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Institutes

Supporting Cause-and-Effect Thinking

Seeing Reason, an Online Mapping Tool

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Seeing Reason, an Online Mapping Tool

Goals
- Learn how causal mapping supports collaborative thinking processes
- Learn to use the Seeing Reason causal mapping tool
- Understand how to set up and manage projects using the teacher workspace

Agenda
1. Overview and Goals

2. Consider Mapping
   Discuss the benefits of concept mapping, view different types of concept maps

3. Learn About Causal Mapping
   Think about a complex problem of cause-and-effect, see how causal mapping helps organize ideas, contribute to a group map

4. Try it Yourself
   Make a team map, discover challenges and opportunities

5. Discuss Team Work
   Make maps, review maps, and consider challenges and opportunities

6. Examine Teacher Resources
   Walk through an example, learn classroom strategies, consider benefits

7. View Classroom Projects
   Study project examples, consider the possibilities for your class

8. Start a Project
   Build a project in the teacher workspace, test your concept by mapping, start a project plan, share your ideas

9. Wrap Up
   Get your questions answered, tell us what you think

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What Makes a Good Project?

The problem is influenced by factors that can be measured, observed, or verified. When students must limit factors to things that they can "prove" in some way, they are required to think carefully and critically about cause and effect. They must be able to observe, measure, or somehow verify a factor through research or review of research. For example, the problem "Why does the moon look bigger when it rises?" has factors that can be measured, while the problem "Why is a full moon so romantic?" does not.

The project is interdisciplinary. A good project is one that addresses an authentic, real-world problem that is broad and that can be studied from the vantage point of many disciplines. While a social studies teacher might design a project that looked at the causes and effects of the Irish Potato Famine from historical, cultural, and economic perspective, an interdisciplinary team might address the broader problem of the causes and effects of famine.

The project is complex and connects to real-world problems. The Seeing Reason mapping tool is an appropriate tool in the investigation of any problem that involves multiple influences (factors) that impact an outcome. The context should have sufficient complexity; that is, it should have a high level of interaction among the factors.

A context that has relatively few factors and interrelationships that are fairly linear is not as interesting, or as much in need of a causal relationship organizer.

Project Examples at www.intel.com/education/seeingreason

On the Road to Safety
Grade: 6   Subjects: Social Studies, English
In *On the Road to Safety,* students in Petach Tikva, Israel address the problem of traffic accidents in their country. Using the Seeing Reason mapping tool, they investigate factors that contribute to the problem and develop a well-reasoned plan for making the roads safer for all.

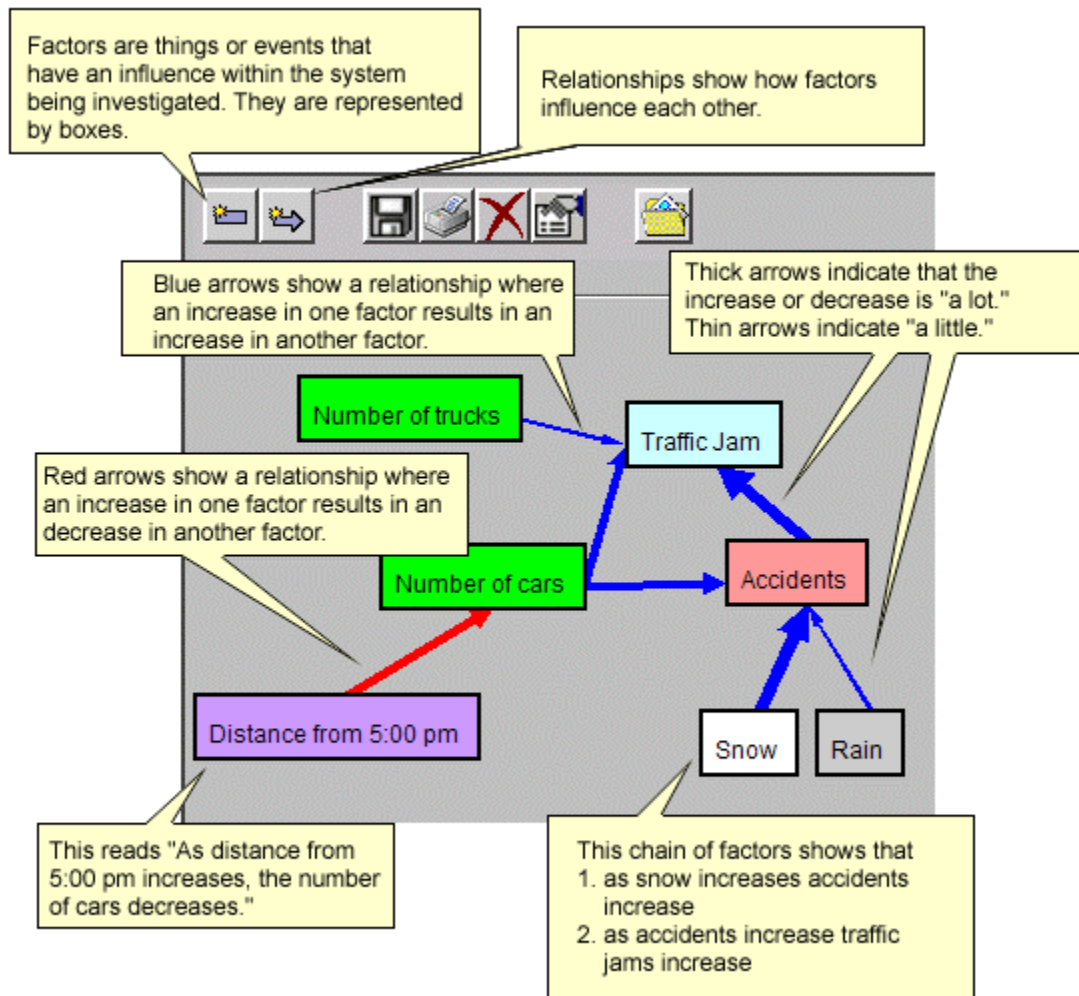

Forensics: Get a Clue
Grade: 5–7   Subjects: Math, Science
 A "crime" has been committed, but who is the criminal? Using the Seeing Reason tool, Idaho middle school students map out the relationships between the evidence and suspects as they attempt to solve this whodunit.

Brief Examples

"Nuisance" Bears Grade: 5–8 Subjects: Science, Ecology What happens when human and bear habitats overlap?	**Papyrus to PDA** Grade: 9–12 Subject: Graphic Arts What invention in the history of visual communication has had the greatest impact?
Neighborhood Diversity Grade: 8–12 Subject: American History Why is our neighborhood becoming more (or less) diverse?	**Shakespeare's Richard III** Grade: 12 Subject: English How does Richard contribute to his own dissatisfaction and eventual demise?
Benefits of Math Education Grade: 9–12 Subjects: Math, School to Work What are the benefits and costs of taking more advanced math courses?	*Contact Us* We are always looking for examples of how teachers are using Seeing Reason in their classrooms. seeing.reason@intel.com

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Features of Seeing Reason Maps

Factors are things or events that have an influence within the system being investigated. They are represented by boxes.

Relationships show how factors influence each other.

Blue arrows show a relationship where an increase in one factor results in an increase in another factor.

Thick arrows indicate that the increase or decrease is "a lot." Thin arrows indicate "a little."

Red arrows show a relationship where an increase in one factor results in an decrease in another factor.

Number of trucks

Traffic Jam

Number of cars

Accidents

Distance from 5:00 pm

Snow   Rain

This reads "As distance from 5:00 pm increases, the number of cars decreases."

This chain of factors shows that
1. as snow increases accidents increase
2. as accidents increase traffic jams increase

Think About Your Project

Task: Meet in teams and discuss project ideas. Consider project topics, investigative questions, and learning outcomes.

Examples

Subject/Concepts	Investigation	Learning Outcome
Social Studies • human migration • physical geography	Why did people settle here?	Draw a map of our area, showing climate and landforms. On clear overlays, map the paths of different groups, and show how they interacted with the physical features.
Math/Economics • Supply and demand • Production costs • Marketing	What factors influence the price of a pair of basketball shoes?	Essay: Write a report describing how to get the best basketball shoes for the lowest price.
Science/Ecology • Checks and balances in nature • Human intervention	What are the causes and effects of coral death in a reef ecosystem?	Presentation: Provide expert testimony about coral and reef ecosystem health. Propose and justify your choice for the most effective and economic solution.
Literature • Plot and character development • Literary interpretations of history	How did Richard III contribute to his own unhappiness and eventual demise?	Write an additional scene for the play, wherein Richard's character plainly influences the action in the scene.
Use this space to make notes about your project ideas.		

Project Plan Template

Project Author	
First and Last Name	
School Name, District	
City, State	
E-mail Address (optional)	
Project User Name and Password (optional)	

Project Overview
Subject Area(s)
The subject you teach or the subject of focus for this project.
Grade Level
The targeted grade level(s) for this project.
Project Summary
An overview of the project, including the topics covered and main concepts to be learned. Include a brief explanation of the cause and effect investigation students will pursue.
Learning Objectives/Outcomes
Learning objectives for this project, based on identified curriculum standards.
Cause-and-Effect Investigative Question
The question that guides student research into a problem or system that is significant in this course of study.
Final Project/Presentation of Findings
Investigation into a cause-and-effect problem may be one element of a larger project. Causal mapping is a means to an end, but not an end in itself. The project embodies student understanding of the concepts addressed in this course of study. Comprehensive learning outcomes might include: performance tasks, presentations, written or oral reports, a supported argument or debate, or a call for community action.

Other Resources

Intel® Innovation in Education
www.intel.com/education

Seeing Reason on the Intel® Innovation in Education Web site
www.intel.com/education/seeingreason

To download the Participant Handouts (including the Project Plan Template), go to www.com/intel.com/education/institutes/seeing_reason.