

Lesson Plan Title:**Silicon Comes to Silicon Valley****Overview:**

Silicon Valley is generally understood as the area south of San Francisco, California that spreads south from Stanford University to San Jose and is contained by the San Francisco Bay on the east, the Santa Cruz Mountains of the Coast Range on the west. At the turn of the century, when fruit orchards predominated, the area was known as the *Valley of Heart's Delight*. Students will learn about the history of the region through the study of the early Bay Area electronics companies. The term Silicon Valley originally referred to the region's large number of silicon transistor and integrated circuit chip manufacturers, but is now frequently used as a general term for the high-tech sector. It was first used in print in 1971 by journalist Don Hoefler, a journalist with the industry newspaper *Electronic News*.

Objective:

To understand the impact of silicon in transforming the Santa Clara Valley from an agricultural region into the capital of high technology.

Vocabulary Words and Key Phrases

Fairchild
Semiconductor
Silicon
Silicon Valley
Shockley

Website References:

The online exhibition *The Silicon Engine: A Timeline of Semiconductors in Computers* will provide a wealth of resources and information. See the *Timeline*, *People*, *Companies*, and *Glossary* sections at:
<http://www.computerhistory.org/semiconductor/>

Specifically for this assignment see:

<http://www.computerhistory.org/semiconductor/timeline/1956-Silicon.html>

The subject matter of the lesson plan will inspire students to expand their research on the Web. Additional suggested website links are provided below:

Technology and Entrepreneurship in Silicon Valley and Silicon Valley History Timeline;
http://nobelprize.org/nobel_prizes/physics/articles/lecuyer/index.html

Silicon Valley History Online- a photographic history:
<http://www.siliconvalleyhistory.org/>

Silicon Genesis – oral histories of Silicon Valley pioneers
http://silicongenesis.stanford.edu/complete_listing.html

Teaching Strategy/Procedure:

1. Have students research the online exhibition *Timeline* section about 1956 and the *Companies* section and identify companies founded in the Silicon Valley area and their focus area in semiconductors. Students should also research online the history of Silicon Valley.
2. Ask students to identify 2-3 key elements that made the area the perfect environment for the development of the semiconductor industry.
3. Divide class into 2-3 groups. Assign each group one of the following Silicon Valley cities: Mountain View, Sunnyvale, Santa Clara, or San Jose. Each group should research two historical facts about their assigned city and semiconductor companies currently located in them and report back to the class.

Materials:

Access the website references listed above, together with the following:

Silicon Valley History Timeline

Compiled from various sources

1891 – Stanford University is founded by Governor Leland and Jane Stanford.

1909 – Cyril Elwell licenses the Poulsen arc radio transmitter from Denmark and establishes Federal Telegraph Company in Palo Alto.

1912 –Using his “Audion” vacuum tube At Federal Telegraph Lee de Forest invents electronic amplifier and oscillator circuits that enabled radio, television, and computers.

1932 Charles Litton establishes Litton Engineering Laboratories, a manufacturer of tube-making equipment and provider of tube engineering services.

1934 William Eitel and Jack McCullough form Eitel-McCullough (Eimac), a firm specializing in the manufacture of power grid tubes.

1937 Russell Varian, Sigurd Varian, and William Hansen invent the klystron microwave radar tube at Stanford. They establish Varian Associates in 1948.

1939 David Packard and William Hewlett establish Hewlett-Packard in Palo Alto

1951 Dean Fredrick Terman spearheads the creation of the Stanford Industrial (now Research) Park.

1955 William Shockley establishes Shockley Semiconductor Laboratories in Mountain View.

1957 Eight Shockley employees quit to found Fairchild Semiconductor in Palo Alto.

1959 Jean Hoerni invents the planar process at Fairchild Semiconductor. Robert Noyce uses it to conceive the monolithic integrated circuit (IC).

1960 At Fairchild, a team under Jay Last develops the IC idea into a product.

1965 Fairchild's Gordon Moore proposes his Moore's "Law" in *Electronics* magazine.

1966 Charles Sporck of Fairchild Semiconductor takes over National Semiconductor and transforms it into a major Silicon Valley-based integrated circuit manufacturer.

1968 Robert Noyce and Gordon Moore quit Fairchild to found Intel to manufacture semiconductor memories

1971 Federico Faggin, Ted Hoff, Stan Mazor and Masatoshi Shima develop the microprocessor at Intel.

1975 The Homebrew Computer Club is founded in Menlo Park

1976 Steve Jobs and Steve Wozniak and establish Apple Computer in Los Altos

1982 Sun Microsystems founded.

1984 Apple Computer introduces the Macintosh.

1993 Cisco Systems founded.