

Using the Seeing Reason Tool to Target Thinking Skills

**Activities**

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## MODULE 7

# Using the Seeing Reason Tool to Target Thinking Skills

**Description:** Causal mapping helps develop communication, thinking, and collaboration skills. In this module, you discuss the benefits of using the *Seeing Reason Tool*, view project ideas, and brainstorm ways to integrate *Seeing Reason* into your own classroom project.

## Activity 1: Looking at Seeing Reason in Action

### Step 1: Taking a Look at Your Seeing Reason Map

In this activity, you analyze the benefits of *Seeing Reason* from a teacher's point of view. Recall how you returned to the map several times in the previous modules. View how your team's thoughts evolved through those first few modules of the course.



1. Open *Seeing Reason* from your Favorites. ([www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason))
2. Click **Teacher Workspace**.
3. Enter the **Login ID** and **Password** provided by your instructor to view your map from the **Teacher Workspace**. Click **Login**.
4. Open your team's current active map for the **Thinking** project.



**Note:** In this review mode, the maps you view are fully functional. Any changes you make will be saved.



5. View your team's map in print mode. The most recent map that your team saved is displayed. (See Teaching Tools, Seeing Reason Tool Skill 2.25.)
6. View the map and descriptions of the factors and the relationships.
7. To see how your team's thoughts have evolved through the project, view the Portfolio. (See Teaching Tools, Seeing Reason Tool Skill 2.33.)

**Note:** If you have a pop-up blocker, you need to turn it off for this feature to work. Another way to override your pop-up blocker is to hold down the **Ctrl** key as you click the link to view the maps. **Macintosh\* users:** You may be able to override a pop-up blocker by holding down the **Command** key as you click the link.

The facilitator will provide his or her teacher login ID and password that was used to set up the *Seeing Reason* project for the course.

Refer to the following skills in the Help Guide for this section:

- Seeing Reason Tool Skill 2.25: Viewing the most recent map and factor information from the Student Workspace
- Seeing Reason Tool Skill 2.33: Viewing and printing all maps in a Portfolio

### Using the Seeing Reason Tool to Target Thinking Skills



8. With your teams, review the differences in your maps, and then discuss the following questions as a whole group:
- How did your maps change?
  - How have your maps shown a progression in thinking?
  - Did this cycle of revisiting the maps increase deeper understanding?
  - How do you see this tool being beneficial in the classroom?
  - Most projects do not require your students to return to the map as many times as you did in the previous modules, but what benefits do you see in having students investigate in cycles of evidence gathering, map building, and reflecting?

#### Step 2: Examining a Unit that Uses Seeing Reason

Now that you have used the *Seeing Reason Tool*, take a look at how this tool could be used in a classroom. Explore the Unit Summary, Curriculum-Framing Questions, and procedures for the *Ecology Explorers* unit in Appendix G.04.

- Underline or highlight areas that specifically address complex systems or cause-and-effect relationships. How does the *Seeing Reason Tool* help to support those kinds of concepts?
- Notice the kind of guiding questions the teacher plans to use to help students better understand the intricacies of a balanced ecosystem. What can you do in your classroom to ensure that your students stay on track when they are more directly responsible for their own learning?
- What kinds of questions does the teacher ask to help the students reflect more deeply on their thinking and decision making process?
- How does collaboration in this unit enhance student learning?
- What methods of assessment are used in this project? How do these assessment methods help the students and the teacher?
- Review the Curriculum-Framing Questions. How does the *Seeing Reason Tool* help students find answers to the Unit Questions and begin to understand the Essential Question?

#### Notes:

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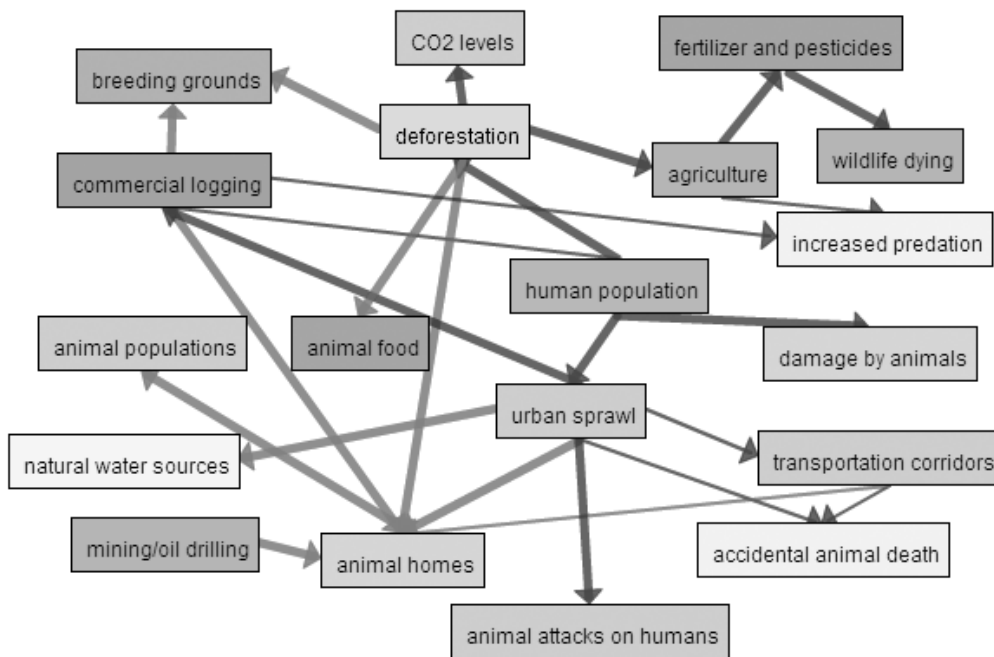
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Using the Seeing Reason Tool to Target Thinking Skills

To view live versions of the maps in this unit, view the unit on the Intel® Education Web site.

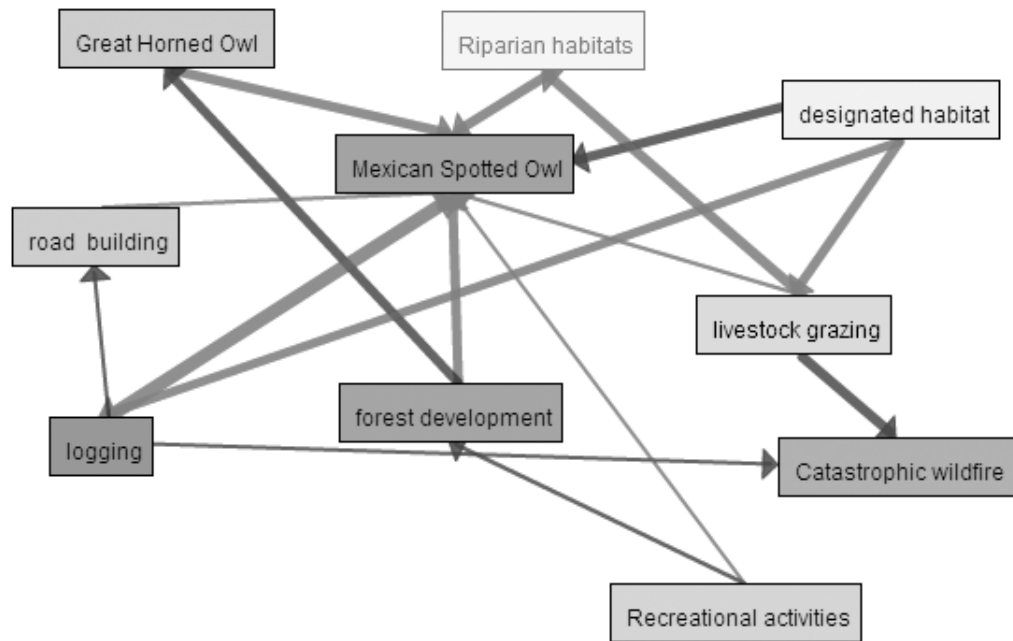


1. Open *Seeing Reason* from your Favorites. ([www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason))
2. Click **Project Examples**.
3. Click **Unit Plans**.
4. Click **Ecology Explorers**.
5. Scroll down to view the first map in the unit that answers the question, *What happens when human and animal habitats overlap?*



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- 6. The *Seeing Reason Tool* does not show loose associations, like a concept map. *Seeing Reason* shows direct cause-and-effect relationships. Double-click various factors and relationships on the first map in the Ecology Explorers unit to view their descriptions.
  - At first glance, the relationship between agriculture and increased predation may seem unclear. When you double-click the relationship arrow, how does the description clarify that causal relationship? Is it valid?
  - Double-click the relationship arrow between deforestation and CO2 levels. Does the explanation provide evidence that the student team understands the process of the Oxygen-Carbon Cycle?
  - Read the description of the relationship between urban sprawl and commercial logging. Is this a direct causal relationship?
- 7. Scroll down to view the second map in the Ecology Explorers unit that answers the question, *What influences the biological success of your specific species?*



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8. Double-click some of the factors and relationship arrows to view the descriptions, evidence, and explanations of the strength of the causal relationships. Discuss the questions you would have for the student team who created this map. Consider the following as you review the map:
- How did the student team provide support or evidence that the causal relationships are valid?
  - Are you concerned with the ability to measure or observe any of the factors?
  - Do you have questions about the evidence or descriptions they are using for any of the factors or relationships?
  - Do you have questions about any of the causal relationships that this team has created?

9. What kinds of questions would you ask if the following factors and relationships were added to this map?
- As **weather** increases, catastrophic fire decreases (Explanation given: If it rains a lot, fires won't have a chance to spread)
  - As **human population** increases, the Mexican Spotted Owls decrease. (Explanation given: The more people there are, the less room there is for the owls.)



**Note:** Additional information about causal fallacies and relationships that are not causal is available in the *Thinking Tool, Seeing Reason Tool* folder on the Curriculum Resource CD.

The proposed factors in item 9 include certain causal fallacies:

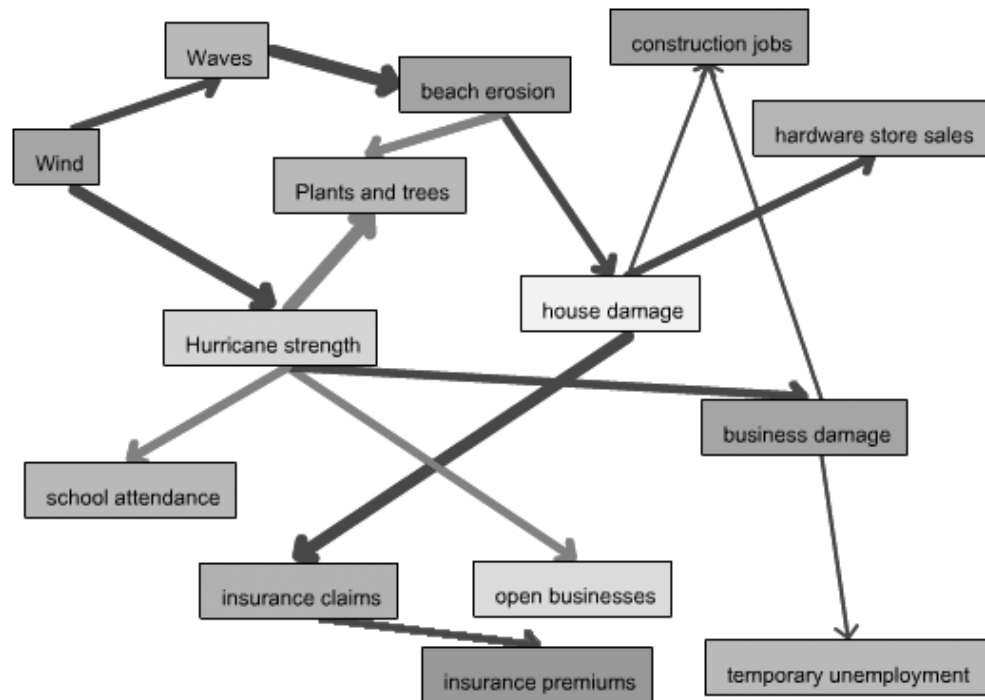
- Weather factor — Weather does not increase or decrease. Weather describes the current state of the atmosphere. A more precise word is needed for the factor.
- Human population factor — The increase in humans does not directly impact animal populations. The team should be asked what it is about increasing human population that impacts the Mexican Spotted Owl populations. There are intermediary factors that should be included.

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Activity 2: Digging Deeper into Cause and Effect

Step 1: Understanding Causal Maps

As we saw in the *Ecology Explorers* unit, the *Seeing Reason Tool* helps students create causal maps that have one specific purpose—to visually represent specific, measurable, or verifiable factors that influence or impact a problem or system. Through causal mapping, students describe how, and to what degree, factors affect one another. Mapping helps students represent their understanding as they investigate the nature of problems that require thinking about cause and effect. The following example investigates how hurricanes affect people, land, and businesses.



A causal map has the visual elements of a concept map but places explicit meaning on each element in the map. Boxes contain factors with linked arrows. Links between the factors depict causal relationships and show an increase or decrease in the intensity of the effect by the thickness and color of the connecting lines. This is very important to causal mapping because it means students can interpret the map through its visual structure.



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## Using the Seeing Reason Tool to Target Thinking Skills

### Step 2: Understanding Cause and Effect

Many concepts are better understood when their causes and effects are known and clearly identified. The cause explains why something happens. The effect describes what happens. In cause-and-effect relationships, you can say:

Because of X, Y happens

**or**

X affects Y

**or**

X results in Y

**or**

Y is caused by X

Examples of cause-and-effect relationships:

- Because of the moon's gravitational pull, tides occur.
- The amount of light given to a plant affects its growth.
- Dumping chemical waste in a river results in polluted water.
- An unattended campfire started a forest fire.

Map building is needed when investigating a complex problem or issue that involves multiple influences that impact the outcomes in a system. For instance, the simple statement above, an unattended campfire started a forest fire, may actually involve more complex issues than the statement implies. Intermediary factors may need to be investigated when determining all factors that contributed to the cause of the forest fire, such as drought, weather conditions, forest management policies, campground safety issues, fire safety education, and so forth. When students revise maps, encourage them to re-examine how direct relationships are between two factors. For example, does drought directly cause fire? Other factors may be involved between drought and fire.



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Helping to Identify Cause-and-Effect Relationships

When discussing cause and effect with your students, you may want to talk about words that signal a cause-and-effect relationship. Review the words in the following table for ideas.

Words that may signal a cause	Words that may signal an effect
as a result of	so
reasons for ... are	then
because	therefore
if	resulting in
in that	leads to
since	for this reason
for	consequently
after	as a consequence
due to (the fact)	hence
when	thus
	accordingly
	nevertheless
	is necessary for/to

Contributed by Ruth Sunda



**Note:** Synonyms for the words *cause* and *effect* are available in the *Thinking Tool, Seeing Reason Tool* folder on the Curriculum Resource CD.

Students often confuse the words *affect* and *effect*. You may need to clarify the use of these two words.

**Affect** (verb) means to influence.

Examples:

- Laura's lack of sleep affected her science test grade.
- The wheat crop was adversely affected by the drought.

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**Effect** (noun) means the result.

Examples:

- The negative health effects of cigarettes are well-known, but people still smoke.
- Poor grades are often the effect of not studying.

For additional teaching strategies and Web resources for helping students understand cause and effect, visit:



### Cause & Effect

[www.literacymatters.org/content/text/cause.htm](http://www.literacymatters.org/content/text/cause.htm)



**Note:** Information about causal fallacies and relationships that are not cause and effect can be found in the *Thinking Tool, Seeing Reason Tool* folder on the Curriculum Resource CD.

### Step 3: Helping Students Understand Causal Relationships Using the Seeing Reason Tool

Before students work on the “real” causal map for the project, have them practice on a simple causal map. This will help them to better understand cause and effect, as well as become familiar with the *Seeing Reason Tool*. An easy way to practice with a map is to go to *Seeing Reason* and use the sample map.



1. Open *Seeing Reason* from your Favorites. ([www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason))
2. Click **Try the Tool**.
3. On the page that opens, click **Demo**. (See Teaching Tools, Seeing Reason Tool Skill 2.1.1.)
4. You can use the sample map about traffic jams to help your students understand the meaning behind the visual construction of the map. Have students use the Intel® Education *Help Guide* as needed to understand how to use the *Seeing Reason Tool*.
  - Double-click factor boxes and relationship arrows to read their descriptions.
  - As a whole group, discuss factors that could be added to the map.
  - Add factors and relationships to the map and type more detailed explanations in the description fields.

This step is a brief review of *Seeing Reason* for you, but provides details on how you can introduce *Seeing Reason* to your students.

Refer to the following skills in the Help Guide for this section:

- Seeing Reason Tool Skill 2.1.1: Viewing a Seeing Reason demonstration
- Teaching Tools, Group 2: Seeing Reason Tool

Using the Seeing Reason Tool to Target Thinking Skills

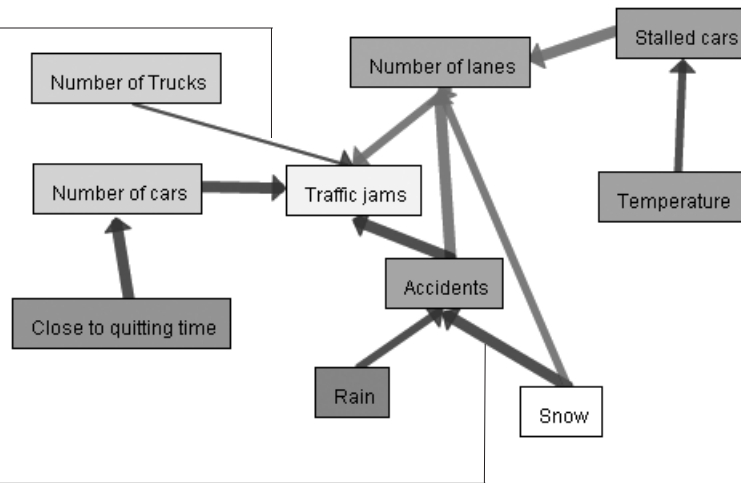
Discussing the Traffic Jam Map With Your Students

This section presents one way of demonstrating to your students how to read a causal map and use the features of the *Seeing Reason Tool*.

The sample traffic jam map on the *Seeing Reason* site (also shown below) shows one student team’s ideas of the cause-and-effect relationships involved in traffic jams. The map has both simple relationships (for example, As the number of trucks increase, traffic jams increase) and complex ones that show a chain of factors (for example, As snow increases, accidents increase; and as accidents increase, traffic jams increase).

Simple relationships  
(As the number of trucks increase, traffic jams increase a little.)

Complex relationships show a chain of factors.  
(As snow increases, accidents increase. As accidents increase, traffic jams increase.)



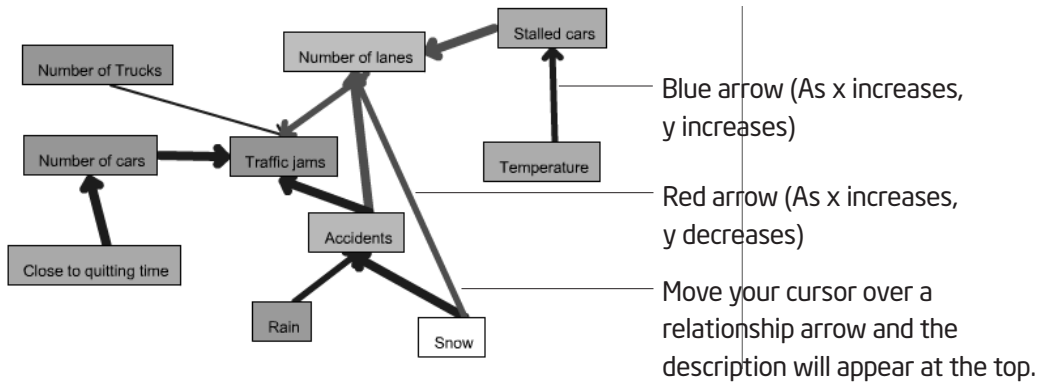
On the causal map above and on the next page, notice the arrows of varying thicknesses.

- Thicker arrows show a stronger relationship.
- Thinner arrows show a weaker relationship.
- Blue arrows indicate positive relationships (as x increases, y increases).
- Red arrows indicate negative relationships (as x increases, y decreases).

When you use your cursor to point to a relationship arrow, the description of the relationship appears at the top of the map below the toolbar. When you double-click an arrow, the full relationship description displays in a dialog box. Students will use the dialog box to present a theory of the causality of the relationship (in an early map) or provide evidence to support a claim, including sources of information, such as Web sites, specific bibliographic citations, quotations, lab results, and so forth (in later revisions).

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By double-clicking a factor box, you can view the full factor description that could include a more detailed description or definition of the factor, a description of how the factor is measured or quantified, sources or Web addresses for information on that factor, and so forth.



Scroll down below the map to view the *Comments* box. This feature allows students to communicate with other team members when they are working on the map independently, as well as to communicate with the teacher to discuss questions, problems, insights, or recent updates. Teachers can use the *Comments* feature to ask questions of the student teams to help students clarify and evaluate their thinking, question their assumptions, and broaden or narrow their focus.

**Comments:**

**Add a New Comment:**

Update Comments   Clear All Comments

Both teachers and students can use the **Add a New Comment** area to discuss topics involving the causal map.

**Note:** If you are interested in seeing how this practice map can be part of a larger classroom project, see the tutorial section of the *Seeing Reason* Web site.

## Using the Seeing Reason Tool to Target Thinking Skills

You have had enough practice with the *Seeing Reason Tool* to understand how to use it. This section is included only as an example for how to introduce the *Seeing Reason Tool* to students. You do not need to complete this part of the activity.



### Having Your Students Create a Practice Map

Direct your students to go to *Try the Tool* section of *Seeing Reason*. In partners, have your students investigate a question that does not require much prior knowledge, such as “What affects a student’s grades?” Provide the following instructions. Use the Intel® Education *Help Guide* as needed to complete any technology skills identified below.

1. Clear the map for the demo map. (See Teaching Tools, Seeing Reason Tool Skill 2.1.1.)
2. Add factors and relationships that explore the causes of student grades. As you create cause-and-effect relationships, remember that the first factor in the equation always *increases*. This approach is necessary to enable students and teachers to accurately interpret the maps visually. Below are some examples of how to change a *decreases* statement into an *increases* statement. (See Teaching Tools, Seeing Reason Tool Skills 2.15 and 2.20.)

Refer to the following skills in the Help Guide for this section:

- Seeing Reason Tool Skill 2.1.1: Viewing a Seeing Reason demonstration
- Seeing Reason Tool Skill 2.15: Adding a factor
- Seeing Reason Tool Skill 2.16: Adding or changing the color of an existing factor
- Seeing Reason Tool Skill 2.20: Adding a relationship

Inappropriate Wording for Seeing Reason	Appropriate Wording for Seeing Reason
As attendance decreases, grades decrease.	As absenteeism increases, grades decrease.
As parent involvement decreases, grades decrease.	As parent involvement increases, grades increase.



**Note:** The choice of colors for the factors is determined by the map creators. If working in a team, you may want to have a discussion with your team member(s) about whether the colors of your factors will have any special meaning. (See Teaching Tools, Seeing Reason Tool Skill 2.16.)

3. Students can use the *Help Guide* or the **Need help?** link at the top right of the map for further instruction.

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## Using the Seeing Reason Tool to Target Thinking Skills

### Step 4: Viewing the Benefits of the Seeing Reason Tool

Now that you have dug deeper into a unit that uses the *Seeing Reason Tool* and gained a better understanding of ways to help students understand cause and effect, review the benefits of using *Seeing Reason* in the classroom.

#### Benefits of the Seeing Reason Tool

##### Students:

- Learn the tool easily and begin identifying and organizing factors and relationships right away
- Focus on important content instead of the “bells and whistles” of a tool
- Show their thinking processes, which provoke discussion among students and between students and teachers
- Use the Comments feature to communicate progress
- Apply mathematical reasoning and understanding through using logic, critical thinking, and visually representing direct and inverse relationships
- Use precise language as they identify causal factors and explain the evidence that support the relationships
- Develop investigation skills
- Easily save work and can insert maps into other documents or presentations

##### Teachers:

- Can view every version of each team’s maps to see the changes and progression of their thinking, ideas, and research
- Identify important project milestones and have students save maps in a Portfolio

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**Activity 3: Viewing Project Ideas**

During this activity, you identify the components of a good project, view examples, and brainstorm some ideas for integrating the *Seeing Reason Tool* into your unit.

**Step 1: Reviewing the Power of the Seeing Reason Tool**

In Module 4, you used Bloom’s Taxonomy to consider the types of thinking that the *Visual Ranking Tool* supports. Another model, Costa and Kallick’s Habits of Mind, shows the range of thinking that could be supported by the *Seeing Reason Tool*.

Uses of Seeing Reason Classified by Costa and Kallick’s Habits of Mind	
Thinking and Communicating with Clarity and Precision	<ul style="list-style-type: none"> <li>Communicating ideas clearly in writing, verbally, and visually, (for example, writing detailed explanations of factors and relationships, discussing the causal relationships with a partner or teacher, and arranging and color-coding factors and their causal relationships so that they can be understood visually)</li> <li>Using precise language to accurately communicate complex concepts (for example, creating factors and relationships that fit in the linguistic form of the tool)</li> </ul>
Creating, Imagining, and Innovating	<ul style="list-style-type: none"> <li>Creating representations of and understanding patterns in complex systems (for example, creating and arranging factors in new ways to model a novel approach to visualizing a complex issue)</li> <li>Conceiving new solutions to problems by examining alternate possibilities (for example, using the information gained from the <i>Seeing Reason Tool</i> to create solutions to a problem)</li> </ul>



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Uses of Seeing Reason Classified by Costa and Kallick's Habits of Mind	
Thinking Flexibly	<ul style="list-style-type: none"> <li>▪ Examining possibilities from many angles (for example, using the <i>Seeing Reason Tool</i> to explore all the possible factors involved in the cause of a particular effect)</li> <li>▪ Changing one's thinking and opinion about a topic or issue when confronted with new and/or conflicting information (for example, using the <i>Seeing Reason Tool</i> to help develop understanding over time; allowing for and supporting map changes as new information is received)</li> </ul>
Striving for Accuracy	<ul style="list-style-type: none"> <li>▪ Supporting ideas with specific, relevant, measurable, and accurate evidence (for example, providing specific data to clarify the meaning of factors or relationships)</li> </ul>
Thinking Interdependently	<ul style="list-style-type: none"> <li>▪ Thinking with others to contribute to a better understanding of an issue (for example, all members of a team work together to find and make sense of evidence, determine factors, and explain relationships)</li> </ul>
Remaining Open to Continuous Learning	<ul style="list-style-type: none"> <li>▪ Building on initial ideas to obtain greater understanding of complex systems (for example, returning to add factors and relationships to a Seeing Reason map after research and fact-gathering)</li> </ul>
Thinking About Our Thinking	<ul style="list-style-type: none"> <li>▪ Planning for, reflecting on, and evaluating the quality of one's own thinking skills and strategies; reflecting on the map for the purpose of self-evaluation (for example, supporting reflection through the Comments feature and self-reflective activities tied to the various iterations of the map)</li> </ul>

### Using the Seeing Reason Tool to Target Thinking Skills

The *Seeing Reason Tool* provides students with the ability to hypothesize, research, and draw preliminary conclusions about how some part of the world operates. Using the *Seeing Reason Tool*, students:

- **List Factors**—In teams of two or more, students discuss and create factors that are related to their problems. They create these factors on a Seeing Reason map and add descriptions of the factors. The teacher talks with the students, using probing questions, to help them develop their hypothesis. .
- **Show Relationships**—As students talk through the relationships among the factors, they show those relationships on their maps by connecting factors with arrows. Both simple relationships (for example, As the number of cars increase, traffic jams increase) and complex relationships (for example, As snow increases, accidents increase, and as accidents increase, lanes decrease) are shown. When students add relationships, they describe how the relationship works and what evidence would prove whether the relationship is valid.
- **Investigate and Revise**—After students have a map that shows their initial reasoning about a problem, they test and research their ideas. Armed with new data, the teams modify their maps to reflect changes of opinion based on new knowledge.
- **Present Findings**—When students have finalized their maps and researched and obtained evidence for their findings, they decide how to best present the information.

Students can express understanding of cause and effect without technology, but the *Seeing Reason Tool* is powerful because it enhances reasoning and communication. When students discuss, represent, and defend the ideas on the maps, their understanding deepens. When teachers examine changing maps, they find opportunities to interact with students and guide their learning.

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## Using the Seeing Reason Tool to Target Thinking Skills

### Step 2: Understanding What Makes a Good Project

A good project that incorporates the *Seeing Reason Tool* grows out of a real-world problem with complex relationships. *Seeing Reason* helps students sort through complex relationships. For student investigations, a problem is best framed in the form of an open-ended question or problem statement that requires higher-order thinking skills. The tool supports cycles of investigation where students gather what they know, organize that knowledge into a map, investigate whether their initial concepts are supported by evidence, revise their maps, and then use their new understanding to make decisions and plans of action to answer questions of the larger project.

When designing a project that incorporates the *Seeing Reason Tool*, consider the following project characteristics:

- **The project is complex, preferably connecting to real-world problem-solving.** The *Seeing Reason Tool* is a useful tool when investigating multiple influences (factors) that impact other outcomes in a system. The context should have sufficient complexity; that is, it should have a high level of interaction among the factors. From the students' initial investigations, which are supported by the *Seeing Reason Tool*, students develop further plans of action, decisions, or conclusions to answer the larger questions of the project.
- **The project has a meaningful research question that requires investigation of an issue or concept involving cause and effect.** The research question is the direct question that students answer in their causal maps. This question must be open-ended so that students are challenged to explore many possibilities. The question should be designed to capture student interest, encourage in-depth discussion and research, and set the stage for further questioning. The research question and the resulting investigation provide a foundation for students to answer the larger questions or issues of the project.

For example, the question, *What causes ice?* would probably produce a map with relatively few factors and fairly direct relationships. However, the additional factors and relationship complexity found in answering, *What is causing the north and south poles to melt?* would justify the need for map building. This question, in turn, would help students understand the larger problem of how to prevent unnatural climactic changes, allowing students to continue their research and develop recommendations based on their initial assessments of the effects on climate.

- **The problem is influenced by factors that can be measured, observed, or verified.** When students must limit factors to ideas they must prove in some way, they are required to think carefully and critically about cause and effect.

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- **The project is interdisciplinary.** A good project can be studied from many disciplines. For example, while a social studies teacher might design a project that looks at the causes and effects of the Irish potato famine from a historical perspective, an interdisciplinary approach might include a variety of student project choices about the Irish potato famine, such as researching the resulting literature and music of the period, the repercussions in the worldwide economy, or the effects of the redistribution of population.

### Step 3: Viewing Sample Projects

In this step, view and discuss sample projects that use the *Seeing Reason Tool*.



1. Open Seeing Reason from your Favorites.  
([www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason))
2. Click **Project Examples**.
3. Review example projects for ideas on how the *Seeing Reason Tool* can be integrated into a project.

**Note:** See additional project ideas starting on Appendix C.03. The sample project plan, *Ecology Explorers*, is available starting on Appendix F.01. Articles about two units that integrate *Seeing Reason* are available in the *Seeing Reason Tool Resources* folder on the Curriculum Resource CD.



4. Discuss how a project that uses the *Seeing Reason Tool* can help develop students' thinking. Share your ideas with the group.

#### Notes:

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## Using the Seeing Reason Tool to Target Thinking Skills

### Activity 4: Clarifying Project Ideas for Using Seeing Reason

#### Step 1: Reviewing the Needs of Your Unit

Before determining a possible use for the *Seeing Reason Tool* in your unit, review your targeted higher-order thinking skills, standards, and learning objectives. Compare them with the thinking skills that would be supported by *Seeing Reason*.

1. Open your Unit Plan.
2. Review your Habits of Learning Taxonomy.
3. Review the standards identified in your Unit Plan and note those standards that could benefit from *Seeing Reason*. If the standards are not already highlighted in a color specific for *Seeing Reason*, you may want to highlight them now or identify them beside the key words listed below.

- affect \_\_\_\_\_
- cause \_\_\_\_\_
- effect \_\_\_\_\_
- impact \_\_\_\_\_
- influence \_\_\_\_\_
- inspire \_\_\_\_\_
- produce \_\_\_\_\_
- result \_\_\_\_\_
- system \_\_\_\_\_
- other: \_\_\_\_\_
- other: \_\_\_\_\_



**Note:** In your search of the standards, do not be limited by these key words. You may need to look for the hidden opportunities for higher-order thinking, especially if your state's standards focus mainly on very specific knowledge-based tasks or understanding.

## Using the Seeing Reason Tool to Target Thinking Skills

- Review your learning objectives and identify which objectives could be supported by *Seeing Reason*. You may want to highlight them in your Unit Plan or identify them below.

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- Consider how the learning objectives for the sample project descriptions on the following pages (and in Appendix C) would be supported through using *Seeing Reason*. Keep your standards and objectives in mind as you think about your own project.



**Note:** If you do not believe *Seeing Reason* is a good fit for your unit, you will have the opportunity to try out an idea for another unit.

Do not try to force using *Seeing Reason* when it is not a good use of time or academically warranted.

### Step 2: Viewing Sample Project Descriptions and Research Questions

When you create a *Seeing Reason* project online, you need to enter a Project Description and Research Question to guide your students' work. Use this time to help clarify your project ideas.

#### Project Description

Just like for the *Visual Ranking Tool*, the project description for *Seeing Reason* is a focused, short paragraph that describes the project to your students and explains how they will use the *Seeing Reason Tool* to help them answer the project's questions. The project description should be able to convey, in a few sentences, why the project or problem is worthy of study, as well as define what your students will try to solve, produce, respond to, test, find out, or recommend.

#### Research Question

The research question is the direct question that students will respond to in their causal map. This question and the resulting investigation provide a foundation on which students will build understanding around the complexities of the project or problem.

### Using the Seeing Reason Tool to Target Thinking Skills

The following are a few examples of learning objectives, project descriptions, and research questions:

- **Language Arts**

- **Learning Objectives:**

- Examine and weigh the causes of violence and death in *Romeo and Juliet*
- Analyze character actions, motives, and alternative courses of action
- Use the themes in the play to better understand current-day relationships

- **Project Description:** Two people madly in love with only a desire that love would conquer all—what could possibly go wrong? Neither Romeo, Juliet, nor their families could foresee the grave future ahead of them. By the end of the play, six people are dead and others injured. Is it fate, simply unlucky circumstances, or something else that causes these deaths? Use the *Seeing Reason Tool* to help you determine the causes of the violence and death in *Romeo and Juliet*. You will use that information to write an editorial in the *Verona Times*.

- **Research Question:** What causes the violence and death in Shakespeare's *Romeo and Juliet*?

- **Health**

- **Learning Objectives:**

- Draw conclusions about the relationship between vaccines and possible adverse effects
- Advise policymakers on how to best deal with immunization concerns

- **Project Description:** Some parents are concerned that childhood vaccines could produce adverse effects and cause health problems for their children, such as autism, damage to the immune system, brain damage, and so forth. You are part of a committee that will make recommendations regarding these immunization concerns. The audience for your report could be federal vaccine research policymakers, state and local vaccine program implementers, healthcare professionals, the public, or the media. Use the *Seeing Reason Tool* to research the relationship between vaccines and any adverse effects. You will use that information to make recommendations to your targeted audience.

- **Research Question:** How could vaccines affect me?



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## Using the Seeing Reason Tool to Target Thinking Skills

- **Interdisciplinary**
  - **Learning Objectives:**
    - Determine what factors influence the price of flowers
    - Select and reject products based on analysis of data
    - Project profit
  - **Project Description:** Mother’s Day is coming! Everyone has a hard time finding the perfect gift for his/her special mom. Our class needs to earn money for an upcoming field trip. Put the two together and what do you get? An opportunity! You will be involved in researching, planning, marketing, and selling flowers for Mother’s Day. You, as a member of the class, are now a business partner and you have many important decisions to make so that your business is successful. To make good decisions on which flowers to sell, you will need to understand what influences flower prices. Use the *Seeing Reason Tool* to help you understand the floral business so you can make the best choices.
  - **Research Question:** What influences flower prices?
- **Math**
  - **Learning Objectives:**
    - Determine what factors influence the rise and fall of stock prices
    - Predict market trends based on available data
    - Advise others on how to best invest their money based on market analysis and projections
  - **Project Description:** Most young people understandably want the best things in life—nice homes, new cars, expensive clothes, and vacations in fun places. Your job in an investment firm is to advise others on how to invest their money. A client has \$100 a month to invest in such things as savings, bonds, and the stock market. Research the best options for investment, based on your understanding of how the stock market changes and the goals of your client.
  - **Research Question:** What makes the stock market change?

### Using the Seeing Reason Tool to Target Thinking Skills

- **Science**
  - **Learning Objectives:**
    - Research the causes and effects of wildfires
    - Examine and debate opposing viewpoints
    - Promote new policy to help control and deal with fires in forest areas
  - **Project Description:** An average of 5 million acres burn every year in the United States due to wildfires, causing millions of dollars in damage. Many people believe all fire is bad for a forest, including prescribed or controlled burning. Some believe healthy forests need to be managed in order to control fire risk; others think that any natural fire should be allowed to run its course. What should we do about wildland fires? You are on a task force to develop a new policy on how to deal with fires and potential fires in forest areas. First, research the causes and effects of wildfires, and then research and recommend a policy that will preserve and protect our natural resources in such a way that the needs of all involved are met.
  - **Research Question:** What are the causes and effects of wildfires?
- **Social Studies/History**
  - **Learning Objectives:**
    - Identify and assess concerns related to immigration
    - Determine why people immigrate to the United States
    - Evaluate the impact of immigrants on their new community
    - Examine the benefits and costs of immigration
  - **Project Description:** Continued immigration constantly reshapes the demographics, economy, and society of the world. In the United States during the 1990s, an average of more than 1.3 million immigrants—legal and illegal—settled in the United States each year, and this trend continues. To begin to understand the issues of immigration, we need to know why people came to the United States in the past and why people still want to come live in the United States today. Additionally, what are the benefits and the problems of immigration—for both the immigrants and existing populations? Your job as the head of the Center for Immigration Studies is to address these concerns and prepare a report that will be passed on to a Senate Subcommittee that is investigating this issue.
  - **Research Question:** Why do people move from one country to another and how does it change their new communities?

**Note:** For more examples, see ideas starting on Appendix D.03.

## Using the Seeing Reason Tool to Target Thinking Skills

### Activity 5: Sharing Your Ideas

Using a wiki or working in small groups, share your ideas for a project that incorporates *Seeing Reason*.

Share your ideas as you reflect on your plan for *Seeing Reason*:

- What idea do you have for using *Seeing Reason*?
- How will *Seeing Reason* fit into your Unit Plan and help your students meet the learning objectives and apply higher-order thinking skills?
- If you have already decided that *Seeing Reason* will not be a good fit for your unit, what ideas do you have for using *Seeing Reason* with your students in other units?
- Does your unit involve a complex system or issue that warrants delving into identifying and analyzing cause-and-effect relationships?
- What concerns do you have about using this tool in your unit?
- What feedback would you like from others?

In small groups, discuss each other's ideas. If using a wiki, share your wiki pages and provide feedback on others' ideas. Specifically, provide feedback on how to best use the tool to encourage higher-order thinking skills. Consider whether the project ideas you review truly involve a complex system or issue that includes cause-and-effect relationships.



1. Open the wiki site URL for this course from your Favorites.
2. Edit your page and create a new entry to summarize your ideas for using *Seeing Reason*. Besides reflecting on the questions above, include:
  - An overview of how the *Seeing Reason Tool* would be integrated into your unit
  - Concerns, questions, and desired feedback



3. Save your wiki page.



4. Share your wiki page in a small group and, if needed, note any feedback directly on your page. Discuss project ideas, concerns, and questions with your colleagues. Provide suggestions to help them better target higher-order thinking and, possible cause-and-effect issues in the unit.

For this sharing activity, review wiki pages of those participants who teach in a similar grade or subject area, if possible.

### Using the Seeing Reason Tool to Target Thinking Skills

#### Activity 6: Planning Your Project

##### Step 1: Creating a Seeing Reason Project from an Existing Project

If you saw a project online that you would like to use as a starting point, you can use the project wizard to copy the project into your Teacher Workspace. If you want to create a new project based on your own ideas, skip this step and go directly to Step 2 on page 7.27.

##### Copying an Existing Project to Your Workspace



1. Open *Seeing Reason* from your Favorites. ([www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason))
2. Click **Project Examples**.
3. Open the appropriate project in either *Unit Plans* or *Project Ideas*.
4. Copy the project into your Teacher Workspace. (See Teaching Tools, Seeing Reason Tool Skill 2.6.)

Refer to the following skills in the Help Guide for this section:

- Seeing Reason Tool Skill 2.6: Creating a Seeing Reason project from an existing project
- Seeing Reason Tool Skill 2.8: Editing a project



##### Review Your Unit Ideas and Edit the Project Information Online

1. Open your Unit Plan.
  2. Review your Curriculum-Framing Questions. Consider how your students' work with *Seeing Reason* could help support your unit's questions.
  3. Review your project priorities on pages 2.20–2.22.
  4. Preview the Project Reflection Checklist on page 8.07.
- Note:** You may also want to review the Project Rubric on page 2.18–2.19.
5. Edit the title, description, and question of your project as necessary. (See Teaching Tools, Seeing Reason Tool Skill 2.8.)
  6. After editing the project information online, copy the details into your Unit Plan.



**Note:** If you do not think the *Seeing Reason Tool* is a good fit for your unit, open and save the *Seeing Reason Project Idea* document from the *Thinking Tools, Seeing Reason Tool* folder on the Curriculum Resource CD and try a project idea for another unit.



7. Save your Unit Plan.
8. Return to your Teacher Workspace. If you have made any changes to your project online, click **Submit**.

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## Using the Seeing Reason Tool to Target Thinking Skills

- Review Steps 2–4 to familiarize yourself with the project-creation options, and then go to Step 5 on page 7.30 to set up teams.

### Step 2: Creating Your Own Project Description and Research Question

Review the following suggestions for creating a Project Description from scratch.

- Set up an authentic problem, significant question, or real-life scenario.
- Explain why the project or problem is worthy of study.
- Define what your students will try to solve, produce, respond to, test, recommend, or discover.
- Describe what students will be required to decide, prioritize, seek consensus on, or negotiate.
- Use age-appropriate language that makes the topic engaging and interesting.

Consider the following questions as you develop a Project Description that reflects your project:

- Does the project engage the students' interest? Will it motivate them to pursue and explore the concepts deeply?
- Is the project cast in a context familiar to the students? Is it based on a real-world situation, scenario, or controversy?
- Is the project staged well? Is the project developed so student interest builds?
- Is the information provided adequate to solve the questions of the project? Is too much or too little information provided?
- Does the complexity and length of the project warrant and support working collaboratively?
- Is the problem or scenario of the project open-ended, which will provide different entry points and paths for your students?
- Does the project challenge students to use higher-order thinking skills?

Modified from:

"Guidelines for Reviewers"

Problem-Based Learning Clearinghouse

University of Delaware

Using the Seeing Reason Tool to Target Thinking Skills

**Draft Your Unit Ideas**

1. Open your Unit Plan.
2. Review your Curriculum-Framing Questions. Consider how your students' work with *Seeing Reason* could help to support your unit's questions.
3. Review your project priorities on pages 2.20-2.22.
4. Preview the Project Reflection Checklist on page 8.07 and review the Project Rubric on page 2.18-2.19.
5. Use the table below to draft the Project Description and Research Question for your map or type them directly into your Unit Plan.

Please do not force *Seeing Reason* when it is not a good use of time or academically warranted.



**Note:** If you do not think the *Seeing Reason Tool* is a good fit for your unit, open and save the *Seeing Reason Project Idea* document in the *Thinking Tools, Seeing Reason Tool* folder on the Curriculum Resource CD and try a project idea for another unit.

Example	<b>Project Description</b>	Problems arise as wildlife and human habitats overlap. You will take on the role of a wildlife conservationist and become an expert on an endangered animal or plant in your region. You will study the organism's needs to understand interdependencies in the ecosystem in which it lives. Using the <i>Seeing Reason Tool</i> , map the intricacies of a balanced ecosystem, and the human factors that influence that balance. From your map-building and research, you will determine what elements affect an organism's survival and propose practical and economically feasible solutions to ensure the organism's survival.
	<b>Research Question</b>	What influences the biological success of your species?
Possible Ideas	<b>Project Description</b>	
	<b>Research Question</b>	

## Using the Seeing Reason Tool to Target Thinking Skills

### Step 3: Planning Your Use of Seeing Reason

1. Open your Unit Plan.
2. In the *Seeing Reason* section of the Unit Plan, complete the Project Title, Project Description, and Research Question sections.



3. Save your file.

### Step 4: Creating a New Seeing Reason Project

Use the directions in this step to help you create a new *Seeing Reason* project. Use the Intel® Education *Help Guide* as needed to complete any technology skills identified below.



1. Open *Seeing Reason* from your Favorites and log in to your Teacher Workspace. ([www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason))

**Note:** Your login information may be listed on Overview vi or in the Login Information document in your Project Folder.



2. When setting up a new *Seeing Reason* project, consider the following. (See Teaching Tools, Seeing Reason Tool Skill 2.7.)
  - **The Project Name** could specifically reference the purpose or use of the *Seeing Reason Tool* in your overall project. This title will appear in the *Student Workspace* and above your students' *Seeing Reason* maps. You can change the name of the project later if you wish. (You may want to copy and paste the title from your Unit Plan.) (See Teaching Tools, Seeing Reason Tool Skill 2.6.2.)
  - **The Project Description** will appear in the *Student Workspace*, so you should use vocabulary that is age-appropriate. (See page 7.28 or copy and paste the description from your Unit Plan.) (See Teaching Tools, Seeing Reason Tool Skill 2.6.3.)
  - **The Research Question** will also be displayed on the top of the students' maps. (See page 7.28 or copy and paste the statement from your Unit Plan.) (See Teaching Tools, Seeing Reason Tool Skill 2.6.4.)

3. Continue with either Step 5 or Step 6 on page 7.30 to set up teams.

Refer to the following skills in the Help Guide for this section:

- Seeing Reason Tool Skill 2.7: Creating a new Seeing Reason project
- Seeing Reason Tool Skill 2.6.2: Adding a project name
- Seeing Reason Tool Skill 2.6.3: Adding a project description
- Seeing Reason Tool Skill 2.6.4: Adding a research question

### Using the Seeing Reason Tool to Target Thinking Skills

#### Step 5: Creating Teams IDs with the Project Wizard

The project wizard enables you to create all your team IDs and passwords at one time and assign the teams to a project. To create specialized team names, skip to Step 6.

Refer to the following skills in the Help Guide for this section:

- Seeing Reason Tool Skill 2.9: Creating a new set of student teams
- Seeing Reason Tool Skill 2.11: Creating unique team names
- Seeing Reason Tool Skill 2.12: Viewing or editing team information2.6.4: Adding a research question

**?** Create at least one team for this practice project. Go to Overview page vii to write down your team ID and password or type the information in the Login Information document. (See Teaching Tools, Seeing Reason Tool Skill 2.9.)

**Note:** If you already have wizard-created teams and you use the project wizard again to set up teams for this project (with the same base word), the wizard will recognize that you already have those teams and assign them to this project. The student teams will be able to view and access both projects from their Student Workspace.

#### Step 6: Creating Specialized Student Teams

**?** Create specialized team IDs to designate different team projects, areas of focus, or different perspectives (such as *conservationist*, *lawmaker*, *consumer*, and so forth). Go to Overview page vii to write down your team ID and password or type the information in the Login Information document. (See Teaching Tools, Seeing Reason Tool Skill 2.11.)

**Note:** You may want to keep the team ID and password the same so students can remember them easily. If they forget their passwords, you can see their passwords in the *Teacher Workspace*, under *Manage Teams*. (See Teaching Tools, Seeing Reason Tool Skill 2.12.)



Using the Seeing Reason Tool to Target Thinking Skills

**Extension Activity:  
Understanding Best Practices with Seeing Reason**

The following resources are available to you for self-study or as an optional extension in your course. Complete Step 1 and/or Step 2 to view strategies and project ideas for using *Seeing Reason* in the classroom.

**Step 1: Viewing Instructional Strategies**

View best practices for planning, implementing, and assessing a project that integrates the *Seeing Reason Tool*.



1. Go to: [www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason)
2. Click **Instructional Strategies**.
3. Click the categories of interest: **Planning a Project, Implementing a Project, or Assessing Work**.



4. View resources and articles on using *Seeing Reason* and understanding cause and effect in the *Thinking Tool, Seeing Reason Tool* folder on the Curriculum Resource CD.

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**Step 2: Viewing Seeing Reason Project Ideas**

Although you had an opportunity to view a few project ideas earlier in this module, if you want additional ideas to help focus or expand your project, explore units that integrate the *Seeing Reason Tool*.



1. Go to: [www.intel.com/education/seeingreason](http://www.intel.com/education/seeingreason)
2. Click **Project Examples**.
3. View projects that integrate the *Seeing Reason Tool* in either **Project Ideas** or **Unit Plans**.

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### Using the Seeing Reason Tool to Target Thinking Skills

#### References

Costa, A., & Kallick, B. (2000–2001). *Describing 16 habits of mind*. Retrieved from [www.habits-of-mind.net/pdf/16HOM2.pdf](http://www.habits-of-mind.net/pdf/16HOM2.pdf)

*Guidelines for reviewers*. (n.d.). Newark, DE: University of Delaware, Problem-Based Learning Clearinghouse. Retrieved from [www.udel.edu/pblc/reviewers](http://www.udel.edu/pblc/reviewers)

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## Using the Seeing Reason Tool to Target Thinking Skills

### Module 7 Summary

Review the central ideas in this module and the plans or materials you created to help improve student learning.

Use this summary to review this module's main points and check for understanding.

#### Module 7 Key Points:

- The *Seeing Reason Tool* is useful to investigate multiple influences (factors) that impact other outcomes in a system.
- The factors and relationships in a *Seeing Reason* map should be measurable, observable, or verifiable.

#### Accomplishments:

- Looked deeply into a unit that includes the *Seeing Reason Tool* to get ideas on project design, implementation, teacher-student dialog, and assessment
- Set up a project online that integrates the *Seeing Reason Tool*

In Module 8, you try out your ideas for *Seeing Reason*.

