

# ScienceHeroes.com

## “On The Shoulders Of Giants”

### **Description:**

In this activity students will go to [www.scienceheroes.com](http://www.scienceheroes.com) and read the biographies of at least 3 scientists who have made life saving discoveries and then choose one of the scientists to do a more in depth research project. As students read real life accounts of the lives of these scientists, they can expand their view of what kinds of things scientists do; realize that all kinds of people do science; find out how the scientific community influences the acceptance of scientific knowledge; learn that science is a collaborative effort; and learn about barriers certain groups encountered in their efforts to become part of the scientific community. The overall purpose of this lesson is to increase students' knowledge about scientists and promote students' own scientific thinking.

Grade level: 6-8

Time: 2-3 class periods

### **National Science Education Standards: (Objectives)**

As a result of this activity students will develop a greater understanding about scientific inquiry and the ability to do it.

#### **KEY INQUIRY SKILLS from National Content Standard G: Grades 5-8**

##### **History and Nature of Science**

##### **Science as a Human Endeavor**

- Kinds of people engaged in science and ways they work
- Human capacities and qualities required for science



## **Nature of Science**

- Importance of experimentation and observational confirmation in testing and changing ideas in science.
- Normalcy of disagreement in areas of active research.

## **History of Science**

- Value of studying the contribution of others.
- Challenges for innovators from historical perspective.

## **KEY INQUIRY SKILLS from National Content Standard E: Grades 5-8**

### **Science and Technology**

- Contributions to science and technology by many people and cultures.
- Variety of settings in which scientists work.
- Limitations of science and technology in solving human problems.

## **KEY INQUIRY SKILLS from National Content Standard A: Grades 5-8**

### **Science as Inquiry**

- Abilities necessary to do scientific inquiry.



## **Materials:**

Computer and [Internet](#) Access (Ensure that every two to three students has access to a computer with internet).

Worksheet #1

Worksheet #2

## **Engage:**

Read to students: “Sometimes I was too hungry to concentrate, and I could not hear a lecture. Also, sometimes I felt dizzy and crouched down in a hallway to keep from fainting.”

- Akira Endo, discoverer of statins

Tell students, these words are quoted from Akira Endo, a scientist who discovered statins, a type of drug that are among the most commonly prescribed drugs in medicine and significantly reduce the risk of heart attack and death in patients with proven coronary artery disease (CAD).

He also said: The school (that he attended in Japan after WWII) had a system the students called zwei, for second meal. Some students did not eat all of their allotted food, so around 8PM a drum would signal that leftovers were available. The drum set off a race to the cafeteria for the remaining food, which was given out on a first come-first served basis. Endo studied from 7pm to 12pm every night, but he always had his chopsticks ready: “I was good at running. I ran like women running for a bargain. After all, I was not full even right after supper.”

## **Explore:**

Say to students: Akira Endo is a fascinating Japanese scientist whose life had plenty of ups and downs. Today, we’re going to read about some other scientists that have made lifesaving discoveries while leading fascinating lives. I want you to go to the [www.scienceheroes.com](http://www.scienceheroes.com) website and read at least three of the biographies of the scientists listed there. You should work with a partner. After reading the biographies you’re going to do a more detailed report on one of your choices. Complete Worksheet #1 and bring it to me for approval. Worksheet #1 contains the following:



- Name of 3 scientists you read about
- Scientist you chose to do more research about
- After choosing one scientist to research, answer the question, why did you choose him or her?

[Click here to download a PDF worksheet # 1](#)

[Click here to download a DOC worksheet # 1](#)

After the teacher approves of the scientist you choose you may move onto worksheet #2. Answer the questions on worksheet #2 about the scientist you've chosen.

1. The student will research the scientist. They can start on ScienceHeroes.com, but should find at least 2 other web resources. Most scientists on ScienceHeroes.com have links to other websites or the students can Google the scientist.
2. The student should answer the following questions from their research (if available).
  - What was your scientist's name?
  - Where were they born?
  - What was their family like?
  - How much education did they have? Where did they go to school?
  - What area of Science did they concentrate on most? (Ex. Medicine, Chemistry, Agriculture, etc.)
  - What was their breakthrough discovery?
  - How did their discovery save lives?
  - Did they make the discovery by themselves or by working on a team?
  - How many lives is it estimated they have saved by their discovery?
  - Any other interesting facts or trivia about the scientist or their discovery.

[Click here to download a PDF worksheet # 2](#)

[Click here to download a DOC worksheet # 2](#)

Students then decide to present to the class a report in one of the following ways: by dressing up as the scientist and reading their report to the class, preparing an activity based on the scientist's work, creating a PowerPoint presentation about the scientist's life and work, creating a scrapbook of the scientist's life, or another idea of the students' choosing.



## **Explain:**

By examining the life and work of scientists, students can learn science content, develop understandings about inquiry, see the relationship between science and society, and show how at times it is difficult for scientific innovations to replace previously accepted ideas. If students can connect the story of one scientist to other stories, they begin to understand that science has evolved over time.

Biographies of scientists—the living, the dead, the famous, and not so famous—all have a place in the science classroom. Reading about the lives of people who engage in science emphasizes that science is indeed a human endeavor—it is something that people do rather than just an accumulation of facts. Scientific knowledge is a result of the efforts of people engaged in science.

## **Elaborate and Connect:**

In middle schools, this would be a great integrated project that can include the language arts, reading, art, health and science teachers—each of whom could provide classroom instruction related to their area of expertise.

Invite to speak in your classroom scientists from a local university or hospital, a nearby national or state park, and scientists connected to industries in the community.

Arrange visits to a scientist in your community so the students can see real people doing science in action.

To give students an idea of when their scientists lived in relation to each other and to world events, create a timeline on a long strip of adding machine tape or larger paper. After each presentation, we add the scientist's name to the timeline and mark his or her lifespan on the tape. Important historical events, such as wars, scientific discoveries, natural disasters, and inventions, that occurred during or around the time the scientist lived are also added to the tape. Milestones for the timeline can be researched and suggested by students or provided by the teacher.

## **Evaluation:**

The teacher may evaluate students using a rubric which includes:

- Completion of the handout #1 on choosing a Scientist
- Completion of the handout #2 on researching the Scientist.
- Content of the Report
- Quality of the Report
- Did they cite their sources?

This lesson plan was written by Catherine Hesseldenz of Lexington, KY. She is a retired science teacher with over 33 years of experience at every grade level ranging from kindergarten to college seniors. Holding a Masters degree, she has also worked as the County Science Resource Teacher for the Fayette County Public Schools (50 schools) for 11 years, including organizing the county science fair and developing teaching materials for middle school programs through the University of KY.