

# Curriculum in MCIS

Science



Montana Department of  
**LABOR & INDUSTRY**

# Science Curriculum in MCIS

**This electronic pdf is based on the curriculum found inside of MCIS. To access the links listed under materials, log into MCIS using your administration or staff account.**

**The link can be found on the footer of any page within MCIS. Click on “Tools for Counselors and Teachers”, “Classroom Activities”, “Learning Activities” and then “Curriculum”. To find the curriculum for a specific subject go to the bottom of the page and under “Subject Areas” choose the subject from the dropdown menu.**

# **Classroom Activities Found in Science Curriculum**

## **Getting Started 8th and 9th Grade: 7 Activities**

Architects and Engineers  
Careers in Science  
Framing My Community  
From Raw Materials to Finished Goods  
Math and Science Make a Difference  
Men's Work, Women's Work  
Solar Bake Off

## **Looking Deeper 10th and 11th Grade: 14 Activities**

Architects and Engineers  
Are You Pro-Development?  
Asteroid and Career Topography  
Careers in Science  
Chilling Engineers  
From Raw Materials to Finished Goods  
Imagine  
Math and Science Make a Difference  
Men's Work, Women's Work  
Practicing Positive Interaction  
Prospective Hindsight  
Test Preparation and Practice  
Vulcan Space Settlers  
Worksite Modifications

## **Next Steps 12th Grade: 7 Activities**

Are You Pro-Development?  
Asteroid and Career Topography  
Imagine  
Practicing Positive Interaction  
Prospective Hindsight  
Test Preparation and Practice  
Worksite Modifications

## Science Curriculum in MCIS

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Activity	Getting Started 8th and 9th Grade	Looking Deeper 10th and 11th Grade	Next Steps 12th Grade
Architects and Engineers	x	x	
Careers in Science	x	x	
From Raw Materials to Finished Goods	x	x	
Math and Science Make a Difference	x	x	
Men's Work, Women's Work	x	x	
Framing My Community	x		
Solar Bake Off	x		
Are You Pro-Development?		x	x
Asteroid and Career Topography		x	x
Imagine		x	x
Practicing Positive Interaction		x	x
Prospective Hindsight		x	x
Test Preparation and Practice		x	x
Worksite Modifications		x	x
Chilling Engineers		x	
Vulcan Space Settlers		x	

# Architects and Engineers

## Theme and Level

**Theme:** Research Options

**Level:** Getting Started, Looking Deeper

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## At a Glance

Students compare and contrast two occupations using CIS and other resources. Students identify the importance of various occupational characteristics.

**Time:** 100 minutes.

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## Essential Questions

- What are key differences between these two occupations?
  - What occupational characteristics are most important to me?
- 

## Preparation

- Reserve computer lab with projector
  - Establish CIS portfolios before this lesson
  - Print *Compare Occupations Worksheet*, one per student
  - Assemble phone books, trade journals and magazines containing information on architects and civil engineers
  - Locate sample web site advertisements for architectural firms and civil engineering firms
- 

## Steps

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is for them to learn to discriminate between occupations and identify occupational characteristics that are important to them.
2. Assign students the task of finding company advertisements for architectural and engineering firms, using written publications, the Yellow Pages, and the Internet. This research could be conducted as homework prior to class activity or during class.
3. Show PPT Slide 2. Facilitate a class discussion about what students learned about these occupations through the advertising. Be sure to mention the subjective nature of the advertising medium and how this may skew the occupations' portrayal. Discuss the differences students

noticed between the two occupations, as portrayed in these advertisements. Also discuss the variations in occupational information available from the advertisements.

4. Divide the class into small groups.
  5. Show PPT Slide 3. Distribute the *Compare Occupations Worksheets*.
  6. Ask students to log into CIS using their personal usernames and passwords.
  7. Show students where to find the Compare feature in CIS Occupations. Ask students to use this tool to research and compare the two occupations "Architects" and "Civil Engineers" and note what they learn on the worksheet. If students prefer to research two other occupations of interest, they may do so.
  8. Show PPT Slide 4. Discuss as a class how the information they learned in the advertisements compares and contrasts to the information within CIS.
  9. Ask students to identify the three occupational characteristics that they most value at this point in their career development. Divide the class into groups of three to discuss these characteristics.
  10. Show PPT Slide 5. Discuss what the students have learned as a class using the following prompts:
    - What are the biggest differences between these two occupations?
    - What did you learn about the occupational characteristics that are most important to you?
    - How has this activity shaped your thinking about these two occupations?
  11. Show PPT Slide 6. Discuss the assignment: students choose to either: 1) create their own advertisement for a civil engineering or architectural firm, or 2) draw a picture of the three occupational characteristics that are most important to them.
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## Variations and Accommodations

- Divide class into two or more groups. Assign half of the class to do an architecture-themed project, such as a scale drawing, and the other half to do a civil engineering-themed project, such as building a bridge (out of paper, cardboard, toothpicks, or modeling clay). Determine specific outcomes for assessment of the projects and share with students ahead of time.
  - Students choose an occupation of interest other than architect or engineer, and design an ad (e.g., web site, magazine or other type of ad) suitable for a business that could exist for the occupation.
  - This activity could be conducted in any subject area using two occupations associated with the subject to teach compare and contrast skills, to help students learn the unique characteristics of occupations associated with this field of study, and to help students see the relevancy of the subject area to occupations in the field.
  - Work one-on-one with any student needing special assistance or pair student with a helpful partner.
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## Assessment

Use the *Architects and Engineers Scoring Guide* to evaluate student work.

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## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box within the Research Options section of Career Plan.

## Materials

\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

Computer lab with a projector and CIS access

[Architects and Engineers \(PPT\)](#)

[Compare Occupations Worksheet \(PDF\)](#)

[Compare Occupations Worksheet \(DOC\)](#)

[Architects and Engineers Scoring Guide \(PDF\)](#)

[Architects and Engineers Scoring Guide \(DOC\)](#)

Phone books, trade journals and magazines containing information on architects and civil engineers

Sample web site advertisements for architectural firms and civil engineering firms



# Are You Pro-Development?

## Theme and Level

**Theme:** Research Options

**Level:** Looking Deeper, Next Steps

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## At a Glance

Students investigate and present arguments for and against a proposed new development in their community based on unique roles and perspectives within the community.

**Time:** 125 minutes (across two days).

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## Essential Questions

- Do my perspectives change when I argue for one side versus another?
  - What new occupations interest me now?
- 

## Preparation

- Select a real, proposed, or imaginary business that plans to establish itself in your area (perhaps a hospital, prison, high-tech company, airport, or large shopping mall)
  - Contact city planning/zoning, the building permits department, or parks and recreation to obtain a real plan for proposed new, local development or a mock layout, or use Slide 2 in the PowerPoint presentation
  - Use scanner to convert the plan to a digital graphic file if not already in digital form, and import into PowerPoint
  - Identify and contact a guest to chair the student meeting
  - Reserve computer lab with computer projector enabled for Day One
  - Set up computer projector with classroom computer for Day Two
  - Ensure classroom/lab has sufficient open space for activity
  - Establish CIS portfolios before this lesson
  - Obtain resources on local issues and information and reports of discussion about the development
  - Prepare brief descriptions of the roles students will adopt for the presentation
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## Steps

## Day 1

1. Show PowerPoint (PPT) Slide 1. Ask students, "Are you pro-development?" Explain the goal of this lesson is to familiarize students with a real, local development concern and allow students to study the issue in-depth.
2. Show PPT Slide 2. Introduce a real (or fictitious, if need be) development project in your community, using a diagram of the proposed development with the real plan for your community or a mock layout.
3. Provide students with information about the development (location, size, type of organization, likely number of employees), and ask them to suggest who is likely to be involved in community discussions about this proposal. (For example, the business or organization, local councils, environmental groups, citizens groups).
4. Do not discuss points of view at this stage.
5. Show PPT Slide 3. Identify some potential issues (for example, volume of water use and runoff, transportation, site on agricultural land or wasteland).
6. Show PPT Slide 4. Assign each student or group of students a role from those displayed: physician, environmentalist, parent, business owner, scientist, taxpayer, city mayor, teacher, tourist, planner, etc.
7. Show PPT Slide 5. Ask students to investigate arguments for and against the project from the perspective of their assigned role following these steps:
  - Instruct students to decide on the point of view and likely position their role would take on the issue.
  - Ask students to prepare arguments in both written and oral format. If working in groups, ask groups to select one person to present.
  - Arrange for individuals or groups to present their views of the pros and cons of the project in a mock meeting.
8. Use the remaining class time for students to conduct research and develop their presentations.
9. Explain to students that a guest will chair the student meeting as well as provide feedback on student presentations on Day Two.

## Day 2

1. Welcome and introduce the invited guest, sharing their credentials.
2. The guest then chairs the student presentations and provides feedback to students or student groups.
3. Show PPT Slide 6. As homework, assign students to use CIS Occupations to select and research an occupation of choice that would be involved with completing the project. Students may also choose from one of the sample occupations listed on the slide.
4. Assign a short written summary indicating how a person in this occupational role might be involved in the project. The summary should address what the worker's duties would be, what phase of the project they would be involved in, and what kinds of decisions they might help make. Students should also note if they have any interest in this occupation.

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## Variations and Accommodations

- Ask students to write to or interview people representing their assigned or chosen occupational role to seek professional opinions.
- Organize a panel of guests to come, and brief them about this project and which students represent which various points of view. When students present their opinions at the meeting, invite guests to comment on students' opinions and briefly add to or explain the arguments.
- If the project is a real development proposal, invite a reporter from the local paper or radio station to the meeting to publicize the students' investigations.
- A visually-impaired student could record and summarize the meeting.
- An auditory-impaired student could video-record discussions and writes a report on observed body language.
- Students needing special assistance should be paired with a helpful group member for the activity.

## Assessment

Use the *Are You Pro-Development? Scoring Guide* to evaluate student work.

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## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access for Day One  
Classroom with computer and projector with CIS access for Day Two  
[Are You Pro-Development? \(PPT\)](#)  
[Are You Pro-Development? Scoring Guide \(PDF\)](#)  
[Are You Pro-Development? Scoring Guide \(DOC\)](#)  
Plan for proposed new, local development or mock layout  
Resources on local issues, especially the new development

# Asteroid and Career Topography

## Theme and Level

**Theme:** Research Options

**Level:** Looking Deeper, Next Steps

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## At a Glance

Students construct a topographic map and topographic profile of an asteroid in a laboratory activity then explore careers that use the skills of this lesson.

**Time:** 125 minutes (across three days).

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## Essential Questions

- What information can topographical maps provide about an asteroid's surface?
  - What careers might use the skills of this lesson?
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## Preparation

- Set up computer projector with classroom computer for Days One and Two
  - Reserve computer lab with computer projector enabled for Day Three
  - Ensure classroom has sufficient open space for activity
  - Establish CIS portfolios before this lesson
  - Review activity instructions on *Asteroid and Career Topography Handout*
  - Print *Asteroid and Career Topography Handout*, one per student
  - Organize all laboratory materials needed for this activity (see Materials)
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## Steps

### Day 1

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is to learn how topographical maps provide information about an asteroid's surface and to explore careers that use the skills used in this lesson.
2. Tell students that topography refers to the shape of the surface of a specific body with various physical features such as plains and plateaus. For example, the Earth has three major types of landscape regions: mountains, plains, and plateaus.

3. Show PPT Slide 2. Explain to the class that the NEAR Laser Rangefinder (NLR) used in NASA's NEAR mission provided measurements of the topography of the surface of an asteroid called Eros. The NLR made topographic profiles of major features including craters and grooves.
4. Tell students that Eros, named after the Greek god of love, was the first discovered Near-Earth asteroid (NEA). It is approximately 34.4×11.2×11.2 km in size, making it the second-largest NEA. It is a Mars-crosser asteroid and was the first asteroid that was known to come within the orbit of Mars. Eros is one of the few NEAs with a maximum diameter greater than 10 km. It is believed to be larger than the asteroid that crashed in the Yucatan, and it is linked to the extinction of the dinosaurs.
5. Show PPT Slide 3. Tell students that this lesson is a laboratory activity in which they will make a topographic map of the surface of an asteroid. Explain that they will use that topographic map to make a profile of the asteroid's surface depicting various physical features of the asteroid. They will interpret their maps. Then they will use the SKILLS assessment to explore the skills used in this activity.
6. Divide the class into four-five groups, based upon amount of materials available.
7. Distribute the *Asteroid and Career Topography Handouts* to students and ask them to read the steps.
8. Ask if there are questions.
9. Ask students to determine roles within their groups: measurers, clay modelers, and recorders.
10. Instruct students to cut a piece of cardboard to fit the bottom of their aquarium tanks or deep-sided pans.
11. Ask students to shape the clay into a model of a small hill. This will represent the surface of an asteroid. On the model they will make craters of various sizes using marbles or beads. Using a pen or pencil, they will make grooves of different depths. Instruct students to place the finished model on top of the cardboard.
12. Let the models dry overnight so that they become hard.

## Day 2

1. Make sure that the models have dried, then ask students to place the model and the cardboard into the tank or pan. Direct them to pour water into the container until the water is one centimeter deep. (This will represent the base line level of the asteroid, which is equivalent to sea level on the Earth.)
2. Ask students to place the pane of glass over the container. Remind students to exercise caution when handling the glass.
3. Ask students to look down into the container and use the grease pencil to trace the outline of the tank or pan on the glass. Then ask them to trace the contour, or outline, of the water around the edges of the asteroid model.
4. Ask students to remove carefully the glass from the top of the container.
5. Direct students to add another centimeter of water to the container and replace the glass in exactly the same position as before.
6. Again, they are to trace the new contour of water on the glass.
7. Repeat the above steps, adding one centimeter of water each time. Make sure students trace the new contour of water for every centimeter of water added.
8. Stop when the next addition of water completely covers the model.
9. Instruct students to remove the glass from the container, then, using a pencil, trace the contour lines on the glass onto a sheet of paper. A contour line is a line that passes through all points on a map that have the same elevation. The contour lines that were drawn on the sheet of paper will represent the topographic map of the asteroid.
10. Instruct students to make the scale so that every centimeter of water above the base line equals 100 meters of elevation on the map.
11. Ask students to label the elevation of each contour line and draw a straight, horizontal line on the topographic map they constructed. Remind them to draw the line through the area that they wish to profile. Explain that this line is called the profile line.
12. Ask students to find the lowest and highest values using the topographic map.
13. Distribute blank sheets of paper. Ask students to check to make sure the width of the paper is at least the length of their profile line.
14. Using their topographic maps, ask students to determine how many contour intervals separate the highest and lowest values that touch the profile line. Tell them to add two to this number.
15. On the sheet of paper, ask students to draw as many equally spaced parallel, horizontal lines as determined in the previous step.
16. Ask students to label these lines with the interval values, beginning at the bottom line, with the

- lowest value (which is one interval below the lowest value on the topographic map). Continue to label each line with the contour interval as on the topographic map proceeding to the top line which should be the highest value (which is one interval above the highest value on the map).
17. For every point on the profile line, which a contour line touches, instruct students to draw a perpendicular line to the horizontal line having the same value.
  18. Tell students to draw a smooth curve through all the points where the perpendiculars intersect the proper horizontal lines to make their profiles.

### Day 3

1. Show PPT Slide 4. Discuss the following questions:
    - What is the elevation of the highest point on the asteroid?
    - What can be determined about the slope of the asteroid by looking at the contour lines? How did you arrive at your answer?
    - How do the contour lines look where they show the grooves on the model?
    - How do the contour lines look where they show craters on the model?
    - What information can topographic maps provide about an asteroid's surface? Explain how you arrived at your answer.
    - What information can topographic profiles provide about an asteroid's surface? Explain how you arrived at your answer. (Write students' answers to this last question on the board.)
  2. Explain to students that occupations have a topography of sorts as well, but an occupation's topography is defined by the skills and abilities required to perform the occupation.
  3. Explain that now they will learn about occupations that use the skills they just used in the laboratory activity.
  4. Ask students to log into CIS using their personal usernames and passwords.
  5. Explain that they will be using an assessment called SKILLS, which explores the skills used at various levels in occupations.
  6. Direct students to open SKILLS, and then click on "Select Skills" and review the skill words displayed.
  7. Show students that skills can be posted in three levels: very satisfying these skills are used continuously; moderately satisfying these skills are used often; and somewhat satisfying these skills are used occasionally.
  8. Ask students to find the skills words that best capture the skills they used in the lesson.
  9. Tell students to post the skill words (or the closest approximation of these words) in the column that best represents how much they used the skill in the laboratory process. For example, if they used a great deal of measuring, place measuring in the very satisfying column.
  10. Once students have finished posting skills, ask them to click on "Rate Skills."
  11. Encourage students to click on "\*Top 30 Occupations" and explore the list of their Top 30 Occupations.
  12. Demonstrate how to use the View feature to see how the coding of any occupation compares to the skills used in their laboratory assignment. (Click the View icon, which looks like miniature binoculars, to produce this comparative view.)
  13. Ask students to note any occupations of interest and their thoughts about these occupations.
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## Variations and Accommodations

- Assign students to use SKILLS for themselves using their own skill preferences as an additional activity.
  - Assign students to continue to work in groups while completing the SKILLS assessment to assist any students with special needs.
  - Students needing special assistance should be paired with a helpful group member for the activity.
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## Assessment

Use the *Asteroid and Career Topography Scoring Guide* to evaluate student work.

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## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of their portfolios.

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\*\*\*These links are not accessible in the pdf version.  
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## Materials

Classroom with computer, projector and CIS access for Days One and Two

Computer lab with projector and CIS access for Day Three

[Asteroid and Career Topography \(PPT\)](#)

[Asteroid and Career Topography Handout \(PDF\)](#)

[Asteroid and Career Topography Handout \(DOC\)](#)

[Asteroid and Career Topography Scoring Guide \(PDF\)](#)

[Asteroid and Career Topography Scoring Guide \(DOC\)](#)

4-5 aquarium tanks or deep-sided pans

4-5 pieces of cardboard (sized to fit the bottom of the tanks or pans)

4-5 panes of clear glass

4-5 bottles of one liter of water

Modeling clay

Sheets of unlined, white paper

Pencils, pens

Marbles or beads of various sizes

Grease pencils

Rulers

Scissors

# Careers in Science

## Theme and Level

**Theme:** Research Options

**Levels:** Getting Started, Looking Deeper

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## At a Glance

Students explore science career areas, choose an occupation to research, and play a "guess-my-occupation" game.

**Time:** 50 minutes.

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## Essential Questions

- Which careers require advanced levels of science?
  - Which careers require applied science?
  - Which careers require practical applications of science?
- 

## Preparation

- Reserve computer lab with computer projector and CIS access assured
  - Establish CIS portfolios before this lesson
  - *Optional:* Prizes for guessing game
- 

## Steps

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is for them to learn more about various science careers and the science coursework required for these occupations.
2. Discuss with students the types of careers that require advanced science, applied science and practical applications of science.
3. Show PPT Slide 2. Show students where in CIS the Science and Health Science occupational clusters are located.
4. Ask students to use CIS to research occupations and the various levels of science required in these occupations.
5. Tell students to thoroughly investigate three careers and choose one that sounds appealing. Explain that they must find out enough about the career to describe it to someone else. Encourage students to carefully review Preparation, Helpful high school courses, Programs of Study and Schools, as well as the Program Descriptions for each school's programs.



6. Once students have chosen their occupation, printed key information, and taken notes, divide the class into groups of three.
  7. Show PPT Slide 3. Tell students to take turns describing their chosen occupation to their partners without saying the name of the occupation.
  8. Students ask questions until they choose the correct answer.
  9. *Optional*: Provide prizes for students who correctly guess the most occupation titles.
  10. Assign students to write a three-paragraph paper about their chosen occupation.
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## Variations and Accommodations

- Invite guest speakers from different occupations to the class to talk about their career preparation. You could play a "What's My Line?" game with the speakers. (In "What's My Line?" people walked on the TV show and TV and movie stars tried to guess the person's occupation by asking only yes or no questions.)
  - This lesson concept could be used in most subject area classes, using those clusters and occupations associated with the subject.
  - Encourage students to visit their selected occupation's worksite; help students arrange job shadows to sites where the occupation exists.
  - Work one-on-one with any student needing special assistance or pair student with a helpful partner or group member.
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## Assessment

Use the *Careers in Science Scoring Guide* to evaluate student work.

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## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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## Materials

Computer lab with a projector and CIS access

[Careers in Science \(PPT\)](#)

[Careers in Science Scoring Guide \(PDF\)](#)

[Careers in Science Scoring Guide \(DOC\)](#)

*Optional*: Prizes

\*\*\*These links are not accessible in the pdf version.  
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# Chilling Engineers

## Theme and Level

**Theme:** Research Options

**Levels:** Looking Deeper

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## At a Glance

Students design and construct a cooling system and identify occupations that use the skills involved in the activity.

**Time:** 100 minutes (across two days).

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## Essential Questions

- Which careers require advanced levels of design and math?
  - Which careers require applied science?
  - Which careers require practical applications of science?
- 

## Preparation

- Reserve computer lab with computer projector enabled
  - Ensure lab has sufficient open space for activity
  - Establish CIS portfolios before this lesson
  - Review lesson plan for Day One
  - Organize the following materials for Day One:
    - Blocks of ice
    - Styrofoam
    - Cardboard
    - Newspapers
    - Shipping tape and glue
    - Scissors
    - Plastic trash bags
    - Packing materials
    - Aluminum foil
    - Rulers
    - Ice cream and cones
- 

## Steps

## Day 1

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is for them to learn more about cooling systems and careers that use cooling technology skills.
2. Divide the class into teams of four.
3. Tell teams that their goal is to create a cooling container that best cools a block of ice, measured by whichever team's block of ice lasts the longest.
4. Distribute the materials. Encourage students to use the Internet and other classroom materials and resources to design their cooler.
5. Tell students that they must complete their design and construction during this class period using only the materials available in the classroom or school.
6. Tell students that this is a competition, and the group whose ice block lasts the longest will win ice cream cones in a subsequent class.
7. Provide remainder of class time for cooler design and construction.

## Day 2

1. Offer ice cream cones to winning team.
  2. Show PPT Slide 2. Ask the class to identify the reasons why the winning cooler worked most effectively.
  3. Show PPT Slide 3. Ask students to identify which of these skills they used when designing and constructing their coolers.
  4. Go to CIS. Demonstrate the skills selection and rating process used within the SKILLS assessment.
  5. Ask students to log into CIS using their personal usernames and passwords.
  6. Instruct students to go to SKILLS and then select the skills they and their group members used while designing and constructing their coolers.
  7. Tell them to click on Rate Skills and view the \*Top 30 Occupations on their list.
  8. Ask students if heating and cooling careers surfaced on any of these lists.
  9. Ask students if any occupations of interest surfaced on their lists.
  10. Tell students to save their thoughts about SKILLS and any occupations of interest in their portfolios by clicking the Save button.
  11. Show PPT Slide 4. Discuss the links between classroom skills and occupation skills.
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## Variations and Accommodations

- Invite guest speakers from various heating and cooling companies to the class to talk about their careers and the preparation they undertook to secure their present position.
  - Plan for class to visit a heating and cooling company worksite, and arrange for various workers to discuss their occupations and the preparation required for these.
  - Work one-on-one with any student needing special assistance or pair student with a helpful group member for the activity.
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## Assessment

Use the *Chilling Engineers Scoring Guide* to evaluate student work.

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## Portfolio

## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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## Materials

\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

Computer lab with a projector and CIS access

[Chilling Engineers \(PPT\)](#)

[Chilling Engineers Scoring Guide \(PDF\)](#)

[Chilling Engineers Scoring Guide \(DOC\)](#)

Blocks of ice

Styrofoam

Cardboard

Newspapers

Shipping tape and glue

Scissors

Plastic trash bags

Packing materials

Aluminum foil

Rulers

Ice cream and cones

## Theme and Level

**Theme:** Research Options

**Level:** Getting Started

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## At a Glance

Students investigate the occupations and roles that sustain a community.

**Time:** 75 minutes (across two days).

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## Essential Questions

- What services and occupations are key to my community?
  - What occupation in my community most interests me?
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## Preparation

- Contact a regional planning agency and request a large map of your community; if you obtain a digital copy, insert it into Slide 2 of the PowerPoint presentation
  - Set up computer projector with classroom computer for Day One
  - Reserve computer lab with computer projector enabled for Day Two
  - Establish CIS portfolios before this lesson
  - Identify local government agencies, community agencies, and businesses that provide the tax base for your local funding and try to obtain some local government booklets; the local chamber of commerce, Rotary Club, and Kiwanis may be useful contacts
  - Research sustainable communities on the Internet by searching for "elements of sustainable communities"
  - Read ten crucial functions of sustainable communities described here: [Functions of Sustainable Community Systems for Transformation](#) (also listed on Slide 3)
  - Determine the time frame and presentation requirements for the project, and add details to Slide 4
  - Gather materials needed for project: large chart paper, newspapers, magazines, brochures, art supplies
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## Steps

## Day 1

1. Show PowerPoint (PPT) Slide 1. Tell students that this lesson will teach them about the key individuals and occupations that sustain their community.
2. Display a map of your local community. Ask students to identify places they know and mark them on this map.
3. Ask students to devise a map key or coding system to mark places that are important to them; for example, schools and recreational facilities. This also establishes how much students know about their community.
4. Show PPT Slide 2. This slide displays the question, "Who organizes our community and keeps it functioning?"
5. Ask students to make a list of their ideas individually.
6. Divide the class into small groups and ask students to share their ideas.
7. Ask groups to identify a reporter who will then share the group's ideas with the entire class.
8. Record the groups' responses.
9. Show PPT Slide 3. Discuss the contents of the slide and mention any aspects of the community's functioning that students have overlooked.
10. Create new groups of five.
11. Show PPT Slide 4. Explain to students that their small group is to create a mural, diagram, or collage of their community. This project will show how the community functions and include brief job descriptions for the people involved. Tell students that CIS Occupations and local publications have useful information for this assignment. Establish the time frame and presentation requirements.
12. Show PPT Slide 5. Ask students to write a short report about their community. This report must include a paragraph that describes what they learned about the community and themselves while creating the project. It must also detail one occupation in their community that they would like to do and the reasons for their choice.

## Day 2

1. Provide class time to complete this project, and, on a subsequent day, have groups present their projects to the entire class.
  2. Collect individual reports.
- 

## Variations and Accommodations

- Ask students to interview someone in the occupation they chose to research. CIS Occupations and Job Search (see Step 6: Check out Employers and Additional job search information) have useful information.
  - Invite a local public official, chamber of commerce member, or someone from an occupation in which students are interested to view their project(s) and to speak to the class about their role in the community.
  - Use this activity before students take part in a community service program.
  - Arrange a visit to local government or chamber of commerce offices.
  - Present class with a local issue and ask students to prepare an argument for or against it. Ask students to be prepared to vote on the issue.
  - Ask students to prepare a matching activity for another class to do. On one side of the page list everyday community activities, like "takes trash away," "ensures drinking water quality," or "provides public transportation." On the other side list local government departments and community agencies such as U.S. Postal Service, fire department, water district, electric company, and sanitation service. Ensure that in the layout the matching items do not line up. Students then match activities to service providers.
  - Students needing special assistance should be paired with a helpful group member for the activity.
-

## Assessment

Use the *Framing My Community Scoring Guide* to evaluate student work.

---

## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Classroom with computer, projector and CIS access

[Framing My Community \(PPT\)](#)

[Framing My Community Scoring Guide \(PDF\)](#)

[Framing My Community Scoring Guide \(DOC\)](#)

Map of local area

Local government booklets

Large chart paper

Newspapers, magazines, brochures, art supplies for project

# From Raw Materials to Finished Goods

## Theme and Level

**Theme:** Research Options

**Level:** Getting Started, Looking Deeper

---

## At a Glance

Students conduct and present research on a product: its background, raw materials, production process, and the occupations associated with its production.

**Time:** 100 minutes.

---

## Essential Questions

- What all is involved in the process of transforming raw materials into finished goods?
  - Do any of these manufacturing-linked occupations interest me?
- 

## Preparation

- Reserve computer lab with computer projector enabled
  - Edit Slide 4 to include your requirements for the project in terms of time frame, scope, and schedule for presentations
- 

## Steps

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is to learn about the relationships among raw materials, production processes, and occupations.
2. Show PPT Slide 2. Explain that they will be investigating how an everyday item is made, with particular reference to the materials, technology, and production processes used. They will also be exploring manufacturing-linked occupations.
3. Show PPT Slide 3. Further explain that students will be expected to document their findings in a poster or in a report and present a summary to the class. The research must include the background history of the product, summary of the production processes, technology used, a list of the raw materials used in the manufacturing, and a list of the occupations associated with the product. (Occupations may include raw material production, transportation, manufacturing, packaging, marketing, sales, research, or any associated with manufacturing and production). Encourage students to use library books, magazines, encyclopedias, CIS Occupations, and the



Internet.

4. Show PPT Slide 4, which shows your requirements for the project in terms of timeframe, scope, and schedule for presentations.
  5. Ask students to select a product to investigate for example, canned food, sports shoes, cars, planes, sandwich bread, shirts, boats, or the telephone and then conduct their research. The product can be related to a hobby or interest.
  6. Show PPT Slide 5. Inform students that they will be evaluated on the skills exhibited during the presentation and the research conducted, as demonstrated in their poster or report.
  7. Provide adequate time for project completion, then ask students to present to the class a summary of their findings, supported by their poster or report.
  8. Hang posters and reports around the room for students to view.
- 

## Variations and Accommodations

- Students could create both a written report and a poster.
  - Ask students to share their reports with other students through a short oral presentation. Discuss the patterns and trends common to several industries, such as automation, fewer workers, increased skill levels, teams.
  - Ask students to select products or industries from fields allied to specific curriculum areas, and to identify and include school courses and related subjects in their poster and report.
  - All students could investigate one industry. They report on: the industry's origins, major technological changes, the effects of the new technologies on products, workplace organization, the tasks of workers, effects on the work and lifestyle of consumers, and likely future changes.
  - Students investigate the long-range occupational outlook for three occupations on their product poster or in their report.
  - Students investigate the social effects of technological change and/or organizational changes within industries.
  - Students could work in pairs or small groups to conduct their research.
  - Students needing special assistance should be paired with a helpful partner for the activity.
- 

## Assessment

Use *From Raw Materials to Finished Goods Scoring Guide* to evaluate student work.

---

## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access  
[From Raw Materials to Finished Goods \(PPT\)](#)  
[From Raw Materials to Finished Goods Scoring Guide \(PDF\)](#)

[From Raw Materials to Finished Goods Scoring Guide](#)  
Tape or tacks to hang finished posters and reports

## Theme and Level

**Theme:** Research Options

**Level:** Looking Deeper, Next Steps

---

## At a Glance

Students imagine change within a dynamic system by exploring the effects of weightlessness on a workplace.

**Time:** 100 minutes.

---

## Essential Questions

- What are dynamic systems?
  - How might dynamic systems theory impact my work?
  - How does changing one element of a work environment impact the environment?
- 

## Preparation

- Reserve computer lab with computer projector enabled
  - Establish CIS portfolios before this lesson
  - *Optional:* Read Roger Von Oech's *A Whack on the Side of the Head* for scientific references
- 

## Steps

1. Show PowerPoint (PPT) Slides 1 and 2. Tell students that the goal of this lesson is to learn more about dynamic systems by studying weightlessness.
2. Click the link on Slide 2 and demonstrate the notion of zero gravity by showing the video of astronauts experiencing weightlessness.
3. Ask students to use all of their senses to imagine what would happen if gravity stopped for ten seconds every day. Ask:
  - What land surfaces would change?
  - What would happen to oceans and rivers?
4. Show PPT Slide 3 and explain the assignment: Ask students to use the Internet to research the impact of not having gravity, and to create a scenario (either pictorial or written) depicting a work setting involving an occupation of interest in a world without gravity.
5. Suggest that students log into CIS and use Occupations to learn more about traditional work

demands and settings and speculate how a gravity-free environment would affect various work environments.

6. Ask students to prepare to share their scenarios.
  7. Show PPT Slide 4. Using the slide, explain the evaluation criteria: Evaluate presentations based upon content, creativity, eye contact, appropriate tone, and making a connection with the audience.
  8. After students share their scenarios, discuss the processes of imagination and systems analysis that were required to complete this assignment. Ask students:
    - How did you imagine the details of zero gravity?
    - Where did you find information about gravity on the Internet?
    - How did you create your work settings?
  9. Show PPT Slide 5. Use slide to define dynamic systems.
  10. Discuss the importance of thinking about systems and the dynamic interrelatedness of life as we imagine changes in the physical structure of our world.
  11. Discuss the dynamic nature of social systems and work systems.
  12. Ask students to list at least six other examples of dynamic systems in their world: for example, human body systems, the solar system, the water cycle, families, and the Internet.
  13. Ask students to write a paragraph discussing how dynamic systems theory might be used in an occupation of interest to themselves.
- 

## Variations and Accommodations

- Use the basic idea of this activity in other subjects, but instead of zero gravity: imagine infinity in math class, imagine living in the sea or on another planet in science, imagine life in another country or in another economic or political system in social studies, or imagine living forever or until age 200, curing all disease in health class.
  - Work one-on-one with any student needing special assistance or pair student with a helpful partner.
- 

## Assessment

Use the *Imagine Scoring Guide* to evaluate student work.

---

## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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## Materials

\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

Computer lab with projector and CIS access

[Imagine \(PPT\)](#)

[Imagine Scoring Guide \(PDF\)](#)

[Imagine Scoring Guide \(DOC\)](#)

# Math and Science Make a Difference

## Theme and Level

**Theme:** Research Options

**Level:** Getting Started, Looking Deeper

---

## At a Glance

Students guess how much math and science are required for various occupations then research the knowledge, skills, and training required for occupations of interest.

**Time:** 75 minutes.

---

## Essential Questions

- How do the math and science requirements of occupations impact my career planning?
- 

## Preparation

- Reserve computer lab with computer projector enabled
  - Establish CIS portfolios before this lesson
  - Print *Math and Science Make a Difference Worksheet*, one per student
- 

## Steps

1. Show PowerPoint (PPT) Slide 1. Explain that the goal of this lesson is to help students grasp the math and science requirements of various occupations.
2. Ask the class to share examples of ways they use math and science in everyday life (examples: making change, measuring ingredients, calculating distance or time, removing stains, managing the pH in a garden). Write these on the board.
3. Show PPT Slide 2. This slide contains this question: "How might math and science knowledge or skills affect career choice?" Record students' ideas on the board. Do not discuss at this point.
4. Show PPT Slide 3. Explain that one characteristic of occupations relates to how much math or science is required in the work. Review these points on the slide:
  - Some jobs require workers to select the correct mathematical formulas
  - Other jobs require workers to use scientific rules and methods
  - Often an occupation uses similar amounts of math and science
  - However, a few occupations are high on math or science but not both

5. Ask the class to discuss this information and share examples from their personal lives.
  6. Show PPT Slide 4. This slide is the *Math and Science Make a Difference Worksheet*. Explain to the class that they will each receive this worksheet. To complete it they will take their best guess as to whether each occupation on the list requires math and/or science a great deal, a lot, somewhat, a little, or hardly ever. Demonstrate to the students how to complete the My Guess column by using 5 for "A great deal" and 1 for "Hardly ever."
  7. Pass out the worksheets and remind students to fill in the My Guess column only.
  8. Create five columns with "5 (A great deal)," "4 (A lot)," "3 (Somewhat)," "2 (A little)," and "1 (Hardly ever)" as headings on the board. Ask the class to place each occupation in the appropriate column. Where there is disagreement, ask the class to vote.
  9. Show PPT Slide 5. It displays the answers, and highlights any discrepancies when compared with the class-generated lists. (Note: Students can list occupations with ranges more than once.)
  10. Ask the students to think about how this type of information is valuable to a high school student. Ask students to log into CIS using their personal usernames and passwords, and explain that this type of information is in CIS.
  11. Demonstrate how to find an occupation using CIS Occupations.
  12. Review with students all the topics they can explore about each occupation. Ask each student to research three occupations of interest to discover the Skills and Abilities, Knowledge, and Preparation (training) necessary to obtain entrance into that field of work. Remind them to look for indicators of math and science skill requirements.
  13. Ask students to share with the class three interesting facts they discovered while doing the research.
  14. Discuss the importance of math and science in relation to occupational choice. Point out to students that the actual amount of math and/or science used by any individual in their job can vary greatly. Refer back to the ideas aired in Step 1 and discuss how math and science proficiency can affect occupational choice.
- 

## Variations and Accommodations

- Students could survey family and friends to find examples of how they use math in their work (include homemakers). Make sure the students get the occupation title from the people surveyed. Students could then work in groups to devise a quiz using their survey responses. Students could share an example of a math problem from their surveys without revealing who it was from. Other students guess the occupation. Repeat until all math examples are covered. A list of the occupations surveyed could be displayed.
  - Students (or the teacher) could devise a set of problems based on the examples for the class to solve.
  - Work one-on-one with any student needing special assistance or pair student with a helpful partner.
- 

## Assessment

Use *Math and Science Make a Difference Scoring Guide* to evaluate student work.

---

## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access

[Math and Science Make a Difference \(PPT\)](#)

[Math and Science Make a Difference Worksheet \(PDF\)](#)

[Math and Science Make a Difference Worksheet \(DOC\)](#)

[Math and Science Make a Difference Scoring Guide \(PDF\)](#)

[Math and Science Make a Difference Scoring Guide \(DOC\)](#)

# Men's Work, Women's Work

## Theme and Level

**Theme:** Research Options

**Level:** Getting Started, Looking Deeper

---

## At a Glance

Students investigate occupational roles of men and women and identify potential reasons for the differences in occupational choice and pay equity.

**Time:** 100 minutes.

---

## Essential Questions

- Why are some occupations more populated by men than women and vice versa?
  - Do the physical requirements of occupations limit my participation?
  - How can we reduce gender-linked stereotyping and discrimination in careers?
- 

## Preparation

- Reserve computer lab with computer projector enabled
  - Establish CIS portfolios before this lesson
  - Review Bureau of Labor Statistics, U.S. Census Bureau, and other Internet sites to find current information
  - Update U.S. Census data on Slide 3 of PowerPoint presentation when available
  - Print *Women's Employment and Earning Concerns Quiz*, one per student
  - Print instructor's copy of *Women's Employment and Earning Concerns Answers*
- 

## Steps

1. Show PowerPoint (PPT) Slide 1. Explain that this lesson will look at differences in male and female wages and some of the lingering reasons for these differences.
2. Show PPT Slide 2. Explain to students that they will be taking the *Women's Employment and Earning Concerns Quiz*, which is ungraded.
3. Distribute the quiz sheets and ask students to make their best guesses for each of the questions.
4. Review the answers students provide. Do not give the quiz answers at this stage. Explain that the answers will be given later.

5. Ask students to reflect upon their own family experiences.
  6. Show PPT Slide 3. Ask students to graph the figures shown on the slide of workers by occupational categories. (This data is from 2010; check to see if you can update this slide if newer data becomes available.)
  7. Ask students to write two sentences about their graphs and what they show.
  8. Ask students to write two additional sentences on the differences in the occupational patterns of men and women. Tell students they are not to suggest reasons for the patterns, merely describe them.
  9. Discuss the patterns the graphs show.
  10. Ask students, individually or in pairs, to log into CIS and go to CIS Occupations. Ask them to identify and read about one occupation dominated by men (for example, most construction occupations), and one dominated by women (for example, several clerical occupations).  
*Optional:* Assign occupations to students. Ask them to note the qualifications and physical requirements for each occupation.
  11. Ask students to share their findings with the class, particularly whether they found anything that limited participation by men or women in the occupations.
  12. Ask students to suggest other reasons for the occupational distribution patterns in their graphs.
  13. Show PPT Slide 4, which contains this statement: "Average earned income for women in the U.S. is currently about 78 percent of the average earned income for men."
  14. Ask students to suggest reasons for this. (Likely answers include "more managers are men," "women do lower level jobs," "women are not as smart or educated as men," "women mostly raise young children.") Accept and record all answers at this stage and record on the board.
  15. Show PPT Slides 5 and 6. These are the answers to the *Women's Employment and Earning Concerns Quiz*, and ask students to compare their answers. Discuss the answers.
  16. Discuss the influences on women's and men's career choices; for example, the effects of taking time out from an occupation to care for children, working part-time for some years, the pressures and long hours of sales and management jobs, and the effects on family life.
  17. Refer back to the patterns of occupational distribution for men and women graphed earlier and the reasons students suggested for women's lower average pay.
  18. Show PPT Slide 7. Ask students to write two paragraphs on the following:
    - How I would like to see the occupational distributions of men and women change when I am an adult.
    - What I can do to ensure that I have full information and full choice of occupations, regardless of gender. (This part of the activity could be a homework assignment.)
  19. Ask students to share and discuss their ideas with the class.
- 

## Variations and Accommodations

- Ask students to draw graphs or diagrams of the occupation distribution they would like to see when they are adults, instead of writing a paragraph.
- Ask students to survey members of their family for age, level of education, hours of paid work, and the rate of pay. Ask them to pool the factual information only, and leave out names. As a class, analyze the information and compare it with the fact sheet for the quiz or current statistical information from U.S. Department of Labor, Bureau of Labor Statistics, or U.S. Census Bureau.
- Ask students to investigate the role of paid and unpaid work in men's and women's lives, 50 years ago and today. Ask students to estimate the percentage of housework done by each member of their family.
- Discuss the term "housework" and carefully define it (consider maintenance of house, car, yard, taking children to activities, shopping, cleaning, cooking, washing). Ask students to describe in some detail the types of tasks typically involved; for example, "collect, sort and load clothes into machine, unload, dry, air, fold, sort" rather than "do the washing."
- Invite guest speakers to talk with the class about occupational opportunity; for example, men and women in nontraditional occupations.
- Work one-on-one with any student needing special assistance or pair student with a helpful partner.



## Assessment

Use *Men's Work, Women's Work Scoring Guide* to evaluate student work.

---

## Portfolio

Students enter their reflections in the **What occupations interest you now?** text box in the Research Options section of the Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access

[Men's Work, Women's Work \(PPT\)](#)

[Women's Employment and Earning Concerns Quiz \(PDF\)](#)

[Women's Employment and Earning Concerns Quiz \(DOC\)](#)

[Women's Employment and Earning Concerns Answers \(PDF\)](#)

[Women's Employment and Earning Concerns Answers \(DOC\)](#)

[Men's Work, Women's Work Scoring Guide \(PDF\)](#)

[Men's Work, Women's Work Scoring Guide \(DOC\)](#)

# Practicing Positive Interaction

## Theme and Level

**Theme:** Know Myself

**Level:** Looking Deeper, Next Steps

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## At a Glance

Students practice workplace conflict resolution skills and provide feedback to other groups regarding their conflict resolution role-plays.

**Time:** 125 minutes (across three days).

---

## Essential Questions

- What can I do to help resolve conflicts in a positive way?
- 

## Preparation

- Reserve computer lab with computer projector for Day One
  - Set up computer projector with classroom computer for Days Two and Three
  - Ensure classroom and lab has sufficient open space for activity
  - Establish CIS portfolios before this lesson
  - Print *Four Situations Handout*, enough for one situation for each group of four
  - Print *Observation Comments Worksheets*, one per student
- 

## Steps

### Day 1

1. Show PowerPoint (PPT) Slide 1. Introduce the activity by stating that the class is going to practice and develop conflict resolution skills. Explain that they will be role-playing a workplace conflict situation.
2. Divide the class into groups of four. Give each group a situation from the *Four Situations Handout*.
3. Show PPT Slide 2. Instruct the groups that they are to begin with the basic situation and add more details, so that others can understand and reenact it.
4. Instruct students to select a specific occupational setting for this conflict; i.e., a bank, a welding

shop, a business office, a medical laboratory, etc.

5. Allow ten minutes for students to develop a scenario then facilitate exchange of scenarios, so that each group has a new scenario to use for the activity.
6. Show PPT Slide 3. It displays the Rules for Positive Interaction. Review these rules with the class, answering any questions.
7. Explain that students will observe and comment on each other's presentations.
8. Allow the remainder of the class period for the groups to plan and prepare for their conflict resolution role-plays.
9. Encourage groups to learn more about the occupations in their scenarios and the work settings for these occupations by logging into CIS and using CIS Occupations, so their role-plays will be more credible.

### Day 2 and 3

1. Distribute the *Observation Comments Worksheets* to students.
  2. Instruct students to take turns presenting and observing one another's role-plays, then noting positive comments and observations on the worksheet.
  3. Request that students use the Rules for Positive Interaction as they make comments on each other's role-plays.
  4. Discuss each role-play upon its conclusion with the whole class.
  5. Show PPT Slide 4. Ask how similar situations might be resolved differently, given different settings or interpersonal dynamics.
  6. Collect the *Observation Comments Worksheets* to verify student participation.
- 

## Variations and Accommodations

- Videotape the role-plays then play back before feedback sessions. Allowing students to view themselves in a role-play promotes better awareness of behavior and enhanced receptivity to other's feedback.
  - Pair students needing special assistance with a helpful group member for the activity.
- 

## Assessment

Use the *Practicing Positive Interaction Scoring Guide* to evaluate student work.

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## Portfolio

Students enter their reflections about this activity in the **What did you learn about yourself your characteristics, interests, and preferences?** text box in the Know Myself section of Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access for Day One  
Classroom with computer, projector and CIS access for Days Two and Three

[Practicing Positive Interaction \(PPT\)](#)  
[Four Situations Handout \(PDF\)](#)  
[Four Situations Handout \(DOC\)](#)  
[Observation Comments Worksheet \(PDF\)](#)  
[Observation Comments Worksheet \(DOC\)](#)  
[Practicing Positive Interaction Scoring Guide \(PDF\)](#)  
[Practicing Positive Interaction Scoring Guide \(DOC\)](#)

## Theme and Level

**Theme:** Evaluate Options

**Levels:** Looking Deeper, Next Steps

---

## At a Glance

Students use forecasting and hindsight to develop possibilities for their future. Students learn about climate change.

**Time:** 50 minutes.

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## Essential Questions

- How can hindsight help me plan my future?
- 

## Preparation

- Reserve computer lab with computer projector enabled
  - Establish CIS portfolios before this lesson
  - Print *Prospective Hindsight Worksheet 1* and *Prospective Hindsight Worksheet 2*, one each
  - Review this new article: [National Geographic web page](#) to provide students with information for the first activity
  - *Optional:* Review *Decision Traps*, by J.E. Russo & J.H. Shoemaker
- 

## Steps

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is for them to learn how to use prospective hindsight to help them plan their futures.
2. Define "prospective hindsight:" Prospective hindsight involves generating an explanation for a future event as if it had already happened; i.e., one envisions going forward in time, and then looking back.
3. Divide the class into two large groups.
4. Show PPT Slide 2. Give one group the *Prospective Hindsight Worksheet 1*, and the other group the *Prospective Hindsight Worksheet 2*.
5. Allow students to work for twenty minutes, using Internet resources if desired.
6. Ask groups to share their results. Examine how answers, perspectives, and approaches differ between the groups.

7. Show PPT Slide 3. Use these results to address the following questions:
    - Why might it be easier to use hindsight to generate more options?
    - Did the prospective hindsight group (*Worksheet 2*) have different results than the forecast group (*Worksheet 1*)?
    - What were the options generated by the forecast group?
    - Why are options for answering the question on *Worksheet 2* different from those for *Worksheet 1*?
  8. Show PPT Slide 4. Explain and discuss how "mental time travel" is a powerful tool for gaining insight into the myriad of variables and choices that can produce both success and failure.
  9. Ask students if their daydreams (which are projective imaginations of the future) have ever assisted them with stressful upcoming events.
  10. Explain that *Worksheet 2* uses prospective hindsight to identify creative possibilities. Though folks typically think of hindsight as a negative phenomenon that obstructs learning, it can be turned into an advantage when contemplating the future.
  11. Show PPT Slide 5 and inform students that research suggests that the ability to explain events so easily in hindsight can be harnessed to constructively anticipate greater possibilities for the future.
  12. Show PPT Slide 6. Assign a written report for homework. Ask students to imagine that they are ten years older and entering their ideal occupation. They are to list all the reasons that they were successful in landing this occupation.
  13. Show PPT Slide 7. Ask students, "What did you learn about how you make decisions?"
- 

## Variations and Accommodations

- Ask students to cite other examples of changes with which they are familiar.
  - Discuss climate change more in depth in science classes.
  - Students needing special assistance should be paired with a helpful group member for the activity.
- 

## Assessment

Use the *Prospective Hindsight Scoring Guide* to evaluate student work.

---

## Portfolio

Students enter their reflections about this activity in the **What did you learn about how you set goals and make decisions from the career work you completed?** text box in the Evaluate Options section of Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access  
[Prospective Hindsight \(PPT\)](#)  
[Prospective Hindsight Worksheet 1 \(PDF\)](#)

[Prospective Hindsight Worksheet 1 \(DOC\)](#)  
[Prospective Hindsight Worksheet 2 \(PDF\)](#)  
[Prospective Hindsight Worksheet 2 \(DOC\)](#)  
[Prospective Hindsight Scoring Guide \(PDF\)](#)  
[Prospective Hindsight Scoring Guide \(DOC\)](#)

## Theme and Level

**Theme:** Evaluate Options

**Levels:** Getting Started, Looking Deeper

---

## At a Glance

Students construct a simple solar oven that heats cookies and s'mores. Students learn about technology and careers that use green technology.

**Time:** 100 minutes (across two days).

---

## Essential Questions

- Which careers require advanced levels of science?
  - Which careers require applied science?
  - Which careers require practical applications of science?
- 

## Preparation

- Set up computer projector with classroom computer for Day One
  - Reserve computer lab with computer projector enabled for Day Two
  - Ensure classroom has sufficient open space for activity
  - Establish CIS portfolios before this lesson
  - Review lesson plan for Day One or procedure on Slide 2 of the PowerPoint presentation
  - Organize the following materials for Day One:
    - Several empty pizza boxes, one per group
    - Newspapers
    - Tape and glue
    - Scissors
    - Marker
    - Black construction paper
    - Clear heavy-duty plastic wrap
    - Aluminum foil
    - Pencils or pens
    - Rulers
    - Thumbtacks
    - Pieces of string or yarn about 15" long
    - Cookies, bagels, or s'more fixings
    - Towels or blankets
-

# Worksite Modifications

## Theme and Level

**Theme:** Research Options

**Level:** Looking Deeper, Next Steps

---

## At a Glance

Students investigate some of the ways that disabilities impact those affected and learn how to modify occupations to accommodate workers with disabilities.

**Time:** 125 minutes (across two or more days).

---

## Essential Questions

- How do disabilities impact the workplace?
- 

## Preparation

- Set up computer with computer projector enabled for **Day 1**
  - Reserve computer lab with computer projector enabled for **Day 2**
  - Establish CIS portfolios before this lesson
  - Decide which level of simulated disabling condition students will experience
  - (Note: This activity has physical disability as its focus: if students raise intellectual or psychiatric disabilities, include them on the list in Step 5 and discuss them, but explain that these disabilities will not be included in the experiential component of this activity; if there is sufficient interest, develop a separate exercise similar to this one)
  - *Optional:* Ask a counselor, equity specialist, or special needs teacher to attend the presentations, or assist with contacting others who may be interested
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## Steps

### Day 1

1. Show PowerPoint (PPT) Slide 1. Tell students that the goal of this lesson is to help them better understand how disabilities impact workers and the workplace.
2. Show PPT Slide 2, which shows the following instructions:
  - Write the numbers 1-6 down the left margin of a sheet of paper.



- Next to number 1 ask them to print their name, school name and then, using cursive, write their regular signature.
  - For number 2 ask students to repeat the assignment, using their non-dominant hand.
  - Repeat for number 3 using their dominant hand but without the use of their thumb.
  - For number 4 use their non-dominant hand without the use of their thumb.
  - For number 5 put the pen down, close their eyes, pick up the pen and write with their eyes closed.
  - For number 6 write with their pen in their mouth.
3. Ask students to look at their writing and discuss the experience with a partner. Discuss with the whole class which tasks were most difficult and why.
  4. Show PPT Slide 3. Brainstorm with the class how people with these disabilities could be assisted with these tasks.
  5. Ask students if they have had broken fingers, arms, or legs and how that affected their everyday life. Emphasize the things they could still do, as much as those they could not do.
  6. Discuss the concept that we all have strengths and weaknesses (for example, a poor speller may be seen as "having a disability").
  7. Discuss the effects of attitude and terminology: for example, handicapped (an offensive term to many people), disabled, differently abled, alter-abled, and the effects of labels and stereotypes.
  8. Divide students into small groups of five-six.
  9. Ask students to make a list of permanent disabilities that people adjust to in all aspects of their lives.
  10. Ask groups to share their lists with the class.
  11. Record these ideas on the board.
  12. Discuss how people adjust to disabilities sustained from injuries later in life, as compared with those who possess disabilities from birth.
  13. Explain to students that they will be studying one form of disability (such as a visual or hearing impairment, paralysis, amputation, or speech impairment) and its effects on occupational choice, recording their ideas on a chart, and presenting these charts to the class. Groups may choose how to present their summary.
  14. After each presentation, ask the class to comment on the group's findings. (Note: Some groups may make stereotypic errors and assumptions. If students do not challenge these, you should.)
  15. After the final presentation, divide the class into new small groups.
  16. Ask these groups to list the everyday impacts of one of the disabilities studied above.

## Day 2

1. Ask groups to research the specific activities, working conditions, and physical demands of three occupations using CIS and identify how the requirements of these occupations would affect a person with the disability they investigated. Students may choose the three occupation titles, be given these three: Line Installer and Repairs, Lawyers, Agricultural Scientists, or you may select three related to a given subject area.
2. Ask groups to identify if/how these jobs could be modified to accommodate a person with the disability they investigated who wants to work (or return to work following an injury).
3. Show Slide 4 and introduce each of the roles one group member must take:
  - Employer: manages the information about what is required in the occupations;
  - Encourager: helps the group see all the tasks that can be done despite the disability;
  - Realist: focuses the group on tasks that can't be done;
  - Problem-solver: coordinates ideas about modifications to equipment, work environment, training;
  - Recorder: keeps summary notes of the group's findings and recommendations on a chart for each occupation. (Note: The roles of employer and recorder could be combined).
4. Ask recorders to head the charts with the disability type and occupation.
5. Groups decide who will present their findings and how this will be done.
6. *Optional:* Invite guests (people who either have disabilities or work with people with disabilities such as a counselor, vocational counselor, or special needs teacher) to hear the groups share their findings.
7. Display the charts around the room. Invite the guests to comment.

## Variations and Accommodations

- Extend the simulation activity so that students acquire a disability for a day at school. Disabilities could include using a blindfold or earplugs, mouth taping (for part of the day), one hand tied behind back, fingers splinted, arm strapped to board to prevent elbow use, arm in sling, leg in splints to prevent knee bend, feet tied together to prevent walking, or use of a wheelchair. Allow for extensive debriefing.
  - As an extension to the main activity, ask students to design a brochure for employers promoting the employment of people with disabilities, focusing on the things that can be done, rather than the potential problems. Ask the human resources staff of local businesses to review and comment on the brochures.
  - Invite students with disabilities to share some of the difficulties they have experienced and accommodations they have made to achieve goals in school and life.
  - Invite adults with disabilities who are employed in a range of occupations to visit and talk with the class. Before their visit ask students to use CIS Occupations to investigate their occupations. During the talk, students should note how the job and working environment have been adapted to suit the person.
  - Invite special needs teachers, counselors, or representatives from organizations to talk to students.
  - Ask students to identify famous people with disabilities and research their career pathways.
  - Ask students to research the organizations and facilities that support people with disabilities.
  - Ask students to investigate six more occupations and suggest what modifications to the tasks, equipment and environment would be necessary for someone with a disability.
  - Devise a community service project with a focus on assistance to those with disabilities.
  - Arrange for students to learn some sign language.
  - Work one-on-one with any student needing special assistance or pair student with a helpful group member for the activity.
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## Assessment

Use the *Worksite Modifications Scoring Guide* to evaluate student work.

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## Portfolio

Students enter their reflections about this activity in the **What occupations interest you now?** text box in the Research Options section of Career Plan.

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\*\*\*These links are not accessible in the pdf version.  
They can be found by logging into the MCIS System.

## Materials

Computer lab with projector and CIS access  
[Worksite Modifications \(PPT\)](#)  
[Worksite Modifications Scoring Guide \(PDF\)](#)  
[Worksite Modifications Scoring Guide \(DOC\)](#)  
Chart paper

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