

# USING A PROBLEM-SOLVING PROCESS

## STEP ONE: IDENTIFY THE PROBLEM

**A. Say what the goal is**, i.e. what it will look like, sound like, be like if the problem is solved or what you want the outcome to be. *Do not offer your favorite solution as a problem statement.*

OR

Express the problem as a question: e.g. *How might we increase the rate and quality of oral participation in science classes in order to help students explore their own thinking?*

Good Problem Identification Statements	Bad Problem Identification Statements (aka solutions in disguise)
We will reduce the number of 7 <sup>th</sup> and 8 <sup>th</sup> grade students who come to class unprepared (as defined by homework not completed, + not having materials) to under 10% of the total grade enrollment	<i>We need a grading policy that punishes kids who come unprepared.</i>
Students who need extra, targeted short term help will regularly take advantage of school based opportunities to get that help	<i>We need to start an after-school homework club.</i>
We will each end up with 1.5 uninterrupted hours for math instruction each day.	<i>We need to change the specialists' schedules so they can't pull anyone out during math block.</i>
Fourth grade students will be able to talk themselves through and successfully tackle math problems when they encounter vocabulary or formats that are unfamiliar.	<i>We need a computerized practice program that challenges kids to deal with problems in different formats.</i>

**B. Get the full picture out on the table.** Collect facts and about the problem—and all the questions you have about it. Every idea counts. Postpone judgments and do not allow “clarifications” or argument about what anyone “knows”. Perceptions are important; everything counts at this stage. **Do not propose solutions.**

Know	Need to Know



**C. If you discover multiple issues or several possible definitions, break the problem into parts.**

## **STEP TWO: BRAINSTORM/GENERATE MULTIPLE APPROACHES OR POTENTIAL SOLUTIONS**

As a group, brainstorm (without evaluation or self-censorship) as many different potential ways to solve all or part of the problem as possible. Strive for volume, variety, and creativity. Wacky or way out suggestions sometimes stimulate the group to think about alternatives it would not have considered otherwise. Don't shut down divergent thinking.

Appoint a recorder and chart ideas publicly. Let people call out ideas as they think of them and ask the group to be responsible for helping the recorder capture everything that gets said. Use participants' exact words; do not rephrase suggestions or question the speaker except to check that the thought has been correctly recorded.

## **STEP THREE: CLARIFY AND CATEGORIZE OR LINK ALTERNATIVES**

As a group ask questions that will make the meaning or intent of an idea clearer and will let members check their own assumptions about certain items with the person who proposed them but **do not allow evaluative commentary**.

Sort and categorize the alternatives. Together, scan the lists for ideas that are closely related or almost the same and belong together in a category. Circle and link ideas but do not cross them out or rephrase them.

Note/name patterns or trends in the solutions proposed.

## **STEP FOUR: EVALUATE THE ALTERNATIVES AGAINST THE PROBLEM-DEFINITION**

Ask: Will these help us to reach xyz? What else do we need to know in order to determine whether this is a likely approach? What are the likely advantages to this approach given what we know about the problem? What are the potential disadvantages?

## **STEP FIVE: AGREE ON ONE OR MORE APPROACHES TO TRY AND MAKE IMPLEMENTATION PLANS**

Establish who will do what, when, how—or a time to make those plans.

## **STEP SIX: DETERMINE HOW/WHEN YOU WILL ASSESS WHETHER THE PROBLEM HAS BEEN SOLVED**

Set criteria for success. Determine what kind of data the group will need to collect—and how they will collect it—in order to determine how well the solution is working. Set a timetable for checking back to see if modifications are needed.



