Icebreaker: Career Step Up

In this activity students will learn about how different careers work together to make different products.

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Grades 5 – 12</th>
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<tbody>
<tr>
<td>Activity Time</td>
<td>20 minutes</td>
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<tr>
<td>Preparation Time</td>
<td>5 minutes</td>
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<tr>
<td>Grouping</td>
<td>Two groups</td>
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Objective

As a result of this activity the students will be able to:

- Learn about different careers
- Learn about how careers work together

Materials

Per Team:

- One set of Role Model Career Cards (located in the Appendix of this unit)

Directions

1. Divide the class into two teams.
2. Give each student a career card and have students read their specific cards. Tell them that this is the career they will take on for the game.
3. Say a product and have the teams huddle up and decide which people were involved in the making and building of that product.
4. Have the people who think their career was involved step forward and tell what they did to help create or produce the product. Remind the girls to think about the entire product. If it was a video game who was involved in designing the game controllers? Who made the characters, etc.?
5. For every right answer the team gets a point. The team with the most points at the end wins.

Suggested Products: car, computer game, cell phone, iPod, toothpaste, watch, clock
Mechanical Engineers design and test all kinds of mechanical things. Imagine your daily life and all the mechanical devices you use. They are designed by mechanical engineers who find out what we need and how best to make them so they’re safe and work well.

As a mechanical engineer, there’s no limit to the kinds of projects you might work on. You could design a bike that’s easy to pedal up hills or a car that doesn’t pollute. Or you might create a mechanical game for blind children.

Meet: Judy Lee

**Judy’s Biography:**
As a kid, I loved taking things apart and trying to put them back together. I was always curious about what made things work. Having the chance to tinker helped me decide to study mechanical engineering.

Today I have my dream job at IDEO. As a Product Designer, I have the chance to make a range of products - from toys to medical devices and food to interior spaces.

**Judy’s Hobbies:**
I like to mountain bike and play soccer. I love animals—especially Rosie, my pug dog. My first project was for washing dogs and I was able to take what I learned and use with Rosie.

I love getting my hands dirty. Last year, I started silk screening to transform my ideas into something I can print. It’s fun to wear a t-shirt with my design on it.
Computer Scientist

**Computer Scientists**, sometimes called Computer Engineers, develop the software programs for products we use at home, school, and play. They design software that can save lives, improve our planet, and help us learn, play, and stay in touch.

As a computer scientist, you might design an app used by people around the world. Or you might make animations for the next Pixar hit. You could work on an educational video game that teaches young children the alphabet.

Colleen Lewis
University of California
Berkeley, CA

**Colleen’s Biography:**
I worked at LeapFrog and made video games like Dora the Explorer. At LeapFrog, I worked as a programmer, which means I wrote rules for the computer to follow so that when kids press buttons the game does the right thing.

I am interested in how kids learn to program and returned to school to become a computer science professor.

**Colleen’s Hobbies:**
I like to go camping. I used to be a counselor at a Girl Scout camp where I got to spend all summer in the mountains, hiking, cooking marshmallows over a campfire, and sleeping under the stars.

When I’m at home I like to cook and do crafts. I have sewn purses for my friends and I have made scrapbooks for all of the trips I have taken.

Meet: Colleen Lewis
Patent Attorney

**Patent Attorneys** help inventors protect their ideas. Patents are granted by the government and give inventors the rights to their creations for a limited period.

As a patent attorney you can help decide if inventions are really new and can be patented. You might help with the patent of the next new must-have toy like bubbles that taste good, a dog toy that releases treats, or a video game that girls like to play with friends.

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**Josetta’s Biography:**
I grew up in Houston and spent summers attending science and engineering programs. I liked meeting new friends and learning new things. I studied chemical engineering at Northwestern University and attended law school. I’ve been an environmental engineer and patent examiner. I now enjoy working as a patent attorney where I get to apply my interest in engineering and experience in law.

**Josetta’s Hobbies:**
I like to bake, sew, read, and travel. I just joined a tennis team and am excited about playing.

One day I plan to learn how to surf!

My favorite quote is “Seek first to understand and then to be understood.” - Anonymous

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Meet: Josetta Jones

Josetta Jones
Chevron
San Ramon, CA
Appendix: Role Model Career Cards

<table>
<thead>
<tr>
<th>Toy Designer</th>
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<tbody>
<tr>
<td><strong>Toy Designers</strong> are creative people who use their imaginations to create a new toy or game. They may study graphic arts or electrical engineering to help them design their inventions. They’re not afraid of failure and don’t let challenges keep them from working on their ideas. They tinker and try until they succeed. They protect their ideas by getting a patent for their invention.</td>
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<tr>
<td>As a toy designer you might make a video game that appeals to girls or interactive toy to entertain your dog while you’re at school. Or you could make a portable video game that’s inexpensive so that every kid can have one.</td>
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<table>
<thead>
<tr>
<th>Janese’s Biography:</th>
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<tbody>
<tr>
<td>As a child I had a knack for fixing broken appliances and tinkering with electronics. I wasn’t encouraged in science or technology as a girl, and had jobs in modeling, teaching, and sales. Eventually I found my true calling and founded my own company, Girl Tech, which made toys that encourage girls to use technology. Today, I teach technology to children and teachers.</td>
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<table>
<thead>
<tr>
<th>Janese Swanson</th>
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<tbody>
<tr>
<td>San Diego, CA</td>
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<table>
<thead>
<tr>
<th>Janese’s Hobbies:</th>
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<tbody>
<tr>
<td>The joy of life is about design, discovery, and inventing. I like making websites so that the children I teach can play and explore while learning to design and invent. One of my favorite things to do is go to the beach with my family. Sailing is another great love of mine. I am passionate about painting, music, and digital and creative art. I also designed my own house on the computer and built it with my dad!</td>
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Meet: Janese Swanson
Product Designer

**Product Designers** have a talent for design. They combine art, science, and technology to make the products we use at home and school and play. They often use engineering to help them create a product that people want to use and can afford to buy. Product designers have good “people skills” and spend time listening to what people want and watching how they use products.

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Heather Fleming
Catapult Design
San Francisco, CA

**Heather’s Biography:**
I grew up in a small town in New Mexico with lots of animals and a sister to keep me company in the country. I started Catapult Design where I do product design for the developing world. The best part of my job is traveling and experiencing new cultures. I also like that the work I do makes a difference in people’s lives. I volunteer with Engineers without Border and made a wind turbine for Guatemala.

**Heather’s Hobbies:**
I love animals. I have a turtle, frog, and cat. I like spending time outdoors, taking long walks with my iPod. I also like spending my free time sewing, cartooning, visiting bookstores, and going to movies in the middle of the day.

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Meet: Heather Fleming
Civil Engineers design and create structures and buildings that make up our world. They think about how to make these structures safe and long-lasting using materials such as wood, steel, and concrete. A civil engineer works on everything from tunnels and dams, to bridges, highways and airports, to water and sewer systems.

As a civil engineer, you could build a school that would survive an earthquake, design the tallest green building in the world, or develop a system to provide safe drinking water.

Meet: Melanie Lapointe

Melanie Lapointe
Swinerton Builders
San Francisco, CA

Melanie’s Biography:
I always knew I wanted to study science, and I especially liked biology and math. But after my first year in college, I realized I did not enjoy the long hours in the labs. I decided to transfer into engineering with a focus on the environment, which allowed me to continue my pursuit of biology. Now, I work for the oldest general contractor in California and built the first LEED-certified hotel in the state!

Melanie’s Hobbies:
When I’m not on the construction site, I might be mentoring high school students in the after-school ACE (Architecture, Construction, and Engineering) program, traveling with friends near and far, or riding my motorcycle!
### Architect

**Architects** design new buildings and structures as well as improve existing ones. They think about how the structures look and design the floor plans. They also make sure that buildings and structures are functional and fit the needs of the people who will use them.

Green architects make sure that all buildings and structures conserve energy and are not harmful to the environment.

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**Adhamina Rodriguez**  
Swinerton Builders  
San Francisco, CA

**Adhamina’s Biography:**

Hi! I am a licensed Architect and Civil Engineer from the University of Seville, Spain. I got my master’s degree in Project Management at Northwestern University (in Chicago), where winters are long and cold.

I have always been a nerd at school and enjoyed science and math, but it was at work when I realized that all those hours studying were worth it. We can make a difference in the world.

I am passionate about the environment. I think our beautiful planet is unique and it needs to be protected from bad industry practices.

In my free time I enjoy swimming, reading, watching movies, and especially travelling with my husband. It will never stop surprising me how much you can learn from other cultures if you just open your eyes and your mind!
Landscape Architect

**Landscape Architects** plan, design, and manage land. They provide nice areas for people to enjoy while making sure that the landscape fits in the natural environment. They also design landscapes that use native or low-water plants to conserve water.

As a landscape architect, you might design parks, airports, playgrounds, hospitals, schools, and homes. You might look at the impact of a new project and study how it affects a neighborhood.

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**Annie Abbott**
RHAA
San Francisco, CA

**Annie’s Biography:**
I spent my childhood hiking and camping in the Maine woods. In college I found that Landscape Architecture offered me a way to combine my love of the outdoors with art and design. It allows me to design with soft materials like plants and trees as well as the hard materials like concrete and steel. I now work in San Francisco helping to make the city more environmentally friendly.

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**Annie’s Hobbies:**
I mostly like to hang out at the beach with my husband, our baby, and our dog. We love to travel to places to see new landscapes and meet new people. I enjoy camping, snowboarding, anything to do with the ocean, and exploring cities.
**Chemical Engineers** use chemicals to find creative ways to solve problems, and create products to improve the lives of others. Chemical engineers can work in many areas including electronics, pollution control, even medicine and the food industry.

A few things chemical engineers are researching right now are how to turn seawater into drinking water, how to develop a delicious new candy bar, and how to reduce pollution by developing new kinds of fuel for cars.

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**Carrie Kelley**
The Clorox Company
Pleasanton, CA

**Carrie's Biography:**
I graduated in May 2007 from the Georgia Institute of Technology. Go Yellow Jackets!!! Now, I am a process developer in the cleaning division at Clorox.

Basically, that means that I get to play all day at work. I figure out what pieces of equipment to put together to make the cleaners you see at the store. I think it is very magical to mix two things together to get something totally different.

**Carrie's Hobbies:**
I absolutely love animals. Currently, my roommates and I have a parrot, cat, and two tanks of fish. They are great to relax with at the end of the day.

In my free time I enjoy sports, traveling, watching movies and playing my guitar. Recently I have started learning how to cook. It is awesome how much I can use what I’ve learned with Chemistry to make great meals!
Environmental Engineer

Environmental Engineers work to make sure pollutants are not released into the air or water and come up with ways to create a cleaner environment. They can make a real difference in the survival of our planet by finding ways to clean up our oceans, rivers, and the air we breathe.

Environmental engineers are working on designing products that create little waste, inventing better ways of recycling, and removing poisons from well water in developing countries.

Meet: Cari Ishida

Cari’s Biography:
I studied engineering because my high school counselor told me I should try it since I did well in math and science. I became an engineer because I enjoy solving puzzles and problems. In graduate school I studied how wetlands can remove pollutants and provide habitat for animals. At Carollo I help people plan for growth and development and keep the environment healthy.

Cari’s Hobbies:
In my spare time, I enjoy playing soccer, softball, running, and playing with my pet beagle. I ran the Chicago Marathon a few times, but decided to scale back on the running after doing the Boston Marathon in 2003 (marathon training during the winter in Chicago was not a fun experience).
# Computer Scientist

**Computer Scientists**, sometimes called Computer Engineers, develop the software programs for products we use at home, school, and play. They design software that can save lives, improve our planet, and help us learn, play, and stay in touch.

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**Meet: Patty Legaspi**

**Patty's Biography:**
My interest for computers was sparked in elementary school when I was introduced to the computer game, Oregon Trail. I began to wonder how it had been created and what was inside the computer that made it work. I enjoyed taking old computers apart and loved the challenge of math. I went on to study computer science at Mills College and now I am an engineer at Google.

**Patty's Hobbies:**
My favorite hobby is spending time with my daughter Sofia. We play with stuffed animals, read books, and chase each other on our hands and knees. We also play on the computer together – she likes to hear music on it. Besides playing with my daughter, I also enjoy reading, biking, playing with my dog (Cookie), and spending time with the rest of my family.

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Patty Legaspi  
Google  
Mountain View, CA
Electrical Engineer

Electrical Engineers design parts for anything that uses electricity. They think about how to power everything from very small to large products.

As an electrical engineer, you might design parts for the next digital camera or MP3 player. Or you could design on the large scale, developing batteries for an electric car or designing power grids for cities.

Meet: Maria Alvarado

Maria Alvarado
University of California, Davis
Davis, CA

Maria’s Biography:
I lived most of my life in Oakland and I recently completed my first year of college at UC Davis, where I am majoring in electrical engineering.
I chose electrical engineering because I want to make smaller and better radio collars for endangered species and create green electronics.

Maria’s Hobbies:
I like hobbies where I can relax and be creative.
My hobbies include reading, listening to music, hanging out, and taking pictures with my camera.
Also, I’m a flute player in the Cal Aggie Marching Band-uh!
Aerospace Engineers design and develop all parts involved in flight vehicles and satellites. They also play a role in creating the directions for operating these vehicles, and figuring out solutions when things don’t go as planned.

As an aerospace engineer, you participate in the design process, including the planning, manufacturing and testing. You might be part of a team that designs new airplanes or you might design TV satellites.

Meet: Amy Connors

Amy Connors
Stellar Solutions
Palo Alto, CA

Amy’s Biography:
Amy’s interest in space started when she read about the space program and astronauts in a children’s magazine in elementary school. She was introduced to engineering in high school when she attended Space Camp. Amy received an Aerospace Engineering degree from the University of Notre Dame. She worked on space hardware for the International Space Station as well as two TV satellites.

Amy’s Hobbies:
Amy enjoys spending time with friends, traveling, and teaching children about space and science. She also enjoys taking walks, swimming, and cake decorating.

Amy was a Girl Scout for 12 years, and now volunteers as a role model for Girl Scout events.
Material Science Engineers design new and improved materials. They might design materials that are very strong and lightweight or they might design materials that don’t harm the environment when they are disposed of.

As a materials engineer, your job might be to create disposable utensils that dissolve in water, or produce a sun block that protects against skin cancer. You might also design materials to make computers run faster.

Joanna Bettinger
University of California, Berkeley
Berkeley, CA

Joanna’s Biography:
I always loved math and science as I was growing up. The first time I heard of Materials Science was at college at Brown University. I like it because we used physics to engineer new and creative uses for materials. Now I am in graduate school at UC Berkeley working towards my Ph.D. in Materials Science. I study magnetic materials that might be in your computer in about 10 years!

Joanna’s Hobbies:
One of my favorite hobbies is hiking. I love hiking because it gives me a good chance to think about things and reflect back. I also love playing with my cats, Bonsai and Jasper. I adopted them from the SPCA three years ago and I can’t remember life without them. I try to bring my camera wherever I go so I always have the memories. I think I have about a million pictures of my cats!
User Interface Designers design computers, appliances, and software programs with a focus on how it is used by people. They think about how to make products easier to use.

As a user interface designer, you will think about who is using the product and design for the needs of many people, such as children, the elderly or those with disabilities. You might design how the settings are displayed on a digital camera or the design the look of a social networking site.

Meet: Gerelee Howard

Gerelee’s Biography:
In high school I loved technology but thought I should be a writer. After planning to major in English I found the Cognitive Science department at UC Berkeley and fell in love with the classes. After graduating I was hired as a Junior Product Designer at a company called Autodesk and later went on to work at Mindjet.

Gerelee’s Hobbies:
I love to jog and do yoga, go dancing, go shopping and write articles on a volunteer basis for magazines.

Gerelee Howard
Mindjet
San Francisco, CA