SILICON VALLEY: THE UNTOLD STORY

LESSON PLANS
GRADES 7-12

KIKIM MEDIA

INTRODUCTION

Silicon Valley is more than just silicon chips, computers, and apps. For every decade or so since the early 1900s, the region has spawned or nurtured not just new products that have changed the world but whole new industries. It is a hotbed of innovation and entrepreneurship that is constantly reinventing itself. Exciting lessons can be learned from Silicon Valley about creativity, collaboration, and taking risks that can enrich our lives.

The scope and drama of the region's evolution is revealed in *Silicon Valley: The Untold Story*—a three-part primetime series by Kikim Media for Discovery's Science Channel. The curriculum below includes lesson plans and clips from the film for grades 7-12. It explores the concepts of innovation and entrepreneurship through design thinking activities, investigations into technology companies and artifacts, and research on the role that immigrants and women have played in the technology that students see and use every day. Key companies and figures featured in the film include: Airbnb and Atari, Apple cofounder Steve Wozniak, WhatsApp cofounder Jan Koum, Marimba cofounder Kim Polese, and T/Maker cofounder and CEO Heidi Roizen.

The curriculum meets a variety of standards in the National and California State Common Core standards, California Standards for Career Ready Practice and Next Generation Science Standards. It is provided by the Computer History Museum's Exponential Center, the community and educational outreach partner for the film.

About the Author
Allison Milewski has developed media education resources for a range of award-winning filmmakers and national media organizations and is also the founder of PhotoForward.org. Notable projects include award-winning content for PBS LearningMedia, HBO, and "most downloaded resources" for Independent Television Services (ITVS) "Community Classroom."

The Exponential Center at the Computer History Museum captures the legacy and advances the future of entrepreneurship and innovation in Silicon Valley and around the world. Our mission is to inform, influence, and inspire the next generation of innovators, entrepreneurs, and leaders changing the world.

Kikim Media was founded in 1996 by Kiki Kapany and Michael Schwarz, whose work over the past 20 years has been honored with some of the most prestigious awards in broadcasting. Production of *Silicon Valley: The Untold Story* was made possible thanks to a generous grant from The Alfred P. Sloan Foundation.

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SILICON VALLEY:
SECRET SAUCE

The untold stories behind the tech that shapes our world

Overview
Audience: Grades 7–12
Subject Areas: History, Computer Science, Social Studies, and English Language Arts
Class Time: 110 minutes (2 class periods) + Assignments

Guiding Question
What are the unique elements that have made possible Silicon Valley's long history of innovation and entrepreneurship in the technologies that shape our world?

PURPOSE OF THE LESSON/OBJECTIVES:

Students will:

Understand the definition of "technology" and how use of the term has changed over time

Explore the history of Silicon Valley and how the founders and builders of new companies drove the evolution of technology

**Learning Activity Option 1
(High School)**

Understand why Silicon Valley is described as an "ecosystem" and the essential elements that contribute to its success

Plot out their own community's "ecosystem"

Reflect in writing about how they will apply this model in their own lives

**Learning Activity Option 2
(Middle School and High School)**

Investigate the history of a modern technology "artifact" or company

(Middle School) Write a short story or create art from the perspective of the artifact or company they studied

(High School) Develop a presentation or exhibit for their artifact or company

RESOURCES/MATERIALS

Clips from *Silicon Valley: Secret Sauce*

***Silicon Valley: The Untold Story* Official Trailer:**
https://www.youtube.com/watch?v=37SBRv40qsA&index=16&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Secret Sauce Clip 1
Apple Computer
"The modern world starts right there."
https://www.youtube.com/watch?v=HSzoIRxyYG8&index=10&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Secret Sauce Clip 2
WhatsApp
"And that was it...it was like the light went on."
https://www.youtube.com/watch?v=gnLSOckai7M&index=11&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Computers with Internet access
LCD projector
Whiteboard/blackboard
Pens, markers, and writing paper
Student Handouts
   - Student Handout A: Viewing Guide-Secret Stories of Our Digital World
   - Student Handout B: Choosing a Subject
   - Student Handout C: Untold Stories
Teacher Handouts
   - Teacher Handout A: Silicon Valley and the Computer History Museum
   - Teacher Handout B: Choosing a Subject - Examples

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INTRODUCTORY ACTIVITY: WHAT IS TECHNOLOGY?

Do Now, Think-Pair-Share: Display/write the following quote on the board, give students three minutes to re-write the quote in their own words. Next, have students pair-up to share and refine their responses with their partner. Ask for volunteers to share their responses with the class.

> **"The advance of technology is based on making it fit in so that you don't really even notice it, so it's part of everyday life."**
> —Bill Gates, Cofounder of the Microsoft Corporation

Ask students: "What is technology, and what technology do you use and encounter every day (without even noticing it)? For example, What apps do you have on your phone?" Repeat the Think-Pair-Share procedure and record their examples on the board. Review their responses and remind the class that technology, specifically computing technology, is not just in smartphones and laptops but also in objects like refrigerators, cars, games, watches, etc. And, not all technology is computer technology; a screwdriver can be considered technology.

Explain: Each of these technologies has hidden stories to tell, from how they were first imagined to how they are used by us today. If you were a detective/researcher investigating the "untold story" of these technologies, what questions would you ask?

Record their research questions on the board to revisit later. (Examples: When, how, and why was it invented? How has it changed over time? What is it used for today? How is it manufactured or what company manufactures it? What might its fate be in the future?)

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SCREENING ACTIVITY:
SECRET SAUCE AND UNTOLD STORIES

Explain: Today we'll watch excerpts from the film series *Silicon Valley: The Untold Story* and explore the history, people, and the stories behind the technology that shapes our world.

Have a volunteer read a brief summary about the series *Silicon Valley: The Untold Story*, in Teacher Handout A: Silicon Valley and the Computer History Museum (Facilitator Note: The handout could also be copied and distributed as take-home reading prior to starting the lesson.)

Distribute Student Handout A: Viewing Guide–Secret Stories of Our Digital World and review the note taking activity.

Play the official trailer for *Silicon Valley: The Untold Story*
https://www.youtube.com/watch?v=37SBRv40qsA&index=16&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

and CLIP 1 and follow with a brief discussion. (use the following prompts as needed):
https://www.youtube.com/watch?v=HSzoIRxyYG8&index=10&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

1. What surprised you most about the history of the Apple computer and the company?

2. Who here uses or has used Apple products? What products do you use and what do you use them for?

3. Why did Steve Jobs and Steve Wozniak start working on developing computers?

4. What inspired them to pursue their work? What problems were Apple's founders trying to solve through their inventions and innovations?

5. What role did Silicon Valley play in their development and ultimate success?

Play CLIP 2 and follow with a brief discussion (use the following prompts as needed):
https://www.youtube.com/watch?v=gnLSOckai7M&index=11&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

1. Who uses or has used WhatsApp? What do you use it for? How is it different than other apps that you use?

2. What inspired Jan Koum to pursue his work with computer technology?

3. What problems was he initially trying to solve through his app?

4. What role did Silicon Valley play in Jan Koum's career and WhatsApp's development and ultimate success?

Have the students pair up to review their Viewing Guide notes then reconvene the class to discuss the history of the two companies and their relationship to Silicon Valley:

1. What surprised you most about the histories of both of these companies? What did you already know and what did you learn?

2. What is it about Silicon Valley that made it possible for companies like Apple and WhatsApp to develop here? Could they have happened somewhere else? Why or why not?

3. How did the Apple team and Jan Koum's original goals compare to their outcomes?

4. In what ways did both Steve (Woz) Wozniak and Jan Koum want their innovations to be tools for "liberation"? Do you think they were successful? Why or why not?

5. How has learning about the history of these companies changed your perspective on their products and innovations?

Select one of the following Learning Activities to pursue with your class.

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LEARNING ACTIVITY OPTION 1: UNDERSTANDING AND ADAPTING THE SILICON VALLEY ECOSYSTEM

Part 1: What is Silicon Valley's Ecosystem?

Discuss: Silicon Valley has been described as an "ecosystem." What is an ecosystem? (Dictionary.com: any system or network of interconnecting and interacting parts, as in a business.)

1. Why is this metaphor applied to Silicon Valley? What are some of the "parts" that are "interconnecting" in this region? (Examples: entrepreneurs, funders, university researchers, manufacturers, mentors, consumers, etc.)

2. What are some examples from the film of the Silicon Valley ecosystem at work?

Organize the students into breakout groups and ask them to review and analyze the following models of Silicon Valley's ecosystem:

"Defining an ecosystem." The Entrepreneurial Ecosystem Building Playbook, Ewing Marion Kauffman Foundation, 2017. http://www.kauffman. org/entrepreneurial-ecosystem-building-playbook/ ii-what-are-entrepreneurial-ecosystems#

"The Silicon Valley ecosystem of technological innovation and entrepreneurship," If Venture Capital Falters, Will Job Creation Fade? by Christopher DiGiorgio and Jeanne G. Harris, Accenture Institute for High Performance 2013 (P. 3, Figure 1). https://www.accenture. com/_acnmedia/Accenture/Conversion-Assets/ DotCom/Documents/Global/PDF/Technology_11/ Accenture-Venture-Capital-Silicon-Valley.pdf

Additional ecosystem models and resources: "Entrepreneurial Ecosystem Momentum and Maturity" by Ken Harrington, Ewing Marion Kauffman Foundation, April 2017: http://www.kauffman.org/what- we-do/research/2017/entrepreneurial-ecosystem- momentum-and-maturity

Isenberg's Entrepreneurship Ecosystem Project: http://entrepreneurial-revolution.com/about-beep/

"Introducing the Entrepreneurship Ecosystem: Four Defining Characteristics," by Daniel Isenberg, Forbes, 25 May 2011. https://www.forbes. com/sites/danisenberg/2011/05/25/introducing- the-entrepreneurship-ecosystem-four-defining- characteristics/#1cd9645c5fe8

Domains of the Entrepreneurship Ecosystem (Babson Global): https://blogs-images.forbes.com/ danisenberg/files/2011/05/EES-Domains-and-Pil- lars-only1.jpg

Have the groups analyze the models and identify what elements in each model are "essential" to the success of Silicon Valley's ecosystem.

Once they compare/contrast the models, groups should summarize the essential elements of the Valley's ecosystem and how these elements interact using the film and earlier discussion as a guide. Reconvene the class and have each group share their observations.

Part 2: Adapting Ecosystem Lessons to Your Community

Discuss: How would you describe the ecosystem where you live? What jobs do people have? Who are the biggest employers? What kinds of products and services are produced or offered? Are there colleges and universities?

1. How does it compare with the ecosystem of Silicon Valley?

2. How might you apply the lessons of Silicon Valley to your community?

3. Have groups collaborate to adapt what they have learned using The Startup Ecosystem Canvas Template from the Founder Institute. See next page.

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Facilitator Note: If students have specific startup/entrepreneurial projects in mind, they can tailor their Startup Ecosystem evaluation to those goals. If not, the groups can make a general evaluation of their community.

The Startup Ecosystem Canvas: The graphic organizer and instructions to guide the evaluation of your community's ecosystem and how it can be harnessed for entrepreneur projects: https://fi.co/canvas_template

Printable Ecosystem Canvas Template: https://fi.co/system/upload/ecosystem_canvas_worksheet_v1.pdf

Optional resource:
Y Combinator Startup Playbook written by Sam Altman & illustrated by Gregory Koberger: http://playbook.samaltman.com/

When the groups have completed their Startup Ecosystem evaluations, have them pair up to review and provide feedback on each other's work. Groups should make revisions or pivot as needed.

Reconvene and have the class take a "gallery walk" to review all of the groups' ecosystem evaluations.

Reflection
Reconvene the class and revisit the essential questions:

What is the "secret sauce" of Silicon Valley?

What are innovation and entrepreneurship and what makes them possible?

Journal Assignment
Have students write a journal reflection in response to the following question:

How will you apply what you have learned through this workshop to your own life and/or work?

LEARNING ACTIVITY OPTION 2: TECHNOLOGY HISTORIANS

Explain: Today, you will work in groups to investigate the history, development, and cultural impact of a modern technology "artifact" and/or a company such as Facebook, Google, etc.

Part 1

Distribute a copy of Student Handout B: Choosing a Subject to each student and explain that they will have 3-5 minutes to brainstorm a computer technology to investigate using the handout as a guide. Once they have finished brainstorming, instruct the students to circle their favorite topic in each category. (Use the examples in Teacher Handout B: Choosing a Subject, as needed.)

Organize the class into small groups of 2-3 students. Give the groups 10-15 minutes to share their selections with their partners and work together to choose a technology or a technology company that they all will be excited to investigate. Have representatives from each group share their selections with the class and why they chose it.

Facilitator Note: Encourage the groups to be as specific as possible with their research subject. For example, instead of "smartphones," they can focus on the iPhone. Instead of "GPS technology," they can focus on how GPS has made bike-share programs possible. (General categories for topics for technology artifacts can include: smartphones, computers, software, apps, cash machines, virtual assistants & artificial intelligence [Apple's Siri, Amazon's Alexa, Google Assistant], electronic control units [ECUs] in cars, etc.)

Part 2

Distribute Student Handout C: Untold Stories to each student and explain that they will use the handout to guide their research. The handout includes common inquiry techniques used by archaeologists, historians, and museum curators and a guide for analyzing resources from the Internet, libraries, and museum archives. Revisit their research questions from the Introduction activity and invite them to add questions they would like to ask about their subject. Groups should add at least three of their own questions to the handout.

Have students review the handout and delegate research tasks among their group members. Encourage students to visit the Computer History Museum website and archives, which contain a wealth of information: www.computerhistory.org

Facilitator Note: It is helpful to check in with the groups before they start their research to ensure that the tasks and responsibilities are fairly distributed. The teams may carry out their research in class or as a take-home project, depending on available time. If students are using printed versions of the handout, they will need to write their notes and responses on separate sheets of paper.

Part 3

When the groups complete their research, have them partner with another group to share their work.

Before moving on to the final Assignment, reconvene the class to review and reflect. Ask members of each group to share at least one surprising thing they learned that has changed their perspective on the technology they researched.

Facilitator Note: This activity is suitable for both middle and high school students.

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ASSIGNMENT:
THE OBJECT OF THE STORY

Option 1, Middle School—If Tech Could Talk
Have students use their research to help them write a short story from the perspective of the technology artifact or company they researched. Writing prompts:

1. Where did it come from?

2. How did it feel about the people who helped create it?

3. What problem did it want to solve?

4. What was its journey?

5. What is it most proud about?

6. How has it made a difference in the world?

When the stories are complete, students can use their graphic design skills and illustrate their stories. Completed projects can be presented to their class, posted on the class website, or collected and digitally published using free, online book design programs.

Option 2, High School—Technology Timeline
Have students focus on the history and development of the technology or company they selected and develop a graphic timeline that highlights: the phases of development, significant events, and the people involved at various stages and their contributions.

Students can collaborate with their research group or work independently. Their project can be displayed as an online exhibit or as part of a physical, multimedia presentation in their class.

Research Resources:
For Teachers:
http://www.computerhistory.org/education/educators/

For Students:
http://www.computerhistory.org/exhibits/

Free Timeline Creation Tools for
Educators and Students:

Timetoast: https://www.timetoast.com/
Timeglider: https://timeglider.com/
Free-Timeline: http://free-timeline.com/
Sutori: https://www.sutori.com/teachers

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EXTENSION ACTIVITY

Digital Technology As Our Personal Archives
With the computer revolution has come an explosion in data collection. Most of the tech we use today is collecting information about who we are, what we do, what we like, and how we live. We can now capture both aggregate data and subjective experiences like never before in history.

Have students research and reflect on their digital "footprint" (for example, search history in a computer browser, call/text locations on a mobile phone, photos on Facebook, etc.), the advent of "Big Data," and how our definition of an "archive" has changed with the digital age. They should examine the benefits and drawbacks of massive data collection, how data about them is used, and what this massive expansion of data will mean in the future.

What Entrepreneurs Are Made Of
Entrepreneurs in Silicon Valley can take advantage of a "secret sauce" that fosters innovation. It includes an openness to risk-taking, great universities, a concentration of accomplished people in similar fields, and access to funding, among other things. But people everywhere can think of individuals who have what it takes to motivate themselves and others to work toward their vision for changing the world.

Option 1: Have students identify someone in their lives who they define as successful. This could be a parent, a teacher, a mentor, a politician, a business person, a sports or entertainment figure, etc. They should write down specific words and details to describe what it is about the person that makes them successful. They should research or interview the person to learn about his or her life and career and then identify the person's "secret sauce"—their background, circumstances, community, personality traits, etc.—that seemed to contribute to their success in their chosen field.

Option 2: Have students identify a number of Silicon Valley entrepreneurs from diverse backgrounds and research the common attributes that the individuals themselves or others have said contributed to their success (e.g. passion, tenacity, flexibility, risk tolerance, vision, self-confidence, tolerance of ambiguity, thinking outside the box, etc.). Students can then compare those attributes for success to leaders in other fields, such as sports, entertainment, politics, etc.

Examples (Note: students should choose their own subjects, if possible):

Sergey Brin, Google
Daphne Koller, Coursera
Elon Musk, Tesla, SpaceX
Debra Sterling, GoldieBlox
Kevin Systrom & Mike Krieger, Instagram
Michelle Zatlyn, Cloudflare
Mark Zuckerberg, Facebook

The Evolution of Technology
Today, we may think of technology as cutting-edge computers, the ever-expanding Internet, and world-changing engineering and programming for personal gadgets, robotics, and transportation, but technology has been an integral aspect of human societies since our beginning. Have students explore the evolution of technology since the beginning of humanity and how needs-based inventions made way for more complex innovations. Students can examine how technology has shaped the human experience and identify how specific innovations throughout history have disrupted social structures and radically changed the way people live, communicate, and relate to each other.

Have students identify a radical innovation from human history and compare its development and social impact to the history of the computer revolution (for example: the invention of the printing press). Students can use the Computer History Museum archives and resources for reference and should develop a multimedia presentation that illustrates the similarities and differences in the process of invention, the adoption of the new tech, and the ways that all aspects of society were affected.

Resources:
Computer History Museum Exhibitions:
http://www.computerhistory.org/exhibits/

Computer History Museum
Timeline of Computer History:
http://www.computerhistory.org/timeline/

For more resources, explore the Additional Resources PDF.

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STANDARDS

California Common Core State Standards English Language Arts & Literacy in History/Social Studies

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12:

1. Write arguments focused on discipline-specific content.

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

California Standards for Career Ready Practice

4.0 Technology
Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Information and Communication Technologies sector workplace environment.

4.2 Employ technology based communications responsibly and effectively to explore complex systems and issues.

9.0 Leadership and Teamwork
Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution such as those practiced in the Future Business Leaders of America and Skills USA career technical student organization. (Direct alignment with SLS 11-12.1b)

9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.

9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.

9.5 Understand that the modern world is an international community and requires an expanded global view.

9.7 Participate in interactive teamwork to solve real Information and Communication Technologies sector issues and problems.

National Common Core Standards

English Language Arts Standards

CCSS.ELA-LITERACY.W.7.4
CCSS.ELA-LITERACY.W.8.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.9-10.4
CCSS.ELA-LITERACY.W.11-12.4
Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.SL.7.1
CCSS.ELA-LITERACY.SL.8.1
CCSS.ELA-LITERACY.SL.9-10.1
CCSS.ELA-LITERACY.SL.11-12.1
Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

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Production and Distribution of Writing

CCSS.ELA-Literacy.WHST.6-8.4
CCSS.ELA-Literacy.WHST.9-10.4
CCSS.ELA-Literacy.WHST.11-12.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.WHST.6-8.6
CCSS.ELA-Literacy.WHST.9-10.6
CCSS.ELA-Literacy.WHST.11-12.6
Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

College and Career Readiness Anchor Standards for Speaking and Listening:

Comprehension and Collaboration:

CCSS.ELA-Literacy.CCRA.SL.1
Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-Literacy.CCRA.SL.2
Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas:

CCSS.ELA-Literacy.CCRA.SL.4
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.CCRA.SL.5
Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

SILICON VALLEY AND
THE COMPUTER HISTORY MUSEUM
SILICON VALLEY: SECRET SAUCE

Secret Sauce
"Secret Sauce" is the second segment of the three-part film series, *Silicon Valley: The Untold Story*, that explores the unique mix of ingredients—the secret sauce—that fueled the Valley's rise to becoming the world's technological and economic powerhouse.

Silicon Valley: The Untold Story
Around the world, people want to know what it is about Silicon Valley that has made it a hotbed of innovation and entrepreneurship for decades. *Silicon Valley: The Untold Story* explores the fascinating and often unknown stories of the people, partnerships, events, and social changes that shaped Silicon Valley and changed the world.

For every decade or so since the early 1900s, Silicon Valley has spawned or nurtured not just new products but whole new industries: Vacuum tubes. Radio. Radar. Integrated circuits. Venture Capital. PCs. Printers. Genetic Engineering. Software. Networking hardware. The Internet. Social media. Cloud computing. Mobile.

This three-part Discovery Science Channel primetime series, *Silicon Valley: The Untold Story*, explores the evolution of Silicon Valley and examines how it has managed to stay on the cutting edge of innovation for so long. The film was produced by Kikim Media, founded in 1996 by Kiki Kapany and Michael Schwarz, whose work over the past 20 years has been honored with some of the most prestigious awards in broadcasting. Production of *Silicon Valley: The Untold Story* was made possible thanks to a generous grant from The Alfred P. Sloan Foundation.

The Computer History Museum
The history of computers is the history of our modern world. The Computer History Museum (CHM) in Silicon Valley, California is dedicated to preserving and presenting the stories and artifacts of the information age and exploring the ongoing impact of the computing revolution on society. CHM explores not only the "what" but also the "why" and the "how" of computing, and brings to life the historical narratives, first-person accounts, iconic examples of industrial design, business and marketing strategies, that shape our modern world and change the way we work, live, and play.

The Exponential Center at the Computer History Museum captures the legacy and advances the future of entrepreneurship and innovation in Silicon Valley and around the world. Our mission is to inform, influence, and inspire the next generation of innovators, entrepreneurs, and leaders changing the world.

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VIEWING GUIDE
SECRET STORIES OF OUR DIGITAL WORLD
SILICON VALLEY: SECRET SAUCE

Student Name

Instructions: Take notes in response to the following prompts while watching the film clips and record general notes about scenes and quotes that surprised, confused, or interested you.

1. Why is Silicon Valley the site of so many innovations? Note examples from both film clips that illustrate how Silicon Valley facilitates invention, innovation, and entrepreneurship (starting a business).

2. What inspired Steve (Woz) Wozniak and Steve Jobs of Apple and Jan Koum of WhatsApp to begin their work with computer technology?

3. What events and experiences helped define Woz, Jobs, and Koum's work?

4. General Notes:

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CHOOSING A SUBJECT
SILICON VALLEY: SECRET SAUCE

Student Name

Quickly brainstorm and write as many examples of technology or tech companies you can think of. Be sure to focus on those you really like, use often, are excited about and are important to you. Using the following categories as a guide and try to include at least two examples for each category:

PERSONAL COMPUTERS & LAPTOPS	SOFTWARE & APPLICATIONS (APPS)
COMPUTER/TECH COMPANIES	PORTABLE & WEARABLE TECH (SMARTPHONES, ACTIVITY TRACKERS, ETC.)
SOCIAL MEDIA	VIDEO GAME & SOCIAL MEDIA TECH
HOME & TRANSPORTATION TECH	ARTIFICIAL INTELLIGENCE & ROBOTICS

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UNTOLD STORIES
SILICON VALLEY: SECRET SAUCE

Student Name

Description

1. What is your research subject?

2. Is this a physical object (a phone, tablet, watch, etc.), program (software, app, social network, etc.), or a company?

3. What is it used for, or what does it produce?

4. Who uses it? Who are the audiences or markets for this company or technology (age group, profession, country, economic class, etc.)?

5. Who made this technology or founded this company?

6. When was it made/founded?

7. Where is the tech manufactured?

8. How much is the technology or the company worth (in dollars)?

9. Is the value of this tech or company due to materials, function, date, rarity, brand, fashion, quality, etc.?

Classification:

10. Is this technology or company unique or are there similar ones available? How is it similar to and different from the others?

11. What other technologies or companies would you group it with? How would you classify this group of technologies or companies? (For example: printers and copiers could be classified as office equipment.)

History:

12. Who developed/invented this technology or founded this company?

13. Was it developed independently or as part of a larger company or project?

14. What was the historical and cultural context in which this technology was developed or company founded? How did that influence the people who created it?

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15. Where did the resources for the invention of this technology or company come from and how was it funded?

16. What was the original purpose or goal of this technology or company? Did the purpose or goal change? If so, what caused the change?

17. What mistakes, problems, or roadblocks did the developers/inventors/company leaders encounter along the way?

18. How did failure and trial and error influence the final product or products produced?

19. How is the technology used today or what is the company producing today?

Interpretation:

20. What role does this technology or company play in your life? (How has it changed your life?)

21. If you were studying this technology or company 1000 years from now, what would it reveal about the culture and time period in which it was invented and used?

How did people use the technology produced to organize or enhance their lives?

How did the technology or company change or influence society and culture?

What social benefits did this technology or company provide? What, if any, problems did this technology or company cause?

What were the priorities of the society that made and used the technology or in which the company existed?

Evaluating Research Sources
Guide for assessing the quality of resources from the Internet, libraries, and museum archives.

Sourcing: Who made this source? Where did it come from?

Contextualizing: Why was this information created? Who was the audience? What was the goal of the author(s)?

Corroborating: What do other sources say about the information in this resource? Do they agree or disagree with what it says?

Close Reading: What does the document say? Is it biased? What is the tone?

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CHOOSING A SUBJECT: EXAMPLES
SILICON VALLEY: SECRET SAUCE

Personal Computers, Laptops, & Accessories
(printers, memory drives, mouse, etc.)
Apple iMac
Flash drives (thumb drives)
Google Chrome Laptop
HP printer

Software & Applications
(Apps)
Adobe Photoshop
Evernote
Java
WhatsApp

Computer/Tech Companies
Alphabet Inc. (formerly Google)
Apple Inc.
Facebook
Intel
Hewlett Packard
Tesla Inc.
Yahoo!

Portable & Wearable Tech
(Smartphones, Activity Trackers, etc.)
Apple Watch
Fitbit
Google Glass
iPhone
Oculus Rift
Snapchat Spectacles

Social Media
Facebook
Instagram
Pinterest
Twitter
Wikipedia
YouTube

Games & Entertainment
Atari
Minecraft
Netflix
Second Life by Linden Lab
Tomb Raider by Crystal Dynamics
YouTube
Zynga (Farmville, CityVille, etc.)

Home & Transportation Tech
Cruise Automation and Google's Waymo
(self-driving cars)
Home Automation Technology
Philips Smart Lightbulbs
Segway
Sonos Sound System
Tesla
Uber & Lyft

Artificial Intelligence & Robotics
Amazon Alexa
Apple Siri
Facebook M
Kismet robot
Medical replacements & enhancements: (artificial
heart, retinal implants, artificial limbs etc.)
Roomba

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MAGNETIC FORCE:
THE PEOPLE MAKE THE PLACE

The untold story of how immigrants and women shaped Silicon Valley

Overview
Audience: Grades 7–12
Subject Areas: History, Computer Science, Social Studies, and English Language Arts
Class Time: 10 minutes (2 class periods) + Assignments

Guiding Question
What is the "Magnetic Force" that draws innovators from all over the world? How is the Valley's increasing diversity shaping the future of the community and global technology?

PURPOSE OF THE LESSON/OBJECTIVES:

Students will:

Understand the important contributions women and immigrants have made to technology innovation through *Silicon Valley: The Untold Story* "Magnetic Force" and group research

Explore how cultural myths shape historical narratives and how factors such as race, gender, class, and place influence how stories about our collective history are told

Collaborate on a collection of Untold Stories featuring lesser-known contributors to the history of Silicon Valley

Research the changing demographics of Silicon Valley and analyze how increased diversity is shaping the present and future of innovation

RESOURCES/MATERIALS

Clips from *Silicon Valley: Magnetic Force*

***Silicon Valley: The Untold Story* Official Trailer:**
https://www.youtube.com/watch?v=37SBRv40qsA&index=16&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Magnetic Force: Clip 1
"The fact is, the heroes of Silicon Valley could not have done what they did without a lot of help provided by taxpayers, by a new breed of investors, and waves of immigrants."
https://www.youtube.com/watch?v=E4FOKKASc3U&index=12&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KA-SO

Magnetic Force: Clip 2
"As one of the few women CEOs, I got a lot of attention."
https://www.youtube.com/watch?v=mw3UhHphmho&index=13&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KA-SO

Magnetic Force: Clip 3
"New ideas are born of people with multiple perspectives who come in with a belief that they can make a difference."
https://www.youtube.com/watch?v=filiKMZ1PL0&index=14&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Computers with Internet access
LCD projector
Chart paper
Whiteboard/blackboard
Pen and writing paper
Student Handouts
   - Student Handout A: Viewing Guide
     Who is Silicon Valley?
   - Student Handout B: Who is Silicon Valley?
   -Student Handout C: Case Study Activity
Teacher Handouts
   -Teacher Handout A: Silicon Valley and
     the Computer History Museum
   -Teacher Handout B: Who Is Silicon Valley?
     Case Studies

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INTRODUCTORY ACTIVITY: WHO ARE THE TECHNOLOGY INNOVATORS?

Think-Pair-Share: Have students brainstorm a list of important figures that they associate with technology and innovation, discuss their list with a partner, and share their responses with the class. Follow with a discussion:

1. What are the similarities and differences between these figures? What do they have in common?

2. How many of the people on our lists were born in another country or are people of color?

3. How many women are on our list?

4. Can you think of any more famous innovators and tech developers who represent these populations? Why don't we know more about the diversity of the tech community and the contributions made by people from a range of backgrounds and experiences?

5. Why does representation matter? How do factors such as race, gender, class, and place, shape our view of history?

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SCREENING ACTIVITY:
WHO IS SILICON VALLEY?

Explain: Today we'll watch excerpts from the film series *Silicon Valley: The Untold Story*, explore the "Magnetic Force" that draws innovators from all over the world and learn how the Valley's increasing diversity is shaping the future of technology.

Have a volunteer read a brief summary about the series *Silicon Valley: The Untold Story* in Teacher Handout A: Silicon Valley and the Computer History Museum (Facilitator Note: The handout could also be copied and distributed as take-home reading prior to starting the lesson.)

Distribute Student Handout A: Viewing Guide-Magnetic Force and review the note taking activity.

Play the official trailer for *Silicon Valley: The Untold Story*
https://www.youtube.com/watch?v=37SBRv40qsA&index=16&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

and CLIP 1 and follow with a brief discussion:
https://www.youtube.com/watch?v=E4FOKKASc3U&index=12&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

1. In the clip, Leslie Berlin says, "If you're serious about succeeding in finance, you go to New York City. If you're serious about the movies, you go to Hollywood. If you're serious about science and technology, you come to Silicon Valley." Why is Silicon Valley a magnet for technology entrepreneurs and professionals from around the world?

2. What does Jan English-Lueck mean by saying that Silicon Valley "self-consciously aims to change the world"?

3. What role has public funding played in Silicon Valley? In what ways are taxpayer funded resources especially critical to the Valley's success?

4. Why was Sputnik a catalyst for the expansion of innovation and manufacturing in Silicon Valley? What innovations resulted from the Space Race and Cold War?

Play CLIP 2 and follow with a brief discussion:
https://www.youtube.com/watch?v=mw3UhHphmho&index=13&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KA-SO

1. Despite the fact that women have been integral to Silicon Valley's history from the beginning, the technology industry still employs significantly fewer women than men. Kim Polese comments, "And yet it believes it's a meritocracy. So that's not a good combination." What does she mean?

2. Do you think Silicon Valley is a meritocracy? Why? How does the belief that it is a meritocracy help to reinforce gender and racial inequality?

What other factors contribute to Silicon Valley's lack of gender diversity?

What strategies are female entrepreneurs and professionals like Heidi Roizen and Kim Polese using to break down barriers in the industry?

Play CLIP 3 and follow with a brief discussion:
https://www.youtube.com/watch?v=fiIiKMZ1PL0&index=14&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

1. More than a third of Silicon Valley's professionals are foreign-born. What is the benefit of this geographic and cultural diversity?

2. Why did Narinder Kapany choose to move to Silicon Valley? What did the Valley offer that Boston did not? What resources and opportunities were available to him in the Valley?

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Divide the class into small discussion groups and distribute Student Handout B: Who is Silicon Valley? Have them use their Viewing Notes for reference as they reflect on the film.

Reconvene the class and discuss:

1. What stood out or surprised you most about Silicon Valley's history and culture?

2. In the film, Leslie Berlin says, "New ideas are born of people with multiple perspectives who come in with a belief that they can make a difference." What do you think she means by this? What examples of this dynamic can you give from the film clips?

3. What challenges does increased diversity pose? How will Silicon Valley's culture need to change or evolve to be more inclusive for women and "minority" tech employees from across the United States? How can it remain welcoming to immigrants, who make up over half of workers in computer, mathematical, architectural, and engineering fields? (Currently, workers from China and India greatly outnumber foreign-born workers from other countries. And, while nearly 79% of women ages 25-44 in computer and mathematical fields working in Silicon Valley in 2017 were foreign-born, relatively few women born in the United States worked in those fields. Check out updated demographic information here: http://siliconvalleyindicators.org/data/people/talent-flows-diversity/foreign-born/)

How could diverse experiences, talents, backgrounds, and perspectives benefit Silicon Valley's culture of innovation? How could new and varied voices open up new markets within in the United States and around the world? For example:

Immigrants from Latin American, Asian, and Africa countries can provide perspectives on the unique tech markets, cultural interests, and challenges in their region.

Women around the world are increasingly (if slowly) gaining economic independence and political power. Increasing representation of women in tech will help to identify and address how women's interests and experiences can be better served by the industry.

By 2040, African Americans, Asians, Latinos, and Native Americans will make up more than half of the United States population. Tech employees from "minority" communities can help companies prepare for and connect with a more diverse America.

LEARNING ACTIVITY
CASE STUDIES: THE PEOPLE MAKE THE PLACE

Part 1

Using the Jigsaw Activity, students will work in groups to investigate notable but less well known industry leaders in Silicon Valley using the brief bios from Teacher Handout B: Who Is Silicon Valley? Through this process, students will begin to build a more complex image of the Silicon Valley community and will gain some insight into the value of integrating professionals with diverse skill sets, backgrounds, experiences, and insights.

Explain: Building on our activities and the stories from Silicon Valley we will work in dynamic groups to learn about and share the stories of important but lesser-known figures in the Valley's community.

Have students count off from 1 - 6 and distribute Kimberly Bryant's bio from Teacher Handout: Who Is Silicon Valley? to all the #1s, Iyinoluwa Aboyeji's bio to all the #2s, Audrey Tang's bio to all the #3s, etc.

Case study subjects:

1. Kimberly Bryant
2. Iyinoluwa Aboyeji
3. Audrey Tang
4. Michael Seibel
5. Laura Gómez
6. Megan Smith

Have each group use their subject's bio as a "jumping off point" for research on their case study and discuss using prompts from Student Handout C: Case Study Activity (part 1).

Part 2

Once the groups complete Part 1, reorganize the class into new groups that contain at least one representative for each case study subject. Each group will compare/contrast their Case Study's experience in and contributions to Silicon Valley using Student Handout C: Case Study Activity (Part 2).

Part 3

When the groups are finished, reconvene the class to share and discuss the groups' strategies to diversify the tech community.

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ASSIGNMENT

Option 1: The discussion groups will expand their Case Study research on each of their Silicon Valley subjects and collect their research into a multimedia presentation revealing the Untold Stories of Silicon Valley. Their project can be displayed as an online exhibit or as part of a physical, multimedia presentation in their class.

Option 2: Working independently or in groups, students should analyze the demographics of Silicon Valley and research how race, gender, ethnicity, and class have shaped Silicon Valley's history and predictions for the community's future. Have students visit the Silicon Valley Indicators website for an extensive collection of charts and data on Silicon Valley's economic and community health trends: http://siliconvalleyindicators.org/

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EXTENSION ACTIVITY

We Are Silicon Valley
In *Silicon Valley: the Untold Story*, Fred Turner says:

"The story of the valley is typically told as a story in which heroic and entrepreneurial individuals suddenly find inside themselves the intellectual fortitude and the personal drive to create technologies to change the world. It's a highly individualistic story. It's deeply resonant with American myth and American history, but it's not the case."

The fact is that Silicon Valley would not have been possible without taxpayer-funded Defense Department contracts and infrastructure development across the region. Have students explore the role that taxpayer funding and government programs played in the history and success of Silicon Valley.

Have students examine the "individualistic" myth of Silicon Valley and consider why it persists. Have them research the funding and support Silicon Valley has received and who has provided it. Students should also consider how the funding sources for Silicon Valley have influenced the community's demographics. Is Silicon Valley the product of public funding, corporate profits, venture capital, or a combination of all three?

Students can use the Computer History Museum archives and resources for reference and should develop a multimedia presentation that illustrates the similarities and differences in the process of invention, the adoption of the new tech, and the ways that all aspects of society were affected.

Explore the Additional Resources PDF.

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STANDARDS

California Common Core State Standards English Language Arts & Literacy in History/Social Studies

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12:

1. Write arguments focused on discipline-specific content.

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

California Standards for Career Ready Practice

4.0 Technology

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Information and Communication Technologies sector workplace environment.

4.2 Employ technology based communications responsibly and effectively to explore complex systems and issues.

9.0 Leadership and Teamwork

Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution such as those practiced in the Future Business Leaders of America and Skills USA career technical student organization. (Direct alignment with SLS 11-12.1b)

9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.

9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.

9.5 Understand that the modern world is an international community and requires an expanded global view.

9.7 Participate in interactive teamwork to solve real Information and Communication Technologies sector issues and problems.

National Common Core Standards

English Language Arts Standards

CCSS.ELA-LITERACY.W.7.4
CCSS.ELA-LITERACY.W.8.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.9-10.4
CCSS.ELA-LITERACY.W.11-12.4
Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.SL.7.1
CCSS.ELA-LITERACY.SL.8.1
CCSS.ELA-LITERACY.SL.9-10.1
CCSS.ELA-LITERACY.SL.11-12.1
Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

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Production and Distribution of Writing

CCSS.ELA-Literacy.WHST.6-8.4
CCSS.ELA-Literacy.WHST.9-10.4
CCSS.ELA-Literacy.WHST.11-12.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.WHST.6-8.6
CCSS.ELA-Literacy.WHST.9-10.6
CCSS.ELA-Literacy.WHST.11-12.6
Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

College and Career Readiness Anchor Standards for Speaking and Listening:

Comprehension and Collaboration:

CCSS.ELA-Literacy.CCRA.SL.1
Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-Literacy.CCRA.SL.2
Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas:

CCSS.ELA-Literacy.CCRA.SL.4
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.CCRA.SL.5
Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

SILICON VALLEY AND
THE COMPUTER HISTORY MUSEUM
SILICON VALLEY: SECRET SAUCE

Magnetic Force

"Magnetic Force," the first episode of the three-part film series, *Silicon Valley: The Untold Story*, explores why Silicon Valley draws innovators from all over the world and shows how the Valley's increasing diversity is shaping the future of technology.

Silicon Valley: The Untold Story

Around the world, people want to know what it is about Silicon Valley that has made it a hotbed of innovation and entrepreneurship for decades. *Silicon Valley: The Untold Story* explores the fascinating and often unknown stories of the people, partnerships, events, and social changes that shaped Silicon Valley and changed the world.

For every decade or so since the early 1900s, Silicon Valley has spawned or nurtured not just new products but whole new industries: Vacuum tubes. Radio. Radar. Integrated circuits. Venture Capital. PCs. Printers. Genetic Engineering. Software. Networking hardware. The Internet. Social media. Cloud computing. Mobile.

This three-part Discovery Science Channel primetime series, *Silicon Valley: The Untold Story*, explores the evolution of Silicon Valley and examines how it has managed to stay on the cutting edge of innovation for so long. The film was produced by Kikim Media, founded in 1996 by Kiki Kapany and Michael Schwarz, whose work over the past 20 years has been honored with some of the most prestigious awards in broadcasting. Production of *Silicon Valley: The Untold Story* was made possible thanks to a generous grant from The Alfred P. Sloan Foundation.

The Computer History Museum

The history of computers is the history of our modern world. The Computer History Museum (CHM) in Silicon Valley, California is dedicated to preserving and presenting the stories and artifacts of the information age and exploring the ongoing impact of the computing revolution on society. CHM explores not only the "what" but also the "why" and the "how" of computing, and brings to life the historical narratives, first-person accounts, iconic examples of industrial design, business and marketing strategies, that shape our modern world and change the way we work, live, and play.

The Exponential Center at the Computer History Museum captures the legacy and advances the future of entrepreneurship and innovation in Silicon Valley and around the world. Our mission is to inform, influence, and inspire the next generation of innovators, entrepreneurs, and leaders changing the world.

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VIEWING GUIDE
WHO IS SILICON VALLEY?
SILICON VALLEY: MAGNETIC FORCE

Student Name

Instructions: While watching the film clips, take notes in response to the following prompts and record general notes about scenes and quotes that surprised, confused, or interested you. If you need more space, you can write your notes on the back of this handout or on a separate sheet of paper.

1. In *Silicon Valley: The Untold Story*, we learn that, "The heroes of Silicon Valley could not have done what they did without a lot of help." What "help" has Silicon Valley received and who provided it?

2. Women have been essential to the Valley's history but fewer than one in three tech employees are women.

    a.   What roles have women played in the tech industry throughout the Valley's history?

    b.   Why are women less represented in Silicon Valley?

3. One third of Silicon Valley employees are foreign born. Note how immigrants have helped expand Silicon Valley's innovation and global reach:

4. General Notes:

MAGNETIC FORCE: THE PEOPLE MAKE THE PLACE

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WHO IS SILICON VALLEY?
SILICON VALLEY: MAGNETIC FORCE

Student Name

1. Why do people come to Silicon Valley from all over the world?

2. What did Fred Turner mean when he said, "The story of the valley is typically told as a story in which heroic and entrepreneurial individuals suddenly find inside themselves the intellectual fortitude and the personal drive to create technologies to change the world. It's a highly individualistic story. It's deeply resonant with American myth and American history, but it's not the case"? If this isn't the true story of Silicon Valley, why does this myth persist? How does the real story differ from this myth?

3. What help has Silicon Valley received and who has provided it? Why is it important to recognize that the Valley is as much a product of public funding as venture capitalists and entrepreneurs?

4. How is being an "outsider" (a woman, immigrant, or "minority") a benefit and deficit in Silicon Valley?

5. According to the film, in Silicon Valley, men have always been more likely than women to be judged solely on their merits, even if they are immigrants from the other side of the world. Why do you think that is?

6. Kim Polese talks about her experience in Silicon Valley: "I'm perplexed by the fact that we're still dealing with this problem. Back then in 1996 when we co-founded Marimba and I was getting some of this strange reaction I thought well this will all be gone in 10 years, there will be so many more women founding and building companies. This is just a blip in time. Unfortunately, 20 years later now, things have changed for the better, but they certainly are not where they need to be." Why are women still underrepresented in the tech industry?

7. Leslie Berlin says, "New ideas are born of people with multiple perspectives who come in with a belief that they can make a difference." What does she mean by this?

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WHO IS SILICON VALLEY?
CASE STUDIES
SILICON VALLEY: MAGNETIC FORCE

Instructions: Print 6 copies of this Case Studies Handout and cut out each biography for use in the Learning Activity: Case Studies - The People Make the Place.

Kimberly Bryant
Electrical engineer and Founder of Black Girls Code, a training course that teaches programming concepts to African American girls who are underrepresented in technology careers. Before founding Black Girls Code, Bryant worked in the biotechnology field at Genentech, Novartis Vaccines, Diagnostics, and Merck. Bryant has been listed as one of the "25 Most Influential African-Americans In Technology" by Business Insider.

Michael Seibel
CEO and partner at Y Combinator and cofounder of two startups, Socialcam and Justin.tv, the video streaming service which later became Twitch Interactive. Seibel was a key mentor to the cofounders of Airbnb and has been active in promoting diversity efforts among startup founders.

Laura Gómez
An entrepreneur and CEO & Founder of Atipica, a venture-backed startup focused on big data, machine learning and analytics for talent acquisition and diversity teams. Gomez has worked for major tech companies since she was 17, including Twitter, where she was a founding team member of the International team and led Twitter's product expansion into 50 languages and dozens of countries. Gómez is also a founding member of Project Include.

Audrey Tang
A Taiwanese software developer and self-identified "civic hacker," who has been described as one of the "ten greats of Taiwanese computing." Tang left school at age 14 and developed a search engine for Mandarin lyrics at age 15. At 19, she left Taiwan to work as an entrepreneur in Silicon Valley. In August 2016, she was invited to join the Taiwan Executive Yuan as a minister without portfolio, making her the first transgender official in the top executive cabinet.

Iyinoluwa Aboyeji
A Nigerian entrepreneur who cofounded two successful startups in Africa before launching Flutterwave in 2017, a payments API that makes it easier for banks and businesses to process payments across Africa in 150+ currencies. Aboyeji, whose previous startups have focused on the education and training sectors, believes solving the payments challenge for merchant partners across the African continent could unlock billions of dollars in value.

Megan Smith
The 3rd Chief Technology Officer of the United States and former Vice President of Google's Google X division. As the country's CTO, Megan Smith oversaw IT policies and initiatives across every sector of the economy for the Obama administration where she advised on policies surrounding net neutrality, helped improve how technology was used in the fight against Ebola, and built a website dedicated to celebrating women in science and tech.

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CASE STUDY ACTIVITY
SILICON VALLEY:
MAGNETIC FORCE (PART 1)

Student Name

Instructions: Collaborate with your group to research and answer the following questions about your Case Study subject. (If you need more space for your answers, you may use an additional sheet of paper):

Name of your Case Study Subject:

What is your Subject's title?:

1. What role(s) does your Subject play in the tech industry? What are his/her areas of expertise? List all that apply. (For example: entrepreneur, venture capitalist, computer programmer, software developer, engineer, advocate, philanthropist, advertising & commerce, sales, etc.)

2. What companies/institutions has your subject worked for?

3. What startups (if any) has your subject founded?

4. What invention or innovation is your subject most known for?

5. What was your subject's education background and training? (Was your subject's educational background in STEM?)

6. How did your subject become involved with computer technology? (Optional: If your subject is not from Silicon Valley, what tech communities or resources were available to him/her in his/her hometown/region?)

7. What inspired your subject to work in Silicon Valley?

8. What unique challenges did your subject face during his/her career? How did s/he respond to them?

9. Did your subject receive funding for his/her projects? If so, who were the funders/partners?

10. What is one positive lesson that you can take away from your subject's story? (You can include a quote, describe an event, or summarize what you learned from this tech professional.)

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CASE STUDY ACTIVITY
SILICON VALLEY:
MAGNETIC FORCE (PART 2)

Student Name

Instructions: Share your responses from Part 1 with your new group and work together to respond to the following questions. (If you need more space for your answers, you may use an additional sheet of paper):

Review your responses from Part 1 with the group and compare and contrast the experiences of your Case Study subjects.

1. What are/were the benefits and drawbacks of being a member of a minority community in Silicon Valley?

Benefits:

Drawbacks:

3. How are your subjects' current projects helping to expand inclusion in Silicon Valley?

4. Using your collective Case Study Subjects as inspiration, what are at least two effective strategies that will help to diversify the tech industry?

2. What experiences/challenges/concerns were common among all of the Case Study subjects? How were the subjects' responses similar/different?

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SILICON VALLEY: LUCKY ACCIDENTS?

Making space for design thinking, collaboration, & the freedom to fail

Overview

Audience: Grades 7–12
Subject Areas: Science, Art, Design, Computer Science, Social Studies
Class Time: 110 minutes (2-3 class periods) + Assignments

Guiding Question

What makes innovation possible?

PURPOSE OF THE LESSON/OBJECTIVES:

Students will:

Understand the role collaboration, trial and error, learning from feedback, and persistence play in innovation and entrepreneurship

Explore design thinking strategies

Apply design thinking strategies, collaboration, and trial and error to develop a solution to an everyday problem

Give and receive constructive feedback from collaborators and peers and refine their work through trial and error

Document the process through video journals, project diaries, and/or expository essays

Skills

Creative problem solving; collaboration; critical listening, reading and viewing; stating and supporting opinions in class discussion and in writing; giving and receiving constructive feedback; note taking and oral presentation

RESOURCES/MATERIALS

Clips from *Silicon Valley: Lucky Accidents*

***Silicon Valley: The Untold Story* Official Trailer:**
https://www.youtube.com/watch?v=37SBRv40qsA&index=16&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Lucky Accidents Clip 1
"Our culture allows us to take more risks."
https://www.youtube.com/watch?v=qu0vuI18GWs&index=15&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

Lucky Accidents Clip 2
"Let's go make some big mistakes."
https://www.youtube.com/watch?v=ktW1JyBIozQ&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO&index=16

Computers with Internet access
LCD projector
Chart paper
Butcher paper
Sticky notes (multiple colors)
Markers, pens and writing paper
Whiteboard/ blackboard
Additional design project supplies, as needed
Student Handout A:
    - Active Viewing Guide: Creative Risks
Teacher Handouts
    - Teacher Handout A: Silicon Valley and the
       Computer History Museum
    - Teacher Handout B: Strategy Map

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INTRODUCTORY ACTIVITY: WHAT IS INNOVATION?

Organize students into small groups (3-4) and ask them to create a definition for "innovation." Have a volunteer from each group share and discuss their definition with the class and combine the responses with examples of formal definitions to create a working definition of innovation:

Innovation:
Noun, a new idea, device, or method

Verb, the act or process of introducing new ideas, devices, or methods

Innovation... can refer to something new or to a change made to an existing product, idea, or field.

From Mirriam-Webster:
https://www.merriam-webster.com/dictionary/innovation

Innovation is important in Silicon Valley not only for technology but also business. For example: business model innovation such as Internet-based auctions (eBay); advertising-based Internet search (Google); media platform/applications (Apple iTunes/iPod, iPhone); social networking (Facebook, Pinterest); user-created media content (YouTube, Twitter); share economy (Airbnb, Uber).

Reshuffle students into new groups and have them brainstorm responses to the question:

What makes innovation possible?

Give students two minutes to quickly write down their responses on sticky notes (each response should be written on a separate sticky note).

Facilitator tip: Prep students for the activity and lesson by establishing that there are no wrong answers or ideas in brainstorming. Brainstorming is an opportunity for students to free their imaginations and write whatever comes to mind, without judgement. They will have time to review, refine, and develop their ideas later.

At the end of two minutes, each group should post their notes on a wall or chart paper. Have students review their responses and look for common themes and patterns, then organize their sticky notes into small groups based on similarities and connections. (Groups can make additions or edits at this time, but encourage them to find relationships between their ideas rather than remove responses.)

Follow with a class gallery walk where students can look at responses from other groups then reconvene for a brief discussion:

1. What were the most common themes and responses?

2. Which responses refer to the importance of "resources" (funding, equipment, workspaces, etc.) for making innovation possible?

3. Do any of the responses refer to the style of work environments or communities that innovation thrives in? Why would this be important?

4. What examples of collaboration (if any) were identified in our brainstorming activity? Do you think collaboration is a benefit or an obstacle to innovation? Why? What role can collaboration play in innovation?

5. Did any group include concepts like "failure," "mistakes" or "trial and error" in their responses? How could failure or mistakes be useful?

6. When was the last time you were encouraged to see learning from failure as an important part of the learning or creative process? How can the fear of making mistakes be a barrier to innovation?

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SCREENING ACTIVITY:
SILICON VALLEY AND LUCKY ACCIDENTS

Explain: Today we will explore how collaboration, risk, failure, persistence, and creative problem-solving have helped cultivate invention, innovation, and entrepreneurship throughout Silicon Valley's history.

Have a volunteer read a brief summary about the series *Silicon Valley: The Untold Story*, in Teacher Handout A: Silicon Valley and the Computer History Museum.

Distribute Student Handout A, the Active Viewing Guide: Creating Creative Risks, and review the note taking activity.

Play the official trailer for *Silicon Valley: The Untold Story* (optional)
https://www.youtube.com/watch?v=37SBRv40qsA&index=16&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

and CLIP 1 and follow with a brief discussion
https://www.youtube.com/watch?v=qu0vuI18GWs&index=15&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO

1. What did Jan English-Lueck mean by, "This is a place which is almost like the crystallization of the dream of progress"?

2. Steve Blank says, "It's not that we're smarter. It's that our culture allows us to take more risks because we're not afraid that one shot and you're gone." Why is risk-taking critical to innovation and entrepreneurship?

3. What was the original idea for Airbnb? What prompted the founders to change direction (pivot)?

Play CLIP 2 and follow with a brief discussion:
https://www.youtube.com/watch?v=ktW1JyBIozQ&list=PLQsxaNhYv8dbqYLr-MwFOn9MVneh6KASO&index=16

1. Have you heard of Atari or Pong before? In what context?

2. What was the original purpose of the Pong game? What triggered the project to pivot to a new direction?

3. What was Atari's company culture like in its early history? How did that culture affect the creative process? Why was it important that they were willing to "break all the rules" and have the "freedom to screw up"?

4. How did the Atari culture make it possible for them to hire a young Steve Jobs?

SILICON VALLEY: LUCKY ACCIDENTS?

5. Why did Nolan Bushnell think Atari was losing its soul after it was bought by Warner Communications? What changed?

6. What were Atari's biggest innovations (technological and cultural)?

Follow with a review of the Active Viewing Guide notes and reflect on the stories and themes in the film (Use the following prompts as needed):

1. What surprised you most in these stories?

2. According to Jessica Livingston, why is coming up with an idea like Facebook harder than it looks?

3. What did Satjiv Chahil mean when he said, "Silicon Valley is what Florence was to the Renaissance"? How has the work environment in Silicon Valley contributed to decades of innovation?

4. What is an "Ah-Ha!" moment? What similarities did you see in the "Ah-Ha!" moments in each story?

5. What was Airbnb's original business model? How did that change after the "Ah-Ha!" moment? What do you think would have happened if they ignored the "Ah-Ha!" moment and stayed with their original goal?

6. How was collaboration critical to each of these success stories? What examples can you give from the film?

7. How is risk-taking connected to innovation? What risks did Airbnb and Atari take? (How was hiring Steve Jobs an example of "risk-taking"? What risks did Jobs take?)

8. How did the purchase of Atari by the Warner Communications company change their work environment? According to Nolan Bushnell, how was the Warner business culture incompatible with the process of invention and innovation?

9. Why was the Atari team willing to take big risks but the Warner Communications company was not? What impact did that have on Atari over time?

10. What does it mean to be a "disruptor"? What are the benefits of social, cultural, and technological disruption? How does disruption relate to innovation?

11. How has your answer to the question, What makes innovation possible? changed after watching these stories?

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LEARNING ACTIVITY:
MAKING SPACE FOR BIG THINKING

Problem → Resources → Outcomes → End Users

In this activity, students will identify everyday problems they would like to solve (problems that impact their own lives, their school, and their community) and use design thinking, collaboration, and trial and error to come up with possible solutions.

Explain: In the 1950s, the company 3M started the 15% Project that encouraged employees to spend 15% of their work week pursuing new ideas. Among the results were Post-it notes and 3M masking tape. More than 40 years later Google introduced a similar strategy, 20-Time, where employees could spend 20% of their time at Google developing and working on a project for the company that went beyond their job description. Most of those ideas never became something you could buy or use but a few did, including Gmail, Google Talk, and Google Ads, among others. Giving our brain time to think big can help us solve problems of all sizes and allow time for lucky accidents to happen.

Today we are going to learn how to make space for new ideas and use some design thinking strategies to move from brainstorming possibilities to implementing solutions in the real world.

Part 1: What is the problem?
Divide the students into small groups and have them think about everyday problems they would like to solve (problems that impact their own lives, their school, or their community). Give them three minutes to brainstorm as many problems as they can and write each one on a sticky note. Each time they write down an idea, they can call it out. Their suggestion might spark an idea for partners. (Remind students that this process is not a competition, it is collaboration. Innovation often comes from sharing our skills, talents, and ideas.)

When students finish brainstorming, ask groups to post their notes on a section of wall or chart paper and look for connections and patterns. Have them organize their ideas by moving the notes into categories and reflect on their responses. As in the earlier activity, groups can make additions or edits at this time, but encourage them to find relationships between their ideas rather than removing them.

Instruct each group to select an issue (or category) from the brainstorm that they are interested in, then pair-up with another group. Groups should review each other's brainstorm results and provide constructive feedback and suggestions to refine or reframe their ideas.

Reconvene the class and have each group share and discuss their issue. (If more than one group is working on the same problem, that's great! Remind the class that this is a collaborative not competitive project and each group will be able to look at the problem from a different perspective.)

Part 2: Resources and Outcomes

Evaluate Their Skills and Resources:
Distribute a sheet of chart paper to each group (and more sticky notes, if needed) and have them write the problem they are focusing on at the top of the paper.

Give the groups three minutes to think about and respond to the question below and using the same brainstorming process as before, have students write the skills, materials, ideas, talents, resources, etc. they can contribute to their group's project on sticky notes then post them to the chart paper:

> What resources do we have that can help solve this problem or improve this issue? (What skills, materials, ideas, talents, resources, etc. can you contribute to the project? If students feel stuck, have them identify people they could ask for help or imagine themselves solving a problem several years in the future.)

Following the same pattern as before, groups should review and refine their responses and organize them into categories before pairing-up with another group for feedback.

Facilitator note: Allow students to revise their goal or change their topic if they learn something that changes their perspective on their project or if they face an insurmountable roadblock. Make sure, however, that groups don't just quit when they encounter a challenge. Introduce the idea that a "pivot" is common with startups; it means that when things aren't working as originally planned, they try something else. For example, Airbnb pivoted when they changed their model from renting out air mattresses to entire apartments. Creative problem-solving and peer feedback may help them discover new and unexpected options and opportunities.

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Identify Desired Outcomes
Distribute another sheet of chart paper to each group, have them write "Outcomes" at the top of this paper, and brainstorm possible outcomes they would like to achieve using sticky notes. When groups agree on an achievable "Outcome" they want to pursue, have them refine their responses and organize them into categories before pairing-up with another group for feedback.

Review
Have groups review their resources and identify tools/skills/materials they would need for their outcome.

If needed resources are unavailable, the groups can collaborate on strategies to acquire those resources or revise their anticipated outcomes.

Have groups refine their **Issue, Resources, and Outcome(s)** by collecting the appropriate sticky notes from their brainstorm onto their "Outcomes" chart paper. Follow with a class "gallery walk" and group feedback.

Give groups time to refine, edit, or revise their work as needed.

End Users
Each group now needs to define who would benefit from their outcome: these people/communities are called the "end users."

Have groups pair-up to discuss: Who does our "solution" serve? And refine their **Problem → Resources → Outcomes → End Users** through constructive feedback.

Part 3: Strategy Map
Facilitator Note: Each Strategy Map will look different depending on the group's goal, resources, skills, partners, and audience. See an example on Teacher Handout B: Strategy Map. As an alternative, students can map out their strategies using the DIY Innovation Flow Chart: http://diytoolkit.org/tools/innovation-flowchart-2/

Activities and Resources
Distribute a long piece of butcher paper to each group.

Have them write their "Outcome(s)" on one sticky note and place it in the center of the butcher paper. Then have them write their "End User(s)" on one sticky note and place it on the far right of the butcher paper.

Ask each group to reflect on their previous brainstorming and consider:

"What are the **Activities** and **Resources** we will need in order to achieve our outcome for the community/end users?"

Have students select one sticky note color for "Activities" and another for "Resources" and begin to organize those sticky-notes onto the map, making revisions, adjustments, and edits as needed.

Activities and Resources may include:

Collecting raw materials
Collecting data/information
Market-testing their ideas (using interviews, surveys, and focus groups)
Finding work and storage space
Fundraising
Designing/3D printing prototypes
Making/producing project materials
Refining their plan/product
Creating marketing materials (posters, brochures, etc.)
Designing websites and social media

Identifying Roles: Have groups define "specialist" roles for each member based on their skills and interests then have them delegate the tasks accordingly. Pair groups once again to review each other's maps and give feedback on the distribution of roles and responsibilities. Have groups select a new color for "Team Members" and add each of their names to their map.

Find Partners: Ask the groups: "Who can help you achieve your Outcomes?" Groups should reach out to companies, community organizations, government programs, youth groups, etc. that are working on their issue and discuss how they can collaborate, share resources and/or sponsor the student projects. Have groups select a new color for partners and add them to the map.

Once the maps are finished, have the class take a final Gallery Walk and conclude with a class discussion and constructive feedback.

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ASSIGNMENT:
FROM PLAN TO PROTOTYPE

Option 1 (Additional class time may be needed)

Explain that the groups will implement the plan of action they developed in their Strategy map and present their results (For example: to the class or as part of a school makers' fair). In addition to completing the project, each student should keep a video or written journal documenting the following:

Each phase of the project
Challenges the group faced
Problem-solving strategies they used
What was most surprising
How their actual outcome compares
   with their expected outcome
Lessons learned

Option 2: Have each student write an expository essay about design thinking and what makes innovation possible. Use the following prompts to guide the writing process:

1. Describe your group's Problem, Resources, Outcomes, Strategies and End Users.

2. How would your group's innovation improve your community?

3. How can your personal resources (material resources as well as talent, skills, experience, etc.) contribute to a successful outcome?

4. Identify one challenge you experienced during the activity. What strategies did you use to address it?

5. Compare the experience of brainstorming your project with stories from *Silicon Valley: The Untold Story* and interviews from the Computer History Museum Collection: http://www.computerhistory.org/collections/. What parallels can you draw?

6. In what ways did trial and error influence and/or improve your process?

7. What lessons have you learned for future projects?

Facilitator Tip The following educator resources offer additional Design Thinking ideas and activities:

The National Consortium For Entrepreneurship Education: http://www.entre-ed.org/resources/forteachers/

Prototype design, engineering projects: Ideo: Design Thinking Tool Kit: https://www.ideo.com/work/toolkit-for-educators

Systems and social engineering projects: Frog Design + Girl Effect: The Collective Action Toolkit (CAT): https://www.frogdesign.com/work/frog-collective-action-toolkit.html

NOVA: Making Stuff Collection on PBS LearningMedia: http://ny.pbslearningmedia.org/collection/nvms/?topic_id=1759

Option 3
Have student read the article, "Is it better to be lucky than good in Silicon Valley?" by Marguerite Gong Hancock, Executive Director of the Exponential Center at the Computer History Museum, and write a response to the article's central question: http://www.computer-history.org/atchm/is-it-better-to-be-lucky-than-good-in-silicon-valley/. This response can be used as the foundation for an in-class debate.

Debate Resource:
"Great Debate: Developing Argumentation Skills" By Sandhya Nankani and Holly Epstein Ojalvo. The New York Times Learning Network: https://learning.blogs.nytimes.com/2010/05/17/great-debate-developing-argumentation-skills/

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EXTENSION ACTIVITY

Making and Sharing

Have students research the history of the Homebrew Computer Club and its significance in the history of Silicon Valley using The Computer History Museum collection. Have them compare/contrast the Homebrew Computer Club to modern Maker communities.

Students can identify and collaborate with maker communities that offer resources and guidance in areas such as: learning to build robotics, producing their own album, self-publishing a book of poetry, designing and launching an app or website, inventing/designing a gadget, and using older technology like wood carving, metal work, knitting, paper-making in a new way.

Students can use the strategy mapping tools from the lesson to develop their own projects and present their work at school or one of the hundreds of Maker Fairs across the country.

Resources:
Homebrew Computer Club: http://www.computerhistory.org/revolution/personal-computers/17/312
Maker Faire: https://makerfaire.com/

STEM to STEAM

Examine the role that the arts play in STEM fields. View interviews in the Computer History Museum's collections and learn how science, technology, engineering, and mathematics are powered by creative thinking.

Computer Graphics, Music, and Art: http://www.computerhistory.org/revolution/computer-graphics-music-and-art/15

The Art of Programming:
Exhibition: http://www.computerhistory.org/revolution/the-art-of-programming/9

Computer-Aided Design: http://www.computerhistory.org/revolution/computer-graphics-music-and-art/15/216

Creating Art with Computers http://www.computerhistory.org/revolution/computer-graphics-music-and-art/15/228

Patent Pending

For years, Silicon Valley has been among the world leaders in innovation, invention, and the generation of technology patents. In fact, the Silicon Valley U.S. Patent and Trademark Office was opened in 2005 to serve the region. Have students research the U.S. Patent process and examine current issues and legal challenges related to patents in this age of invention. If possible, have them participate in the process of submitting a patent application.

Resources:
United States Patent and Trademark Office:
https://www.uspto.gov/

Silicon Valley U.S. Patent and Trademark Office:
https://www.uspto.gov/about-us/uspto-locations/silicon-valley-california

Make Magazine, Patents:
http://makezine.com/tag/patents/

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STANDARDS

California Common Core State Standards English Language Arts & Literacy in History/Social Studies

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12:

1. Write arguments focused on discipline-specific content.

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

California Standards for Career Ready Practice

4.0 Technology

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Information and Communication Technologies sector workplace environment.

4.2 Employ technology based communications responsibly and effectively to explore complex systems and issues.

9.0 Leadership and Teamwork

Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution such as those practiced in the Future Business Leaders of America and Skills USA career technical student organization. (Direct alignment with SLS 11-12.1b)

9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.

9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.

9.5 Understand that the modern world is an international community and requires an expanded global view.

9.7 Participate in interactive teamwork to solve real Information and Communication Technologies sector issues and problems.

National Common Core Standards

English Language Arts Standards

CCSS.ELA-LITERACY.W.7.4
CCSS.ELA-LITERACY.W.8.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.9-10.4
CCSS.ELA-LITERACY.W.11-12.4
Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.SL.7.1
CCSS.ELA-LITERACY.SL.8.1
CCSS.ELA-LITERACY.SL.9-10.1
CCSS.ELA-LITERACY.SL.11-12.1
Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

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Production and Distribution of Writing

CCSS.ELA-Literacy.WHST.6-8.4
CCSS.ELA-Literacy.WHST.9-10.4
CCSS.ELA-Literacy.WHST.11-12.4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.WHST.6-8.6
CCSS.ELA-Literacy.WHST.9-10.6
CCSS.ELA-Literacy.WHST.11-12.6
Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

College and Career Readiness Anchor Standards for Speaking and Listening:

Comprehension and Collaboration:

CCSS.ELA-Literacy.CCRA.SL.1
Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-Literacy.CCRA.SL.2
Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas:

CCSS.ELA-Literacy.CCRA.SL.4
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.CCRA.SL.5
Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

Next Generation Science Standards

HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

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SILICON VALLEY AND
THE COMPUTER HISTORY MUSEUM
SILICON VALLEY: LUCKY ACCIDENTS?

Lucky Accidents
"Lucky Accidents," the third episode of the film series, *Silicon Valley: The Untold Story* , charts the circuitous paths, successes, failures, and lucky accidents that lie behind some of the Valley's greatest success stories.

Silicon Valley: The Untold Story
Around the world, people want to know what it is about Silicon Valley that has made it a hotbed of innovation and entrepreneurship for decades. *Silicon Valley: The Untold Story* explores the fascinating and often unknown stories of the people, partnerships, events, and social changes that shaped Silicon Valley and changed the world.

For every decade or so since the early 1900s, Silicon Valley has spawned or nurtured not just new products but whole new industries: Vacuum tubes. Radio. Radar. Integrated circuits. Venture Capital. PCs. Printers. Genetic Engineering. Software. Networking hardware. The Internet. Social media. Cloud computing. Mobile.

This three-part Discovery Science Channel primetime series, *Silicon Valley: The Untold Story* , explores the evolution of Silicon Valley and examines how it has managed to stay on the cutting edge of innovation for so long. The film was produced by Kikim Media, founded in 1996 by Kiki Kapany and Michael Schwarz, whose work over the past 20 years has been honored with some of the most prestigious awards in broadcasting. Production of *Silicon Valley: The Untold Story* was made possible thanks to a generous grant from The Alfred P. Sloan Foundation.

The Computer History Museum
The history of computers is the history of our modern world. The Computer History Museum (CHM) in Silicon Valley, California is dedicated to preserving and presenting the stories and artifacts of the information age and exploring the ongoing impact of the computing revolution on society. CHM explores not only the "what" but also the "why" and the "how" of computing, and brings to life the historical narratives, first-person accounts, iconic examples of industrial design, business and marketing strategies, that shape our modern world and change the way we work, live, and play.

The Exponential Center at the Computer History Museum captures the legacy and advances the future of entrepreneurship and innovation in Silicon Valley and around the world. Our mission is to inform, influence, and inspire the next generation of innovators, entrepreneurs, and leaders changing the world.

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ACTIVE VIEWING GUIDE:
CREATIVE RISKS
SILICON VALLEY: LUCKY ACCIDENTS?

Student Name

Instructions: Take notes in response to the following prompts while watching the film clips and record general notes about scenes and quotes that surprised, confused, or interested you. (If you need more space, you can record your notes on the back of this handout or a separate sheet of paper):

1. Note examples of "Creative Risks" illustrated in the film:

2. Note examples "Ah-Ha" moments:

3. Note examples where "mistakes," "trial and error," and persistence contributed to innovation:

4. Note how the film describes environments that encourage creative problem solving and innovation:

5. General Notes:

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STRATEGY MAP
SILICON VALLEY: LUCKY ACCIDENTS?

Have Students write their "Outcome(s)" on one sticky note and place it to the right of the center of the butcher paper. Then have them write their "End User(s)" on one sticky note and place it on the far right of the butcher paper.

Ask each group to reflect on their previous brainstorming and consider:

"What are the **Activities** and **Resources** we will need in order to achieve our outcome for the community/ end users?"

Have students select one sticky note color for "Activities" and another for "Resources" and begin to organize those sticky-notes onto the map making revisions, adjustments, and edits as needed. What activities need to happen first? What resources will be needed for those activities?

Activities and Resources may include:
Collecting raw materials
Collecting data/information
Market testing their ideas (using interviews, surveys, and focus groups)
Finding work and storage space
Fundraising
Designing/3D printing prototypes
Making/producing project materials
Refining their plan/product
Creating marketing materials (posters, brochures, etc.)
Designing websites and social media

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