## The Industrial Revolution: The Assembly Line Simulation

The goal of this simulation is for students to understand the changes that took place during the transition from the domestic system to the factory system that occurred during the Industrial Revolution. Students will be able to demonstrate how division of labor works through the process of making paper snowflakes on an assembly line. Additionally, students will compare the work of unspecialized/unskilled workers to that of a specialized worker, who will also create a paper snowflake as an artisan. Through the process of completing the simulation, students will also be asked to consider the changes in working conditions that have taken place because of the transition to the factory system.

Subject Areas/Grade Levels: European History, World History/9-12
Pennsylvania State Standards
$\rightarrow$ PA 8.1.9. Analyze chronological thinking: difference between past, present, and future
$\rightarrow$ PA 8.1.9. Analyze chronological thinking: context for events
$\rightarrow$ PA 8.4.12. Evaluate how continuity and change throughout history has impacted belief systems and religions, commerce and industry, innovations, settlement patterns, social organization, transportation and roles of women since 1450.
$\rightarrow$ PA 8.4.12. Evaluate how conflict and cooperation among social groups and organizations impacted world history from 1450 to Present in Africa, Americas, Asia and Europe.

## Common Core Standards

$\rightarrow$ CCSS.ELA-LITERACY.SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Materials
$\rightarrow$ Snowflake print outs (See image on p. 4)
$\rightarrow$ Scissors (1 pair of adult scissors, 3 pairs of children's scissors)
$\rightarrow$ Directions for cutting snowflakes (two separate handouts for artisan/factory workers)
$\rightarrow$ Reflection Questions

Suggested Warm-Up/Do-Now Activities
$\rightarrow$ Introduce the lesson using a YouTube video clip from "I Love Lucy" Job Switching episode in which Lucy and Ethel work on a chocolate factory assembly line.
$\rightarrow$ Questions:

- How did the manager treat Lucy and Ethel?
- How do Lucy and Ethel's reactions to the work change throughout the clip?
- In what ways do they handle the increase in the volume of work? How might this relate to the quality of work being done or the quality of the item being produced?
- What would it be like to do that task for the entire day - both mentally and physically? (Note: factory workers of the time received minimal pay, worked long hours and often had horrible working conditions)

Procedure

1. Before using this simulation, students should have had an introduction to the Industrial Revolution. Review its causes and relevant terms before beginning this simulation.
2. Introduce the simulation by explaining that the purpose of today's lesson is for students to witness the differences in the domestic vs. factory system by acting as either specialized (skilled) or unspecialized (unskilled) laborers.
3. Simulation Preparation:
$\rightarrow$ Ask for a total of 7 student volunteers (1 artisan, 5 unskilled factory workers, and 1 factory manager). Rearrange a few desks in the front of the room so that all students can see the assembly line and the artisan at work. Make sure to separate the artisan from the factory workers so that the artisan can be away from the noise and busyness of the assembly line.

- IMPORTANT NOTE: Try to find a student who is artistic to serve as the artisan.
- Depending on the size of your class and classroom, you could have two different teams, or factories, competing with one another so that the factory workers feel more pressure to produce as many goods as possible.
$\rightarrow$ You can also emphasize the differences in working conditions between the artisan and factory workers. For instance, allow the artisan to sit, maybe even give him/her a pillow. Give the artisan your best pair of scissors. On the other hand, make the factory workers stand, give them children's scissors which are more difficult to hold and use. You could even find a YouTube clip of factory background sound effects during the simulation and allow the artisan to listen to music of his/her choice on an IPhone or IPod.
$\rightarrow$ Hand out the two different direction sheets to the artisan and factory workers. (See worksheet on p. 3)
$\rightarrow$ Allow the factory workers to have one trial run. During this time the artisan can begin working on a design for his/her snowflake.
$\rightarrow$ Give the students (both factory workers and the artisan) 5 minutes. Use a timer or project the time up on a projection screen using Online Stopwatch. Again, it does not matter whether or not the artisan completes the snowflake in 5 minutes; however, hopefully it is done so that you can compare the quality of the product.
$\rightarrow$ While the simulation is occurring, ask the students in the classroom to write down observations. What differences do they notice between the artisan and the factory workers? Write down quotes of any phrases or words that are used that relate to what it may have been like to work in either setting.
$\rightarrow$ After the completion of the simulation, thank the students for their participation. Then, complete the reflection questions through whole class discussion, written response or a think/pair/share activity. (See questions on p. 5)


## Artisan Direction Sheet

Your goal is simply to make the best snowflake you can! Be creative as there is no template to follow. Use whatever process you think is best and take as much time as you need.

## Factory Direction Sheet

Your goal is to make the MOST snowflakes that you can make in the shortest amount of time possible. Here is the process that you MUST follow in order to ensure that you are making identical snowflakes as quickly and efficiently as possible.

Manager, it is your job to make sure that the products are being manufactured quickly. You need to watch the factory workers to make sure that everyone is keeping up the pace. Additionally, you need to keep an eye on the product to make sure it is up to code. If there is a flaw in one of the snowflakes, you can throw it out. If you think the error in production is due to one of your workers, feel free to fire the worker without any warning or explanation and hire another "worker" (i.e. student from the classroom).

## Snowflake Production Process:

Worker 1: Fold the piece of paper lengthwise
Worker 2: Match up the top and bottom of the snowflake and fold crosswise
Worker 3: Cut the first portion of the snowflake (see picture below)
Worker 4: Cut the second portion of the snowflake (see picture below)
Worker 5: Cute the remaining portion of the snowflake (see picture below)



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Reflection Questions

1. What are the major differences between the specialized vs. unspecialized workers (skilled vs. unskilled)?
2. Which would you rather be? Why?
3. Would you prefer to buy a product from a specialized worker or an unspecialized worker? Why?
4. How did the conditions affect the work of the specialized artisan vs. the unspecialized factory workers?
5. From the perspective of the factory worker, what would it be like to do the same job for $12+$ hours a day?
6. How did the manager influence the productivity and work environment for the factory workers?
7. Overall, what are the costs and benefits of the assembly line?
