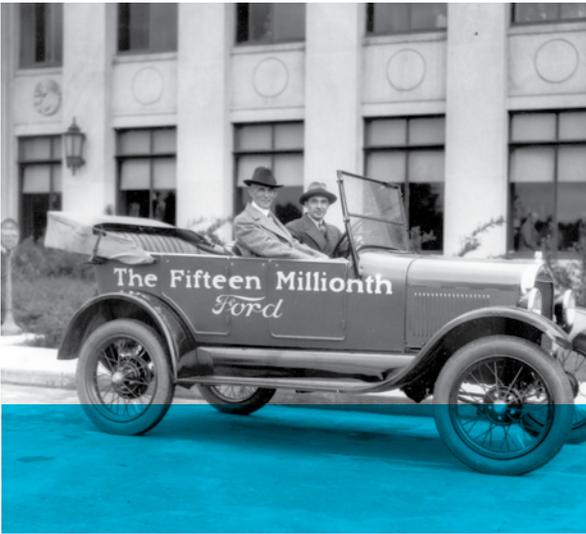
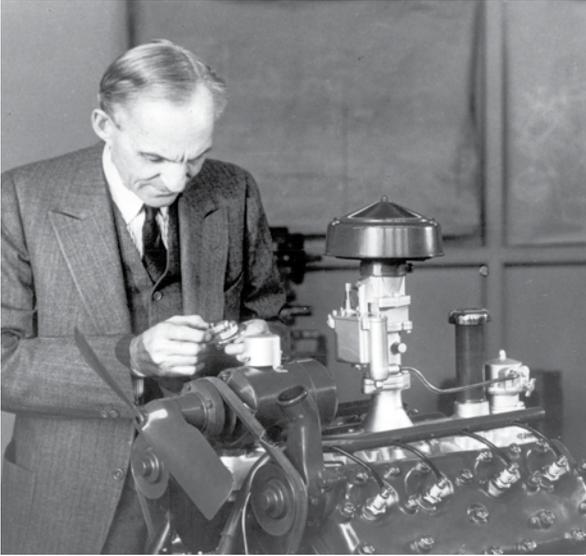


You Can Be an Innovator ... Like Henry Ford

Henry Ford and Innovation
Educator DigiKit



Transportation in America



mission statement

The Henry Ford provides unique educational experiences based on authentic objects, stories and lives from America's traditions of ingenuity, resourcefulness and innovation. Our purpose is to inspire people to learn from these traditions to help shape a better future.

overview

The Henry Ford® invites you and your students to explore Henry Ford's world-changing innovation, the Model T, and how it continues to influence manufacturing and many other aspects of our lives today. While using this Educator DigiKit and our digitized artifacts, students will answer the overarching question, "*How do people solve problems?*" By examining this case study of Henry Ford and the Model T, we hope that they, too, will be inspired to imagine, take risks and persevere as Henry Ford did.

This Educator DigiKit is divided into two sections: a **Teacher Guide** and a **Unit Plan**.

The Teacher Guide section includes resources to complement the *You Can Be an Innovator ... Like Henry Ford* Unit Plan. You will find a glossary, timeline, context-setting activities, bibliography, curriculum links and curriculum-supporting field trip suggestions.

The Unit Plan section follows the Teacher Guide and includes lesson plans, student handouts, answer keys, culminating project ideas, extension activities, and review and assessment questions. Many of the lessons include the use of digitized artifacts from the collections of **The Henry Ford**, which can be accessed through the hyperlinks in the Unit Plan or through our website, TheHenryFord.org/education. If you cannot incorporate the whole unit into your schedule, use the lessons or activities most relevant to your needs.

This Educator DigiKit promotes educational use of **The Henry Ford's** extensive Transportation in America collections. We hope you and your students will find these resources engaging and relevant.

These resources are made possible, in part, by the generous funding of the Ford Foundation.

© 2010 The Henry Ford. This content is offered for personal and educational use through an "Attribution Non-Commercial Share Alike" Creative Commons. If you have questions or feedback regarding these materials, please contact education@thehenryford.org.

Lesson 4 Using Human Resources on the Assembly Line

Big Ideas

- One of Henry Ford’s innovations was new ways to use human resources.
- However, there were some unintended consequences of this innovation.

Key Concepts

- Human resource
- Production
- Moving assembly line
- Division of labor
- Specialization
- Wage
- Union
- Consumption

Digitized Artifacts From the Collections of **The Henry Ford**

Lesson 4 Using Human Resources on the Assembly Line

- [Women Workers Assembling Magnetos at Ford Highland Park Plant, circa 1913 ID# THF23810](#)
- [Workers Assembling Car Bodies at Ford Rouge Plant, 1932 ID# THF23466](#)
- [1924 Ford Model T Cars on Assembly Line at Highland Park Plant, October 1923 ID# THF23577](#)
- [Swift & Company’s Meatpacking House, Chicago, Illinois, Splitting Backbones and Final Inspection of Hogs, 1910-1915 ID# THF32081](#)

Materials

- Computer with access to the Internet (optional); digital projector and screen (optional).
- Sign: How do people solve problems?
- Scrap paper – lots
- Full roll of wrapping paper, any type
- Empty wrapping paper tube
- Tape
- 10 feet of continuous flat surface, like desks or tables pushed together
- Student Activity Sheet 4:
Henry Ford and the Moving Assembly Line

Duration 2 class periods (45 minutes each)

Instructional Sequence

1 Engagement

Discuss capital resources and both natural and human resources with students. Introduce Henry Ford’s problem of not only hiring but also keeping enough workers to perform the many repetitive tasks on the moving assembly line. Ask students to predict or guess what kinds of problems Ford might have, related to workers.

2 Paper Airplane Workshop*

Students will produce paper airplanes as goods would have been produced before the innovation of the moving assembly line.

Continued....

Lesson 4 Using Human Resources on the Assembly Line Continued

Paper Airplane Workshop Continued

Instruct each student to make his or her own paper airplanes from start to finish. Find out how many were made after five minutes, share a few designs and allow flight testing. Clean up.

Tell the students that Henry Ford was especially innovative in how he made use of people in his company. Show the digitized artifacts from [Lesson 4: Using Human Resources on the Assembly Line](#) to provide students with some visual images of the moving assembly line. Read the article “Henry Ford and the Moving Assembly Line, Part I.”

Stop at the end of Part I and facilitate the Paper Airplane Moving Assembly Line* activity described below.

3 Paper Airplane Moving Assembly Line*

Paper Airplane Assembly Line Setup

Recommendation: Set up the physical assembly line before your students come to class.

Setup

- Tape the end of the roll of wrapping paper to an empty roll of wrapping paper in a few places along the end.
- You will need ten feet of continuous flat surface; you might line up desks or tables to achieve this.
- Place the wrapping paper at one end of the surface; unwind it so that the empty roll-end reaches the other end of the flat surface to form the conveyor belt.
- Place a stack of scrap paper at the end with the full roll. This will be Station One on the assembly line.

Assembly Line Stations

- Station One: Take one piece from the stack of paper and place it on the conveyor belt.
- Station Two: Make a center vertical fold in the piece of paper.
- Station Three: Open the folded paper.
- Station Four: Fold the top right corner of the unfolded paper in to the fold line.
- Station Five: Fold the top left corner of the paper in to the fold line.
- Station Six: Fold the center to create the nose.
- Station Seven: Fold one side down to create one wing.
- Station Eight: Fold other side down to create the other wing.
- Station Nine: Adjust the folds so that the wings are horizontal.
- Station Ten: Test-fly the airplane.

Each station is a job on the assembly line. The airplane should move on the conveyor belt (wrapping paper) between stations.

Choose ten students to fill these positions. You will also need two students to run the conveyor belt, with one holding the full tube and one winding paper around the empty tube. The second student will be the belt-controller, controlling the speed of the assembly line.

Students not working on the assembly line should each be assigned to closely observe one of the workers. Let the observers know that they’ll be asked to comment on what their worker seems to find easy and what their worker seems to find challenging.

Continued...

Lesson 4 Using Human Resources on the Assembly Line Continued

Paper Airplane Moving Assembly Line Continued

Introduce the scenario that the speed of production is controlled by the speed of the conveyor belt in the moving assembly line. Before you begin, ask students to explain why Henry Ford might feel this is a good idea. After they answer, ask the workers to be aware of their feelings while they are working on the moving assembly line.

Review each of the jobs with the students. Explain to students how the moving assembly line will work.

Once you are sure everyone understands his or her jobs, try out the moving assembly line!

Discuss students' reactions, successes and challenges. Take notes on the board.

Next, try speeding up the line.

Now ask the students: How do the workers' feelings change? Does the work become more challenging? If so, for whom, and how? How does speeding up the line change the quality of the product?

Update your notes on the board.

4 Henry Ford and the Moving Assembly Line, Part II

Read Part II of Student Activity Sheet 4: Henry Ford and the Moving Assembly Line. If students want to examine the images in the article more closely, access the digitized artifacts and project them onto a screen, if you have one. When you are finished reading, ask students to answer the reflection questions in writing.

Assessment

Evaluate your students' answers to the reflection questions in Student Activity Sheet 4: Henry Ford and the Moving Assembly Line.

* Adapted from *The Power in Our Hands: A Curriculum on the History of Work and Workers in the United States*, by William Bigelow and Norman Diamond. New York: Monthly Review Press, 1988.

Name _____

Henry Ford and the moving assembly line

Part I

Have you ever wondered how the items you use every day, such as the shoes you wear and the pen with which you write, were made? They were probably made by workers on a moving assembly line in a factory. Products have been made on moving assembly lines for almost 100 years. But in 1908, when Henry Ford began producing automobiles on the first moving assembly line, it was a major innovation in the way workers did their jobs.

Producing anything requires people. The people who play a part in producing a product are human resources. Henry Ford used **human resources** very well in his company, as “teammates” who helped him run the company and as workers who made the cars.

Henry Ford was a great team builder. He knew how to choose good workers and how to inspire them to make the business better. Ford employed engineers and business people to help plan the **production**, or building, of vehicles and the sales of cars. Members of his team started Henry Ford on his way to the moving assembly line. In 1906, a new production overseer rearranged the tools in Ford’s factory. Now the tools were in the same order of the steps needed to produce an automobile part! But it took seven more years for Henry Ford and his team to fully develop the moving assembly line.

In 1908, Henry Ford began building a new factory in Highland Park, Michigan. This factory is where the moving assembly line came to life.



Women Workers Assembling Magnetos at Ford Highland Park Plant, circa 1913 ID# THF23810

There are many different stories about what inspired the moving assembly line, which Ford started using in 1913. Henry Ford once said that he had observed the processes in a meatpacking plant. In a meatpacking plant, the animal’s body was attached to a moving conveyor belt and moved from worker to worker, who each cut off a particular piece of meat. One of Henry’s top engineers, Charles Sorenson, said that he and some of his assistants developed the assembly line by pulling an automobile chassis along on a rope past piles of parts, adding one part at each new spot. Historians think all of the stories probably have a bit of truth. It is certain that a variety of influences, many people and lots of

Continued...

experimentation led to the development of the moving assembly line. Henry Ford encouraged his workers to try new ways of doing things. He was a great example for them, too, as he was always tinkering with his machines and automobiles.



Swift & Company's Meatpacking House, Chicago, Illinois, Splitting Backbones and Final Inspection of Hogs, 1910-1915 ID# THF32081

This type of “disassembly” line inspired Henry Ford’s [moving assembly line](#). In the moving assembly line, the work moves from worker to worker. Each worker puts on a new piece of the part; then the part moves along to the next worker. Each worker does one step of the bigger job; this is called [division of labor](#). Also, each worker only has to learn and perform one step; this is called [specialization](#). At first, Ford Motor Company used the moving assembly to make the individual parts of cars. It was so efficient, allowing workers to make parts so quickly, that eventually it spread to all aspects of the assembly process. Even the chassis (the bottom of the car to which the wheels attach) moved on a conveyor belt from worker to worker.



Workers Assembling Car Bodies at Ford Rouge Plant, 1932 ID# THF23466

Part II

This new method of production changed the way that people worked. Instead of being involved in the whole process of building a car, workers just completed one small part of the process. This was faster and made it easier to train workers. However, doing a small task over and over again was boring. Also, workers had to work at the same speed the conveyor belt moved; if one worker slowed down or got behind, the rest of the process would be held up. In 1914, in order to convince workers to do this unpleasant work, Henry Ford began paying his

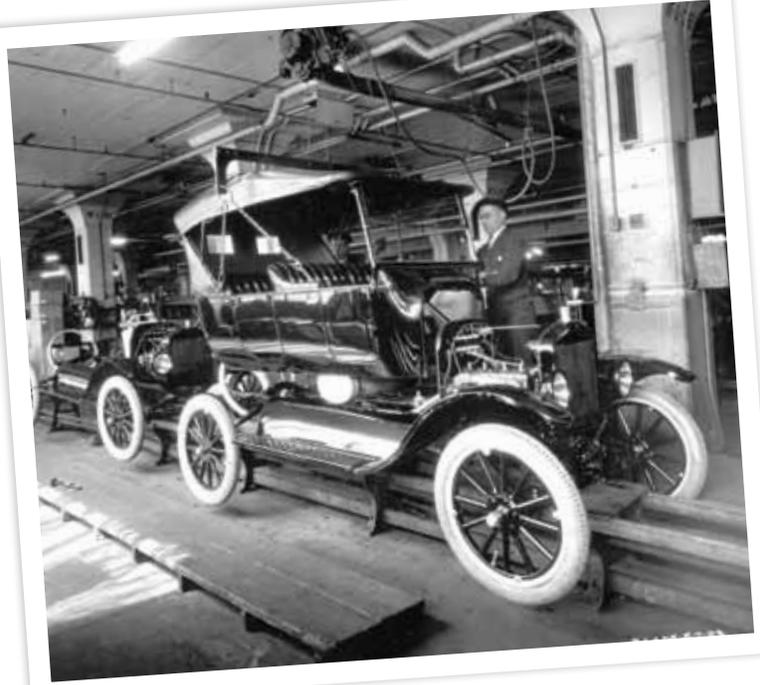
Continued...

Part II Continued

workers \$5 a day – almost twice as much as what they had been earning. Workers came to expect these high wages from Ford Motor Company and other automobile companies. When companies decreased wages during the Great Depression, workers formed a union, or group of workers with shared interests, so auto companies would always have to pay them good wages.

While the work was tedious, items could be produced faster and more cheaply than ever. Also, with workers being paid so well, they could afford to buy more. Soon, **consumption** – buying things – became a way of life for Americans. While Henry Ford did want all people to be able to get around with a Model T, Henry did not like unnecessary consumption, which increased partly because of his innovation of the moving assembly line.

By the 1920s, making, selling and buying automobiles became very important, especially in Michigan, where many automobile companies were located. Today, automobile companies selling cars in the United States are located all over the world. Michigan now faces the challenge of developing other economic activities, since the automobile industry is no longer as strong. However, the innovations of Henry Ford can be an example for the present and future of the Michigan economy.



1924 Ford Model T Cars on Assembly Line at Highland Park Plant, October 1923 ID# THF23577

Questions for Reflection

1. What are some of the advantages of the moving assembly line?
2. What are some of the disadvantages of the moving assembly line?
3. How is the moving assembly line important to Michigan history?
4. If you were offered a job on the moving assembly line for twice the wage you currently make, would you take it? Why or why not?