have students answer the question then review the answer.	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. Plan out how to assemble 100 mechanical pencils.
4. Answer the discussion question.
5. Review vocabulary terms and mark paragraphs in the article.
6. Read the article and answer questions.
7. Daily reflection.





### 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 daily reflection (from day 1).	
10	Review the answers from the text questions with the students.	Use the Assembly PowerPoint to guide your lesson. Start in page 6.
5	Pass out 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 (Tour Day)*

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	Pass out the students directed note-taking worksheet and start with Bell work activity - Have students answer the question “What observed assembly line processes increased efficiency at the company you toured?”	Use the Assembly PowerPoint to guide your lesson. Page 9 & 10.
10	Have students share their observations from the tour on the previous day. Encourage students to write additional observations based on their classmates’ experiences. Using students’ directed note-taking, 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, instruct students to draft an essay on the student worksheet-day 4. 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
<b>Focus &amp; Details</b>	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.
<b>Organization</b>	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.
<b>Word Choice</b>	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.
<b>Sentence Structure, Grammar, Mechanics, &amp; Spelling</b>	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**

