

DEFINING PROBLEMS BIG & SMALL



AGENDA

- Starter
- Scale of Difficulty
- Name It
- Solutions, Please
- Conclusion
- Student Assessment

Objectives

Students will recognise that they already possess the ability to solve many problems.

Students will understand the importance of defining a problem before acting on a solution.

Students will identify a problem and propose solutions.

Materials Needed

- An item to toss back and forth (Part I)
- A dictionary (Part II)

Starter (3 minutes)

Ask students if they enjoy riding roller coasters. Have them describe what they like and don't like about roller coasters. Ask, "Are all roller coasters the same? Are there some roller coasters that you feel more nervous about riding than others?" (Students will probably say that some roller coasters are more frightening than others.)

Explain that some roller coasters are small and easy to ride, while others are bigger and require more thought before one decides whether to ride them. Explain that problems are similar to roller coasters in that some are small and easy to solve, while others are bigger and require more thought before we can solve them.

Explain that in this lesson students will discuss the kinds of problems they might face and a process for finding solutions.

Part I Scale of Difficulty (10 minutes)

Purpose: Students recognise that they already possess the ability to solve many problems.

1. Students play a game in which they solve problems.

Tell students that they are going to play a game. Explain that you will state a problem and then toss the item you brought to school to a student. That student must catch the item and toss it back while giving a solution.

Begin the game. State problems such as the following:

- What does 12 plus 4 equal?
- Your shoe is untied.
- How do you avoid a puddle in your path?
- You need to know the time, but your watch is broken.
- Your locker is jammed.
- You're supposed to go home after school to babysit today, but you have to complete detention.

If students hesitate in tossing the item back to you, urge them to return it quickly and answer with the first thing that comes to mind.

2. Students evaluate their solutions.

When all students have had a chance to solve a problem, ask them if they thought that some of the problems were easier to solve than others. Ask students to identify which problems were more difficult and to explain why.

Explain to students that the last few problems were more difficult because they had to think about a number of different ways to solve the problems before choosing a solution.

Part II Name It (15 minutes)

Purpose: Students understand the importance of defining a problem before acting on a solution.

1. Students define the word “problem.”

Write the word “problem” on the board. Ask students to discuss and formulate a definition of the word. Write responses on the board.

Ask students to decide on a single definition that works best for them. (Students might define “problem” as “a question, condition, or situation that must be solved in order to do something successfully.”)

2. Students learn how to identify problems.

Point out that it’s important to identify a problem before one can go about solving it. Present an example such as the following in order to illustrate this point:

- If the pedals on your bicycle won’t move, what must you do before you can fix them? (Students should mention that they need to figure out what the problem is—something may be caught in the chain or maybe the chain is jammed or needs oil.)

Explain to students that once they have identified a problem, they can decide if they can solve the problem themselves or if they need help.

3. Students learn how to identify solutions.

Refer to the first problem above. Ask students how they might fix the bicycle if they discovered the problem to be something caught in the chain. (Students should respond: clean and then oil the chain.) Ask them to describe how they might respond if they found that a piece of the chain is damaged or broken. (Students should mention: take the bicycle to someone who knows how to fix or replace the chain.)

Point out to students that there are always a number of ways to solve a problem, but first they must identify the problem. Ask, “What can you do when you need help solving a problem?” (Students should mention asking someone for help.)

Part III Solutions, Please *(20 minutes)*

Purpose: Students identify a problem and propose solutions.

1. Students take part in an activity.

Divide the class into four groups. Ask each group to go to a different corner of the room. Quietly give the following instructions, without letting the other groups hear you:

- Group 1: Your task is to move all of the chairs to the left side of the room.
- Group 2: Your task is to move all of the chairs to the right side of the room.
- Group 3: Your task is to put all of the chairs in straight lines in the middle of the room.
- Group 4: Your task is to put all of the chairs in a circle in the middle of the room.

Allow students to work against each other for a few minutes. When the frustration level becomes high, end the activity. Ask all students to help with putting the room back in order.

2. Students identify the problem.

Help students identify the problem they faced in the activity by asking questions such as the following:

- Why couldn't your group complete this task?
- What were the other groups trying to do?

Call on students to give their ideas. Then, have students from each group explain their assigned tasks.

Help students come to the conclusion that the problem arose because each group was trying to accomplish a different task at the same time.

3. Students offer solutions.

Ask students how they might solve this problem and still complete all four of the assigned tasks. (Students might respond: the groups must take turns completing their tasks.)

Through questions and discussion, guide students to conclude that it is necessary to do the following in order to solve the problem:

- Identify the problem.
- Talk to others and get information about what they are doing and why.
- Decide on a solution.
- Work together in order to complete one task at a time.

Emphasise that students should never feel that they must solve problems by themselves. Point out that asking for assistance with problems is a great way to solve them successfully.

Conclusion (2 minutes)

Ask students to explain why it is important to identify a problem before acting on a solution. Elicit from students the following **key points** that were taught in this lesson:

- Always identify problems before acting on solutions.
- Once the problem has been identified, decide if you can solve it yourself or if you need assistance.

Student Assessment

1. List three reasons why some problems are more difficult than others.
2. Define “problem.”
3. Describe a problem you have faced in your life. Identify the problem, the solution you decided on, and the outcome.

LESSON EXTENSIONS

Using Quotations

“Recognizing the problem is half of the solution.”

Have students think of a problem they faced. Ask students to describe the moment they identified the problem they were facing, how they felt about it, and how they went about solving it.

Addressing Multiple Learning Modes

Have students think of problems that they have been grappling with and write them down anonymously. Have students fold their papers up and drop them into a bag. Then, invite each student to pick a problem out of the bag, and come up with suggestions of whom to ask for help with solving it (e.g., teacher, doctor, psychologist, parent/guardian).

Discuss the resources that students suggested for each problem.

Writing in Your Journal

Have students write about a recent problem they had that they felt they could not solve to their satisfaction.

As students continue working on this module, have them apply the steps of the problem solving process to their unsolved problems, keeping notes of each step in their journals.

Using Technology

Have students visit news websites and find and print articles about conflicts between countries, groups, or individuals.

Divide students into small groups. Have the groups read each member’s article, discuss it, and identify the core problem behind the conflict.

Homework

Ask students to interview adults about recent problems they had and how they solved them.

Additional Activity

Watch an episode of a television show, list the conflict involved and discuss if the characters solved the problem or not. What were the steps they took towards resolution?