Problem-Solving Process

Overview: The Six-Step Problem-Solving Process is an easy approach to dealing with issues and problems that face students. It is a simple, systematic way to approach a problem with clearly defined steps so that an individual or team doesn't get bogged down in, "WHAT DO WE DO NEXT?" This lesson covers this process using a program example with a student-selected issue or problem to use the process to develop a solution. The lesson also briefly covers the *Equipped for the Future* Standard of *Solving Problems and Making Decisions.*

Educational Goal: The objective of this lesson is for each student to (1) comprehend the problem-solving process, and (2) appreciate the value of what the problem-solving process can do for her.
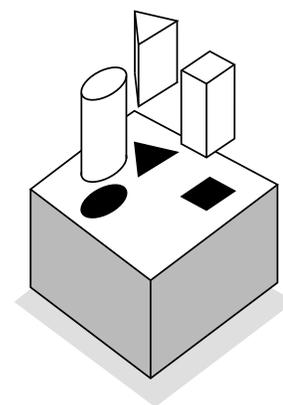
Objectives: The student will…
Cognitive: — Explain the Six-Step Problem-Solving Process.
           — Demonstrate the use of the problem-solving process.
Affective: — Appreciate the uses of the problem-solving process.
           — Evaluate its effectiveness in achieving the goals.

Skill/Standard Connections: This lesson has connection to the Tennessee KSA – *Solve Problems* and the EFF Standard – *Solve Problems and Make Decisions.* (Appendix II)

Teaching Strategy: This problems-solving lesson provides a lot of information for an hour. It covers the steps in the six-step problem-solving process. This helps the students understand the logic and required thinking behind the step-by-step process. It provides a program example of a classroom problem that used the method to select the best solution. It allows for the class to select a common issue or problem to focus on experimenting with the process. The lesson also covers the *Equipped for the Future* Standard of *Solving Problems and Making Decisions.*

Identify the six-step problem-solving process. There are two practical examples used in class to help the students understand and apply the problem-solving steps. The first example is a real-life Knox County classroom problem that the Coordinator and the students solve using the problem-solving process. The second example will be a classroom-selected one.

The lesson's main points cover the definition of the problem-solving

Time: 1 hour

Teaching Materials:
— EFF Standard *Solve Problems and Make Decisions*

Student Materials:
— Learner Note Taker

steps. The teacher then leads a brief discussion to help the students understand the intent of each step. The teacher will use the Knox County Adult Literacy classroom example connecting the appropriate steps together for clarification. The class should select a common problem and work through the process to actually get a hands-on experience of working through the process. The teacher has an option of working through the class-selected problem (1) step-by-step, along with each step of the process or (2) do it all at once later in the lesson. Finally, a brief review of EFF's Standard helps to provide another view of the process and key performance points to make the process work.

Lesson Plan

Introduction

Homework Review: Fear of Technology

Thought for the Day
"The wisest man I have ever known once said to me: 'Nine out of ten people improve on acquaintance,' and I have found his words true."
—Frank Swinnerton

Get to know others. Don't keep yourself in a shell. You have the opportunity to teach others and to learn from others.

Attention: Have you ever wanted to find an easy way to look at the problems you face and start to solve them?

A basic six-step problem-solving process can help you. This process and an understanding of the Equipped for the Future (EFF) Standard of *Solve Problems and Make Decisions* will give you a good set of tools to use to help you with complex problems and decisions.

Motivation: This lesson will help you with understanding the six-step problem-solving process and the EFF Standard *Solve Problems and Make Decisions*. By using this lesson you will be able to better deal with problems and decisions that you face in life.

There are numerous variations on this basic problem-solving process, such as a four- or five-step variation. All processes cover certain basic steps, which are similar to the six-step process. Once you understand and are able to use the six-step process, you can experiment with other varia-

Teaching Tip

Begin each day with a review of the previous day's homework. Allow 15-20 minutes to review the homework.

Then begin the "Thought for the Day." Give students time to answer the four questions. Then discuss the "Thought for the Day."

Teaching Tip

Allow time for the students to respond to your question.

tions or be creative and develop your own process. You should find and stick with one that works for you.

Overview: First, we will take a look at the Six-Step Problem-Solving Process. Then we will examine each step individually. We will use two practical examples during the lesson to help understand and apply the problem-solving process. We will examine a real-life Knox County classroom problem that the program Coordinator helped to solve with the students and teacher using the problem-solving process. We will also use an in-class selected problem to work through using the process. We will assign you homework where you take the problem-solving process and use it on one of your own issues or problems.

Body of Lesson

Main Point 1: Six-Step Problem-Solving Process

There are many problem-solving methods, and the six-step method is just one of them. The problem for most people is that they do not use one process to solve problems and issues or to make decisions. Another problem is that people are not consistent in how they solve problems. They do not find something that works and then do it the same way over and over to be successful. The Six-Step Problem-Solving Process is described on the right.

Knox County Adult Literacy example: In one of the program's Family First classrooms the students were arguing because some students were leaving the class early. The class was divided into two groups—those who sided with the students who were leaving early and those who felt it was unacceptable to leave class early. Because class time was monitored closely, students wanted to be sure that their time was counted. Those students who left early were not signing out at the time they left but at the time class ended. Other students accused them of cheating on their time. The teacher talked with them about how this practice would be unacceptable on the job. The student response was, "This isn't a job. We are not getting paid to come to school." They saw no problem with signing out at the wrong time because they reasoned that they had come to class that day. Again the teacher tried to make the connection between class time and the 20-hour requirement. Other students complained that this was not fair and that the teacher should make them stay. They also complained that some of these same students came to class late or took longer breaks.

Six-Step Problem-Solving Process
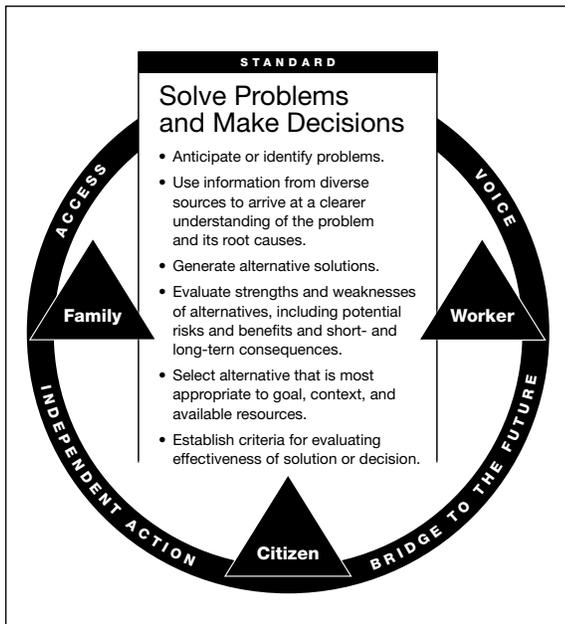
Step 1.
Identify and Select the Problem

Step 2.
Analyze the Problem

Step 3.
Generate Potential Solutions

Step 4.
Select and Plan the Solution

Step 5.
Implement the Solution

Step 6.
Evaluate the Solution

This particular class was very volatile and the students could become disruptive and angry if anything in their environment changed. The teacher was new to the class, but she had tried to establish an open environment where everyone could discuss issues and problems. The students seemed suspicious of everyone, even their teacher. A few students talked with the teacher one-on-one and explained their feeling to her but were unwilling to speak out in a group. One member of this class was very aggressive and forceful and other students were unwilling to disagree with her on any issue. The teacher viewed these students as being disrespectful of her and of other students. She was also struggling with learning how to interact with adult literacy students and establish trust with this class.

This problem had persisted for several days and on this particular day there seemed to be no solution to the problem. Both the students and the teacher were ready to call it quits. The teacher had talked with the students, but they were so upset about this situation that there was no communication between the teacher and the students. Everyone had stopped listening. Everyone had chosen a position on the issue and was unwilling to back down. Instead of being able to talk about the problem the class had erupted into a loud shouting argument.

Teaching Tip

In class example: Either the teacher selects an issue or problem to use the six-step problem-solving method on or the students select an issue or problem. Use the selected issue or problem as an in-class example of how the process works.

The teacher had participated in an in-service where there had been a discussion of the problem-solving process. At a break she came to the office and ask the Literacy Coordinator and the *Learning Skills* teacher to help her use the problem-solving process in the classroom.

After the break the classroom teacher, *Learning Skills* teacher, and the Literacy Coordinator went into the classroom to talk with the students. The first step was to assure the students that they were there to listen and to come to a solution to their problem. They set some ground rules for the discussion and then began the process. Some of the ground rules included:
• Everyone would be allowed to voice their opinion.
• One person would talk at a time.
• Everyone would listen to what others had to say.
• Everyone would be respectful of each other even when we disagreed.
• A solution would be reached that everyone could agree upon.

Main Point 2: Step 1. Identify and Select the Problem

The objective of this step is to identify the problem. That sounds simple enough, but problems usually are tied to very emotional issues. Egos are usually connected to the problem or the possible solution. Because the emotions are a part of the process, people can miss reading the problem.

So, the first step for everyone involved is to step back from the issue and use the STAR method. The individual or group involved should take a look at "what is really causing the difficulty." This should be thoroughly thought through and agreed upon so everyone is on the same page.

Consensus: This is a good time to bring up an agreement process that helps to bring everyone to the same page of agreement, but that isn't easy. Consensus simply means everyone is in agreement or they can live with the agreement. If they cannot live with the agreement, the group or team has not reached consensus. Then, more discussion, understanding each other's point of view, and keeping an open mind are required. This process requires cooperation, good intentions, and a willingness to be flexible about personal feelings and issues.
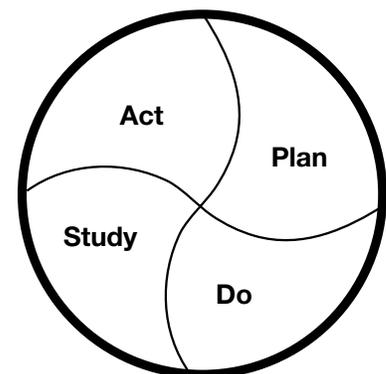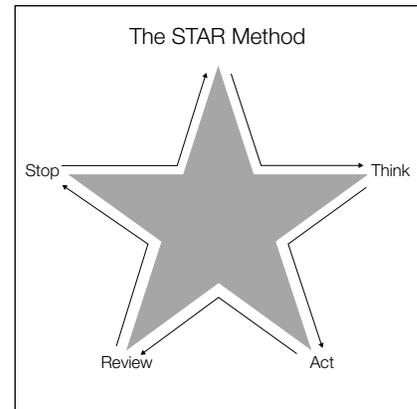
So consensus has these three elements:

1. I agree.
2. I don't fully agree, but I can live with and support the agreement.
3. I don't agree, and I cannot live with or support the agreement.

This process will become increasingly important as the group or team moves closer and closer to selecting a solution to a problem. Using the process from the beginning brings the whole group along at every step.

This entire process is actually a very systematic approach to separating out things that are irrelevant and focusing in on those relevant issues that can solve the problem. This process is also something that you learn and become better at doing. Like learning a math formula, there is practice, review, and more practice. The STAR and PDSA approaches are critical to the problem-solving process. You make better decisions by mastering these tools.

Once the individual, group, or team has identified the problem, they should write it down in a clear and concise statement. They should also be able to write a goal statement that focuses on what is the successful end of the process. Making a goal statement also helps to see the gap between the problem and the goal. This whole process is about closing or fixing the gap between the problem and the goal.

The STAR Method

Stop — Think — Act — Review

Act — Plan — Study — Do

Sometimes problems are so big you have to break them down into smaller, workable problems and attack each small problem first. By doing this, a problem is not so overwhelming that you don't know where to start. So if the problem is too "big," refine it.

Knox County Adult Literacy example:
Problem Statement: The statement for this class was: Some students come to class late, take long breaks, and leave class early. This is not fair for the students who are on time for the beginning of class, return from breaks, and leave at the end of class. Students who do not follow the rules should not have 20 hours reported. If this falls below 90% the teacher should report them.

Goal Statement: Students' time in class will be recorded accurately based on when they come in the morning, when they take breaks and when they leave. All students should work toward 90% attendance based on the 20 hours per week, not the days of the week.

Main Point 3: Step 2. Analyze the Problem

Now that the problem is defined, analyze it to see what is the real bottom-line root cause. Often people get caught up in symptoms or effects of a problem or issue and never get down to the real cause. They get mad at someone's attitude, anger, or actions, which are not the cause of the problem. The key here is to focus everyone's efforts on analyzing the problem for the real cause. Once the cause is found, plans can be made to fix it.

Analyzing means to gather information. If there is not enough information, figure out how to research and collect it. Once the information is gathered, take a very close look at what is going on. Try to come to consensus on why the particular problem or issue occurs.

Knox County Adult Literacy example: Through discussion the class found that the students who were leaving early needed to catch a bus to go home or they would have to wait an additional hour for another bus. For some students this meant that they would not be home when their children arrived from school.

The teacher found that none of the students really understood what 90% attendance meant. They knew they needed to come 20 hours per week, but felt that if they were there some part of every day they were meeting their obligation.

Teaching Tip

In-class example: Use the selected issue or problem to work through this step.

Main Point 4: Step 3. Generate Potential Solutions

Now that the problem has been analyzed, the group can begin to develop possible solutions. This is a creative as well as practical step where every possible solution or variation is identified.

In this step use the brainstorming process that has been used in class before to generate as many solutions as possible. There are no wrong answers here, and judgments should not be passed on another person's suggestions. Toward the end of this brainstorming session, allow time for each person to clarify his or her suggestion so there is a common understanding for a later selection.

Knox County Adult Literacy example:
The following are some of the students' solutions:
• The teacher should come early for students who needed to be there early.
• Stay and catch the bus later.
• Come to school 15 minutes earlier.
• Don't take all of the breaks.
• Find another way to get to school.
• The teacher should have learners mark when they came or left school.

Main Point 5: Step 4. Select and Plan the Solution

Now that there are a wide variety of possible solutions, it is time to select the best solution to fix the problem given the circumstances, resources, and other considerations. Here the group is trying to figure out exactly what would work best given who they are, what they have to work with, and any other considerations that will effect the solution.

There are always a number of things that can effect a solution: money, time, people, procedures, policies, rules, and so on. All of these factors must be thought about and talked through.

The group should prioritize the solutions into what would work the best. This is a slow process of elimination. There may be some possible suggestions that are immediately eliminated. Eventually, the group boils down the choices to one or two best solutions. The group should then discuss those solutions and come to consensus on the best solution.

At this point the group should do a PDSA to have a clear PLAN of action to track the solution, gather information on how it is working, and make necessary adjustments.

Knox County Adult Literacy example: After much discussion the students and teacher came up with the following plan:

• Students who needed to leave early would come to class early.
• The teacher would be available to work with them since this was her planning time for the class.
• All students would be expected to return from breaks at the correct time.
• All students would sign in exactly when they came to class.
• Students would sign out at the exact time they left class.
• All students would keep a calendar and monitor their attendance. They would figure at the first of each month how many hours they must attend to maintain 90% attendance.
• All students would graph their attendance weekly.

The class and the students agreed on the plan.

Teaching Tip

In-class example: Use the selected issue or problem to work through this step.

Main Point 6: Step 5. Implement the Solution

This is the **DO** stage of PDSA. Make sure the solution can be tracked to have information to use in the **STUDY** stage. This may seem to be an easy stage, but it really requires a scientific approach to observing specifically what is going on with the solution.

Knox County Adult Literacy example: The students decided to begin the process that day. They would use the last hour of the class period to figure out what 90% attendance really meant. Then the teacher would give them their daily attendance for that month and they would graph their attendance to see where they were. They all agreed to help each other and to record exactly their time. Students also agreed that they would speak respectfully to one another and to the teacher if either one pointed out that they were dropping below the standard.

Main Point 7: Step 6. Evaluate the Solution

This final step is the **STUDY** stage of PDSA. Did the solution work? If not—why not? What went right, and what went wrong? What adjustments does the group have to make to make the solution work better? This is a careful analysis stage that improves upon the best solution using the information gathered during the **DO** stage. After this analysis the group is ready to **ACT** upon their findings and the problem should be solved or better under control.

Knox County Adult Literacy example: The class tried the plan for the remainder of the month and for the next month. They worked well with the teacher to monitor themselves. Their attendance increased except for the student who was very aggressive. When it became apparent that the other students were going to follow the plan and that they were not going to let the issue disrupt the class she dropped out of school. (This was only one of the reasons for her to discontinue her classes.)

The students found that one problem they had was when new students enrolled in the class. No one took the time to give new students an overview of what had happened and the plan the class was following. While new students began graphing their attendance, they looked upon it as a math exercise and were not as committed to the attendance and attitude issue as the experienced students.

The teacher and the students recognized the gap and made a plan that included certain older students being responsible for explaining the plan to new students and helping them monitor their own attendance.

This class continued to use the PDSA to monitor their attendance. What they discovered was a link between their attendance, attitude, and achievement. Their attitudes improved dramatically and their achievement was remarkable. They bonded as a class and helped each other with problems and issues. Students began to ask the teacher to schedule them for post-tests. They became interested in moving forward and improving their skills. When their test results were not what they wanted, they used the same process to monitor their learning and test-taking strategies. This class promoted more students to the next level of beginning Adult Education than any of our other classes.

Main Point 8: Equipped for the Future
Solving Problems and Making Decisions Standard

The EFF has a Standard called *Solve Problems and Make Decisions.* Solving problems and making decisions are skills that we need to know and perfect so we can take advantage of situations we are confronted with in life.

Here is the skill and performance points for this standard. Elements of the six-step problem-solving process are within the Standard.

Teaching Tip

In-class example: Use the selected issue or problem to work through this step.

Teaching Tip

In-class example: Use the selected issue or problem to work through this step.

Solving Problems and Making Decisions
- Anticipate or identify problems.
- Use information from diverse sources to arrive at a clearer understanding of the problem and its root causes.
- Generate alternative solutions.
- Evaluate strengths and weaknesses of alternatives, including potential risks and benefits and short- and long-term consequences.
- Select an alternative that is most appropriate to goal, context, and available resources.
- Establish criteria for evaluating effectiveness of solution or decision.

Teaching Tip

Allow time for the students to provide the summary of the process and its value. Pull the various responses together into an appropriate ending statement.

Conclusion

Summary: The Six-Step Problem-Solving Process is almost a cookbook approach to dealing with issues and problems. It can help an individual, class, family, or community to make better decisions and improve important areas of their lives.

Without looking at your notes, talk me through each step and how it helps to solve problems.

Re-Motivation: This process works and many people and businesses use some form of it everyday. Now you know the steps to help you take a hard, analytical look at issues and problems. Take the time to use it.

Close: Remember, this problem-solving process is a valuable tool to solve difficult and complex issues. Use it—it works!