

Curriculum: Social Emotional Learning (SEL)

Course: Problem Solving Techniques

Level: Elementary School

Objective: Students will be able to identify the processes used in problem solving and begin to use techniques towards solving problems individually as well as within a group.

Course Description/Intent: Students will be introduced to the steps used in problem solving, including identifying a problem, testing solutions and reevaluating if needed.

Applications & Benefits: Students will learn how to think critically in order to find a solution that may not be readily available to them. They will also learn to work with others in order to bring a solution. This will essentially encourage teamwork, decision-making, creativity, and help relieve frustration and anxieties over believing that problems only have one solution.

Course Snapshot:

This course incorporates the following lessons.

	<u>Activity</u>	<u>Time Required</u>	<u>Resources and Materials Needed</u>
Lesson 1: What is problem solving?	Whole-group discussion Shared writing	15 - 20 minutes	Lesson definitions Chart paper and markers
Lesson 2: Benefits to Problem Solving	Whole-group discussion Small group team building	20 – 30 minutes	Lesson information Art materials (toilet paper rolls, pipe cleaners, cardstock, tape, glue, popsicle sticks, tissue paper, etc. See Lesson)
Lesson 3: Exercises to Begin Problem Solving	Whole-group discussion	5 - 10 minutes, ongoing	Student journals (optional)

Lesson Rationale:

The prefrontal cortex of the brain is responsible for skills such as reasoning, problem-solving and creativity. This explains the phenomena of “Aha!” moments. If you were to walk away from a problem and change activities, you would still be activating the prefrontal with the complex problem you were on.

Problem-solving involves critical thinking and decision-making skills, as well as the ability to think before reacting, all important skills for students of all ages to develop. It is important to develop critical thinking skills so that children can solve issues that will come up in their daily lives in and out of school.

Helpful Tips

Encourage creative thinking when approaching problems. Brainstorming doesn't have to include the standard way to get to the answer ($1+2=3$, when $1+1+1=3$ as well); it can include outside the box thinking to get to the goal.

Having a positive outlook when attempting to solve a problem is an essential skill. Be sure to reinforce and encourage their ideas.

Teach student to try approaching a question in several different ways.

Praising Students

Allow the students to know that everyone makes mistakes. When students see the teacher make a mistake and it is requested that they help find ways to make the correction, it will model to students that even adults make mistakes.

Introductory Lesson: What is problem solving?

What to Know Before You Begin

What is problem solving?

Problem solving involves thinking through complex issues and taking the appropriate actions to solve a problem or dilemma. Problem solving can be used in a variety of situations, including social issues and learning experiences. Problem solving is often an iterative process; a process that occurs again and again until a satisfying or successful solution is found.

What are some techniques used to solve a problem?

Though every problem is different and involves different techniques to solving the problem, the general method for problem solving involves five steps.

1. Recognize that there is a problem
2. Define or identify the problem
3. Think about solutions and plans of action
4. Trying out a solution
5. Evaluating the outcomes

Based on the evaluation of the outcome, the steps may be revisited.

For example, when trying to remember a student number, you first recognize that you don't remember the number, identify that the problem is you keep forgetting it, and begin to brainstorm solutions. There are many possible solutions to try (i.e. make up a song, practice on a keyboard, keep a note) and you try as many as needed until you remember the number.

Problem solving is used anywhere from drawing a picture on paper, to solving a puzzle, or even cleaning up a workstation in the classroom. The critical thinking skills are used to help a student reinforce their ability to think creatively and quickly. It is important to understand frustration and impatience stem from practicing critical thinking.

Activity:

Begin by acting out and modeling for students how you solve a simple problem. Use one of the sample problems below or come up with one that fits your classroom. Make sure it is a problem that can be quickly fixed with a few solutions. As you tell about the problem to students, use the think aloud strategy to model for students how you brainstorm and try different solutions. For example, in the first sample problem (forgetting to spell a word), you might say, "Oh dear. I want to write the word 'construction' but I've forgotten how to spell it. This is a problem. Fortunately, there are some ways I can solve it. I can look up the word on my phone or perhaps one of you might know how to spell it. I think I'll ask you first. Does anyone know how to spell construction?" After students help you, continue evaluating the outcome by saying, "Let's still check the dictionary to see if we are right." Respond with, "Great! We figured it out," or, "We almost had it right!"

- You forgot how to spell a word in your morning message
 - Possible Solutions: Look in the dictionary, look it up on your phone, ask students if they remember how to spell it
- You can't find your favorite classroom pointer
 - Possible Solutions: Ask the student helper to look, think where you saw it last
- You don't know how to draw a cat/dog/etc
 - Possible Solutions: Use an Internet tutorial, ask a student for help

Explain to students that sometimes when we come across a problem, instead of stretching our brains and thinking critically, sometimes we immediately give up or immediately ask for help because we want someone else to solve the problem for us. (You might want to reiterate that there are some situations, those in which someone is hurt or threaten the safety of others, that require students to immediately call for help).

Discuss with students the definition of problem solving and review the general steps. Visuals and charts with the steps are helpful for students to reference. Write out the steps with the students and ask them to provide some ideas for visuals that will help them remember. For example, step one, "Recognize a problem" could be visualized with a lightbulb and step two, "Identify the problem," might be visualized with a question mark.

In a group, have the students explain a problem that they are having and would like others to help them understand.

- How does it feel to hear another solution towards the problem?
- Is the problem able to be broken down so that it's not so large?

Write each problem on a white board followed by the solution the class thinks would be the best solution. Allow each student to follow up with results the next day.

Lesson 2: Benefits of Problem Solving

What to Know Before You Begin

- Benefits to students:
 - Increased confidence in the classroom. Children will be able to engage in thinking with minimal or no assistance in order to attempt a solution. They will be able to understand the process of “trial and error”.
 - Can create an open floor forum in order to expand social interactions between classmates.
- Benefits to teachers:
 - Ability to successfully and positively enforce independent learning skills.
 - Reduction of stress towards classroom activities. When creative thinking is able to be used, it will help children engage with each other rather than experiencing frustration and withholding interactions.

Activity:

World of imagination

Provide the following scenario. Ask students to identify what the problem is. Before students try to solve the problem, model and discuss various tools for step three of the process, ‘thinking about solutions.’ Examples include drawing a picture, writing a brainstorm list, assigning roles based on strengths, and asking ‘why’ questions. Have students work in groups of four to create a plan on how they would fix the rocket and try their solution. Then have them attempt to put the rockets back together and takes turns showing the class how they tried to help Bob the Alien get back home safely.

Bob the Alien has accidentally crashed his ship on the planet Earth. The wings of the rocket have fallen off, but Bob needs to get home to his family.

Items for Activity May Include:

- Toilet paper rolls (to act as the rocket)
- Pipe cleaners

- Card stock in various shapes/sizes,
- Tissue paper
- Popsicle sticks
- Glue
- Tape

After groups have shared their attempted solutions, ask for students to share their thoughts on the following questions. Focus on how the steps of problem-solving helped them come to a solution.

- What tools did you use to make a plan?
- What did not work when trying to fix the rocket?
- What was considered the best solution for each group?
- How did they feel when during the process?
- How many steps did they have to use in order to solve the big issue of the wings?

Lesson 3: Exercises to Begin Problem Solving

Activity

Below are exercises to practice with students in order to remember and use their problem-solving skills.

1. Smelling the Flower, Blowing out the Candle

Taking a moment to breath in through your nose and out through your mouth (smell the flower, blow out the candle) is a good way to stop, focus, gain control of your emotions and think. When a problem is presented, this can be used as a technique to help children gain control of impulse reacting. To practice, have students think about a problem, then practice the breathing technique. Have students begin to recognize how their emotions may change by pointing out how they feel before and after breathing. For example, “When Sara pushed you out of the way, it made you feel angry, but after taking a few breaths, how are you feeling now?”

2. Break It Down

Taking a problem and breaking it down to smaller steps or solutions can make a big problem seem more manageable. Think about a problem, such as the reading nook having a lot of books and papers out of place. Ask the children how they would correct the situation. Then ask them how they would start the cleaning process. Have each child explain what task they would like to choose and why.

3. Brainstorming

Brainstorming helps create new and different ideas by sharing ideas openly. When presented with a problem, there are many ways that students can begin brainstorming solutions. Introduce students to various ways that they can practice and visualize brainstorming. Some ideas include making lists, drawing a picture, boxing out different steps, or making a bubble map.

Quick Quiz

- 1) What is problem solving?
 - a) Thinking through solutions to complex issues
 - b) Waiting for the answer to be said by a classmate
 - c) Pretending there isn't a problem
 - d) None of the above

- 2) Why is it important to practice problem solving?
 - a) To practice critical thinking
 - b) To learn self-control
 - c) To be a helpful team member
 - d) All of the above

Teacher Feedback

Please provide insights on any adjustments made regarding the actual use of the content above. Feel free to share your thoughts, suggestions, constructive criticism. Email your feedback to: info@mylearningtools.org

Module Layout & Design ideas for designer:

<https://pocketofpreschool.com/peek-at-my-week-week-6-problem-solving/>

<https://psycnet.apa.org/record/1985-29291-001>

<https://www.scholastic.com/teachers/articles/teaching-content/how-you-can-help-children-solve-problems/>