Problem Solving

Problem solving can sometimes be simple such as informing somebody that they are not performing a task correctly. More complex problems take time and are difficult to navigate when dealing with red tape and resistance to change.

Steps to Problem Solving

1. Define the problem by asking each student to tell his or her story.
   - "Please describe what happened."
   - "Tell me your story."

Listens to and reflect on the content and feelings expressed by both students.
- "If I understand you correctly ...."
- "I can see that you are angry."

2. Understand the problem. Show understanding of each person's perspective through your comments and nonverbal reactions.

Verify the stories by paraphrasing what was said.
- "Are you saying that ...?"
- "Is this what I heard you say ...?"

Ask people to speak directly to each other as they discuss their issues, feelings, needs, and hopes.
- "I need each of you to look at each other when you talk."

Keep them on the topic.
- "I need you to stay on the topic."
- "Is there anything else either of you want to share about ...?"

Ask clarifying questions and summarize the concerns and issues.
- "Is the main concern ...?"
- "It sounds like you agree (or disagree) that ...."

3. Ask them to brainstorm ways to solve the problem.
   - "What are some of your ideas on how to solve this problem?"

4. Evaluate the potential solutions
   - "Let's see, would ____ work for you?"

5. Together decide what to try and agree to try it out.
   - Clarify the first step that needs to be taken. Who will do what and when?
   - Write down the solution in an agreement.

6. If you can, check back with the students in a week or so to see if their agreed upon solution was successful.

Several Other Possible Strategies Include:

1. Divide and conquer: break down a large, complex problem into smaller, solvable problems.
2. Hill-climbing strategy - attempting at every step to move closer to the goal situation. The problem with this approach is that many challenges require that you seem to move away from the goal state in order to clearly see the solution.
3. Means-end analysis, more effective than hill climbing, requires the setting of subgoals based on the process of getting from the initial state to the goal state when solving a problem.
4. Trial-and-error (also called guess and check)
5. Brainstorming
6. Research: study what others have written about the problem (and related problems). Maybe there is already a solution?
7. Assumption reversal (write down your assumptions about the problem, and then reverse them all)
8. Analogy: has a similar problem (possibly in a different field) been solved before?
9. Hypothesis testing: assuming a possible explanation to the problem and trying to prove the assumption.
10. Constraint examination: are you assuming a constraint, which does not really exist?
11. Incubation: input the details of a problem into your mind, then stop focusing on it. The subconscious mind will continue to work on the problem, and the solution might just "pop up" while you are doing something else
12. Get help from friends or online problem solving community (e.g. 3form, InnoCentive)
13. Delegation: delegating the problem to others.
14. Ask your supervisor or advisor for help!