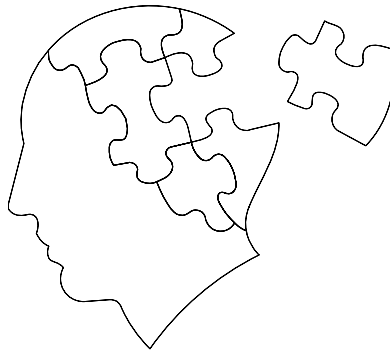


Essential Question 5



Concept Connections

Part 1

Detectives in the Classroom - Investigation 5-5: Concept Connections

Investigation 5-5: Concept Connections is divided into two parts and will take two class periods to complete.

In Part 1, students will identify the important concepts that need to be understood in order to answer the fifth Essential Question: “Did the disease prevention strategy work?” Each Epi Team then creates a **Concept Map** that depicts and explains how the concepts connect to each other.

In Part 2, the Epi Teams will present their **Concept Maps** to the class.

At the conclusion of this investigation, students should have developed the fifth Enduring Understanding of *Detectives in the Classroom*: “The effectiveness of the strategy can be evaluated by determining and comparing rates of disease in populations of people who were and were not exposed to the strategy. Costs, offsetting effects, and alternative strategies must also be considered.”

Next Slide

Essential Question 5

Evaluating an Actual Strategy

Evaluation Issues

Did the prevention strategy work?

How to
Evaluate

Why
Evaluate?

Detectives in the Classroom - Investigation 5-5: Concept Connections

During the previous four investigations, students learned how a disease detective tries to answer the fifth Essential Question: “Did the prevention strategy work?”

Briefly review each of the previous investigations in Module 5.

In **Investigation 5-1: Why Evaluate?**, students uncovered reasons why a risk management strategy should be evaluated.

In **Investigation 5-2: How to Evaluate**, students discovered that the same epidemiologic study designs they learned for studying causality can also be used to evaluate the effectiveness of a risk management strategy.

In **Investigation 5-3: Evaluation Issues**, students explored two evaluation issues that must be considered when determining if a risk management strategy worked—efficiency and offsetting effects.

And in **Investigation 5-4: Evaluating an Actual Strategy**, students created a plan for evaluating an actual risk management strategy.

Next Slide

Investigation 5-5 Worksheet

Detectives in the Classroom Name: _____

Investigation 5-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 5 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Cost-Benefit Analysis
 - Descriptive Epidemiology
 - Efficiency
 - Epidemiology
 - Explanations for an Association
 - External Data Monitoring Board
 - Hypotheses
 - Offsetting Effects
 - Placebo
 - Prevent Disease
 - Risk Management Strategy
 - Random Assignment
 - Strategy Evaluation
 - Testimonials
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Give each student an **Investigation 5-5: Epi Log Worksheet**.

Next Slide

Epi Teams



Detectives in the Classroom - Investigation 5-5: Concept Connections

Divide the class into Epi Teams of four or five students per team.

Next Slide

Essential Question 5

1

Did the prevention strategy work?

Detectives in the Classroom Name: _____
Investigation 5-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 5 at the top of the paper.

2. Write the following words and phrases on index cards:

- Acceptability of Risk
- Analytical Epidemiology
- Association
- Cost-Benefit Analysis
- Descriptive Epidemiology
- Efficiency
- Epidemiology
- Explanations for an Association
- External Data Monitoring Board
- Hypotheses
- Offsetting Effects
- Placebo
- Prevent Disease
- Risk Management Strategy
- Random Assignment
- Strategy Evaluation
- Testimonials

3. Arrange words and phrases to show connections.

4. Draw arrows, circles, and boxes to further show connections.

5. Describe the connections on the arrows, circles, and boxes.

Leave Space

Write Essential Question 5 at the top of the paper.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Give each Epi Team a large (about 3 ft x 4 ft) piece of paper.

Review the steps to create a **Concept Map**.

Step 1: Write Essential Question 5 at the top of the paper.

Tell students to leave a 4- to 6-inch space at the bottom of their paper.

Next Slide

Connections

2

Detectives in the Classroom Name: _____ Date: ____/____/____

Investigation 5-5: Epi Log Worksheet

1. Write Essential Question 5 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Cost-Benefit Analysis
 - Descriptive Epidemiology
 - Efficiency
 - Epidemiology
 - Explanations for an Association
 - External Data Monitoring Board
 - Hypotheses
 - Offsetting Effects
 - Placebo
 - Prevent Disease
 - Risk Management Strategy
 - Random Assignment
 - Strategy Evaluation
 - Testimonials
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

Offsetting Effects

Analytical

Descriptive

Hypotheses

Randomized

Relative

Study Designs

Write the following words and phrases on index cards:

Detectives in the Classroom - Investigation 5-5: Concept Connections

Step 2: Write the words and phrases on index cards.

Next Slide

Investigation 5-5 Worksheet

Detectives in the Classroom Name: _____

Investigation 5-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 5 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Cost-Benefit Analysis
 - Descriptive Epidemiology
 - Efficiency
 - Epidemiology
 - Explanations for an Association
 - External Data Monitoring Board
 - Hypotheses
 - Offsetting Effects
 - Placebo
 - Prevent Disease
 - Risk Management Strategy
 - Random Assignment
 - Strategy Evaluation
 - Testimonials
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Ask students to complete Steps 1 through 5 on their **Investigation 5-5: Epi Log Worksheet**.

☀ Teacher Alert: Listen to each Epi Team's conversation. Observe their work. Identify misconceptions. Conference as needed.

Next Slide

Concept Connections

Epi Assignment

Complete Concept Map.

Each Epi Team prepares a 5 minute presentation that:

Describes how the concepts depicted in their Concept Maps connect to each other.

Meets the **Presentation Rubric** criteria.

Due: Next Class

Detectives in the Classroom - Investigation 5-5: Concept Connections

With 5 minutes of class remaining, tell students that their Epi Assignment for next class is to

1. Complete their **Concept Maps**.
2. Prepare a 5-minute presentation that
 - Describes how the concepts depicted in their **Concept Maps** connect to each other.
 - Meets the **Presentation Rubric** criteria.

Next Slide

Presentation Rubric			
<u>Criteria</u>	<u>Got It</u>	<u>Getting It</u>	<u>Will Get It Soon</u>
<u>Participation</u>	All Epi Team members participate	Most Epi Team members participate	Some Epi Team members participate
<u>Use of Epi Talk</u>	All are appropriate and accurate	Most are appropriate and accurate	Some are appropriate and accurate
<u>Arrangement of Cards</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Arrows, Circles, and Boxes</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Labels</u>	Clearly describe all concept connections	Clearly describe most concept connections	Clearly describe some concept connections

Detectives in the Classroom - Investigation 5-5: Concept Connections

Review the **Presentation Rubric** to be used when evaluating the presentation.

- Participation: All Epi Team members participate.
- Use of **Epi Talk**: All are appropriate and accurate.
- Arrangement of Cards: Clearly depict all concept connections.
- Arrows, Circles, and Boxes: Clearly depict all concept connections.
- Labels: Clearly describe all concept connections.

Give each student a **Presentation Rubric**.

Allow Epi Teams a few minutes to assign presentation responsibilities.

Next Slide

To Understand

To be able to **explain**, interpret, and apply something, while showing insight from perspective, empathy, and self-knowledge.



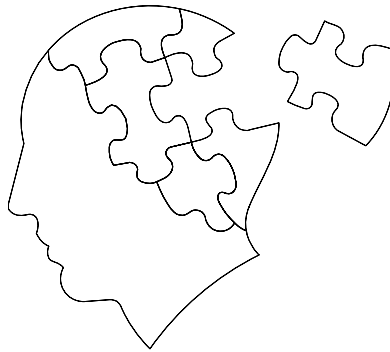
Detectives in the Classroom - Investigation 5-5: Concept Connections

Remind students that they demonstrated their ability to give sophisticated explanations about evaluating disease prevention strategies when they showed how the different concepts connected to each other to answer the fifth Essential Question: “Did the prevention strategy work?”

This concludes Part 1 of **Investigation 5-5: Concept Connections** and students can now put away their **Epi Logs**.

Next Slide

Essential Question 5



Concept Connections

Part 2

Detectives in the Classroom - Investigation 5-5: Concept Connections

Remind students that in Part 1 of **Investigation 5-5: Concept Connections**, they identified the important concepts that are needed to answer the fifth Essential Question—“Did the prevention strategy work?”—and created a **Concept Map** that depicted and explained how the concepts connect to each other.

Now, in Part 2, Epi Teams will present their **Concept Maps** to the class.

At the conclusion of this investigation, students will have developed the fifth Enduring Understanding of *Detectives in the Classroom*: “The effectiveness of the strategy can be evaluated by determining and comparing rates of disease in populations of people who were and were not exposed to the strategy. Costs, offsetting effects, and alternative strategies must also be considered.”

Next Slide

Presentation Rubric			
<u>Criteria</u>	<u>Got It</u>	<u>Getting It</u>	<u>Will Get It Soon</u>
<u>Participation</u>	All Epi Team members participate	Most Epi Team members participate	Some Epi Team members participate
<u>Use of Epi Talk</u>	All are appropriate and accurate	Most are appropriate and accurate	Some are appropriate and accurate
<u>Arrangement of Cards</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Arrows, Circles, and Boxes</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Labels</u>	Clearly describe all concept connections	Clearly describe most concept connections	Clearly describe some concept connections

Detectives in the Classroom - Investigation 5-5: Concept Connections

Tell the Epi Teams that their presentation should meet the **Presentation Rubric** criteria.

Review the **Presentation Rubric** to be used when evaluating the presentation:

- Participation: All Epi Team members participate.
- Use of **Epi Talk**: All are appropriate and accurate.
- Arrangement of Cards: Clearly depict all concept connections.
- Arrows, Circles, and Boxes: Clearly depict all concept connections.
- Labels: Clearly describe all concept connections.

Next Slide

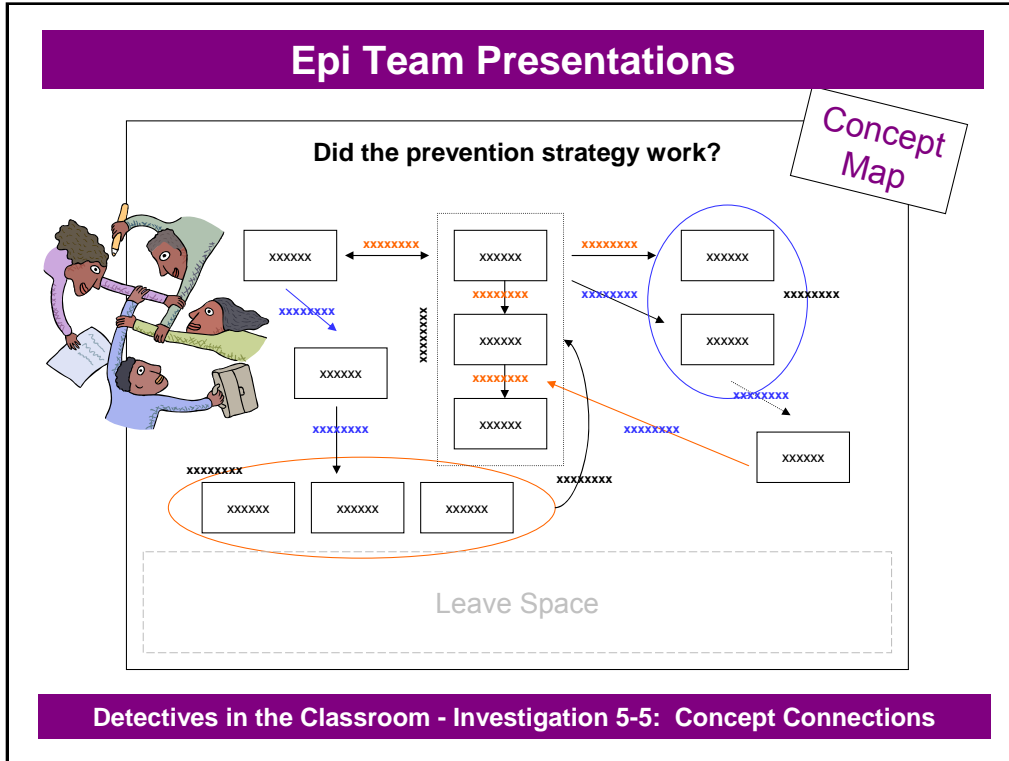
Epi Teams



Detectives in the Classroom - Investigation 5-5: Concept Connections

Divide the class into Epi Teams of four or five students per team.
Allow Epi Teams 5 minutes to get ready for their presentations.

Next Slide



Have one Epi Team present.

After the presentation, ask a student from this Epi Team to self-assess the presentation in terms of one of the **Presentation Rubric** criteria.

Next Slide

Self-Assessment

<u>Criteria</u>	<u>Got It</u>	<u>Getting It</u>	<u>Will Get It Soon</u>
<u>Participation</u>	All Epi Team members participate	Most Epi Team members participate	Some Epi Team members participate
<u>Use of Epi Talk</u>	All are appropriate and accurate	Most are appropriate and accurate	Some are appropriate and accurate
<u>Arrangement of Cards</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Arrows, Circles, and Boxes</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Labels</u>	Clearly describe all concept connections	Clearly describe most concept connections	Clearly describe some concept connections

Detectives in the Classroom - Investigation 5-5: Concept Connections

- Participation: All Epi Team members participate.
- Use of **Epi Talk**: All are appropriate and accurate.
- Arrangement of Cards: Clearly depict all concept connections.
- Arrows, Circles, and Boxes: Clearly depict all concept connections.
- Labels: Clearly describe all concept connections.

Compliment when appropriate.

Discuss differences between the teacher's assessment and the self-assessment.

Repeat this process until all Epi Teams have presented and self-assessed their presentations.

Next Slide

Enduring Understanding 1



Essential Question

How is this disease distributed and what hypotheses might explain that distribution?

Enduring Understanding

Health-related conditions and behaviors are not distributed uniformly in a population. Each has a unique descriptive epidemiology that can be discovered by identifying how it is distributed in a population in terms of person, place, and time. Descriptive epidemiology provides clues for formulating hypotheses.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Point out to students that when they completed the investigations in Module 1, they learned the way a disease detective tries to answer the first Essential Question: “How is this disease distributed and what hypotheses might explain that distribution?” They also uncovered a disease detective’s first Enduring Understanding: “Health-related conditions and behaviors are not distributed uniformly in a population. Each has a unique descriptive epidemiology that can be discovered by identifying how it is distributed in a population in terms of person, place, and time. Descriptive epidemiology provides clues for formulating hypotheses.”

Next Slide

Enduring Understanding 2

Essential Question

Is there an association between the hypothesized cause and the disease?



Enduring Understanding

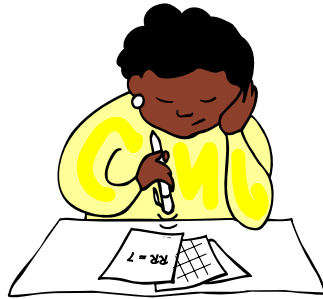
Causal hypotheses can be tested by observing exposures and diseases of people as they go about their daily lives. Information from these observational studies can be used to make and compare rates and identify associations.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Point out to students that when they completed the investigations in Module 2, they learned the way a disease detective tries to answer the second Essential Question: “Is there an association between the hypothesized cause and the disease?” They also uncovered a disease detective’s second Enduring Understanding: “Causal hypotheses can be tested by observing exposures and diseases of people as they go about their daily lives. Information from these observational studies can be used to calculate and compare risks and identify associations.”

Next Slide

Enduring Understanding 3



Essential Question

Is the association causal?

Enduring Understanding

Causation is only one explanation for finding an association between an exposure and an outcome.

Because observational studies are flawed, other explanations must also be considered.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Point out to students that when they completed the investigations in Module 3, they learned the way a disease detective tries to answer the third Essential Question: “Is the association causal?” They also uncovered an epidemiologist’s third Enduring Understanding: “Causation is only one explanation for finding an association between an exposure and an outcome. Because observational studies are flawed, other explanations must also be considered.”

Next Slide

Enduring Understanding 4

Essential Question

What should individuals and society do when preventable causes of disease are found?



Enduring Understanding

When a causal association has been identified, decisions about disease prevention strategies are based on more than the scientific evidence. Given competing values, social, economic, and political factors must also be considered.

Detectives in the Classroom - Investigation 5-5: Concept Connections

Point out to students that when they completed the investigations in Module 4, they learned the way a disease detective tries to answer the fourth Essential Question: “What should individuals and societies do when preventable causes of disease are found?” They also uncovered an epidemiologist’s fourth Enduring Understanding: “When a causal association has been identified, decisions about disease prevention strategies are based on more than the scientific evidence. Given competing values, social, economic, and political factors must also be considered.”

Next Slide

Uncovering Enduring Understanding 5

Essential Question

Did the prevention strategy work?



Enduring Understanding

The effectiveness of the strategy can be evaluated by making and comparing rates of disease in populations of people who were and were not exposed to a strategy. Costs, offsetting effects, and alternative strategies must also be considered.

Detectives in the Classroom - Investigation 5-5: Concept Connections

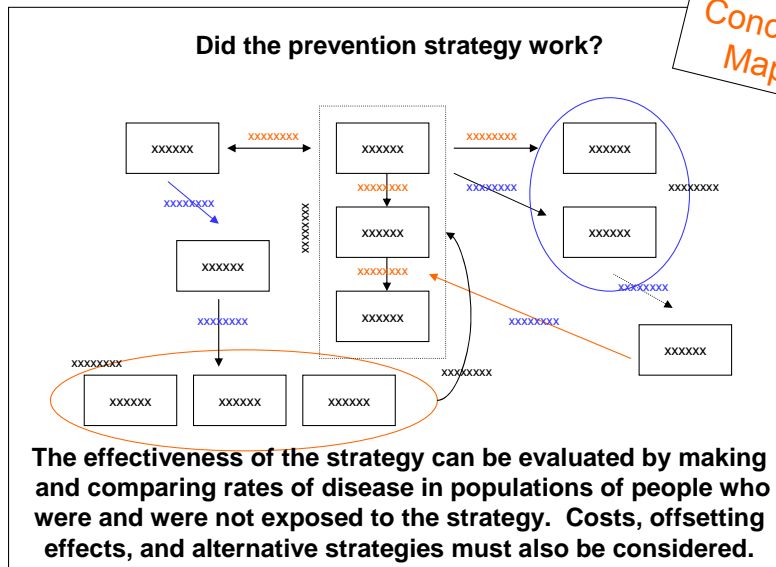
By doing the investigations in Module 5, now completed, students have been learning the way an epidemiologist, a disease detective, tries to answer the fifth Essential Question: “Did the prevention strategy work?”

Ask students:

- Have you uncovered an epidemiologist’s fifth Enduring Understanding? “The effectiveness of the strategy can be evaluated by determining and comparing rates of disease in populations of people who were and were not exposed to the strategy. Costs, offsetting effects, and alternative strategies must also be considered.”

Next Slide

Enduring Understanding 5



Detectives in the Classroom - Investigation 5-5: Concept Connections

A student from each Epi Team should now write the fifth Enduring Understanding in the space at the bottom of his or her Epi Team's **Concept Map**.

Next Slide

Self-Assessment

Detectives in the Classroom Name: _____

Investigation 5-5: Epi Log Worksheet - Homework Concept Map Date: ___/___/___

Place the following words and phrases into a Concept Map that depicts how they connect with each other to answer Essential Question 5:

<i>Analytical Epidemiology</i>	<i>Efficiency</i>	<i>Offsetting Effects</i>	<i>Testimonials</i>
<i>Association</i>	<i>Epidemiology</i>	<i>Prevent Disease</i>	
<i>Cost-Benefit Analysis</i>	<i>Explanations for an Association</i>	<i>Risk Management Strategy</i>	
<i>Descriptive Epidemiology</i>	<i>Hypotheses</i>	<i>Strategy Evaluation</i>	

Did the prevention strategy work?

The effectiveness of the strategy can be evaluated by making and comparing rates of disease in populations of people who were and were not exposed to the strategy. Costs, offsetting effects, and alternative strategies must also be considered.

Epi Assignment

Detectives in the Classroom - Investigation 5-5: Concept Connections

Give each student an **Investigation 5-5: Homework Concept Map** form.

Ask students to complete this Epi Assignment for the next class.

Emphasize that the work is to be done individually and not in Epi Teams.

⚙ Teacher Alert: You can show students the **Homework Concept Map Rubric** after they have completed their Epi Assignment.

Next Slide

To Understand

Investigation
5-5 has ended.

To be able to **explain**, interpret, and apply something, while showing insight from perspective, empathy, and self-knowledge.



Detectives in the Classroom - Investigation 5-5: Concept Connections

Remind students that they demonstrated their ability to give sophisticated explanations about evaluating disease prevention strategies when they showed how the different concepts connected to each other to answer the fifth Essential Question: “Did the prevention strategy work?”

This concludes Part 2 of **Investigation 5-5: Concept Connections** and students can now put away their **Epi Logs**.