

# Root Cause Problem Solving Process (adapted from IBM)

# Objectives

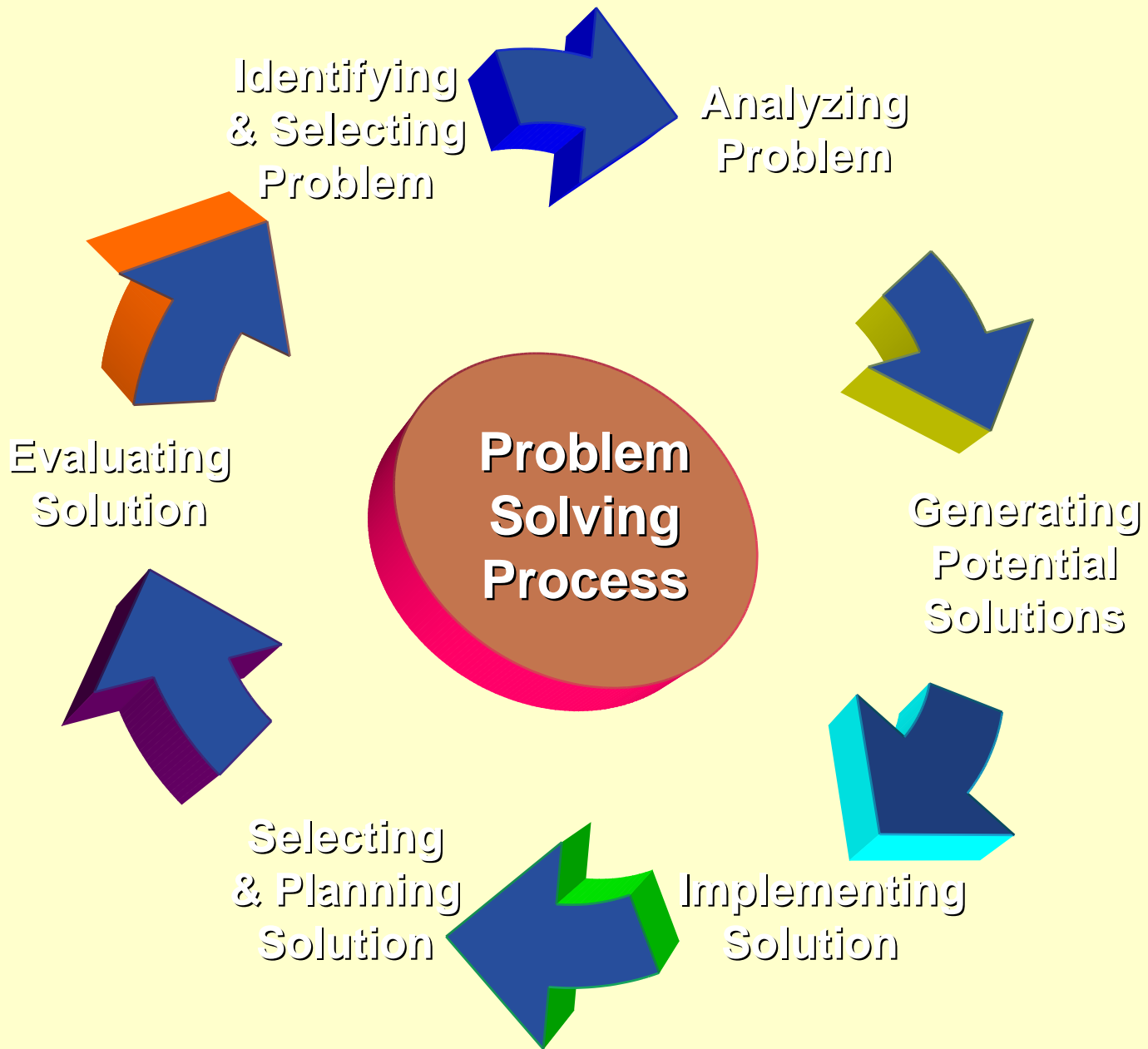
- To learn and use a common process for solving problems and determining root causes
- To learn and use some of the quality management tools such as an affinity diagram and an interrelationship diagram

# Common Problem Solving Pitfalls

- Working on problems that are too general, too large, or not well defined
- Jumping to a solution before really analyzing the problem
- Failing to involve critical decision makers or employees affected by the problem when identifying the potential solutions

# Problem Solving Pitfalls (cont.)

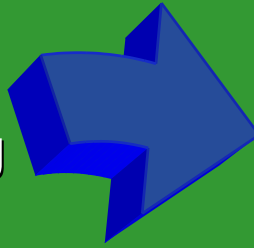
- Tackling problems that are beyond the control or influence of the individual or team
- Applying “Pet” solutions rather than seeking a creative solution
- Failing to develop good reasons for choosing a solution
- Failing to plan adequately how to implement and evaluate the chosen solution



Alignment

SMART  
Goal

Identifying  
& Selecting  
Problem



Analyzing  
Problem

Data  
Analysis



Strategy

Generating  
Potential  
Solutions



Selecting &  
Planning  
Solution

Deployment  
Plan

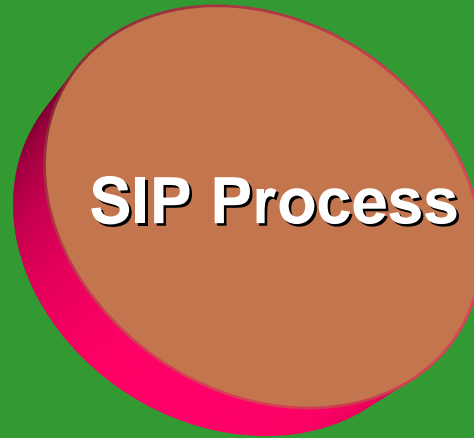


Implementing  
Solution



Quarterly  
Review

Evaluating  
Solution



SIP Process

# Step 1 – Identifying the Problem

- What is the issue or barrier- “broadly defined”?
  - What is the desired state?
  - What is the current state?
  - State the problem using measurements
  - Time-limited: by when will the desired state be achieved?
- The issue is: Our ESL subgroup is not making AYP in Math.
  - The desired state is: make safe harbor by 2011 (10%/yr)
  - The current state is: 40% of our ESL students are proficient.
  - State the problem: To increase the proficiency of our ESL subgroup in Math from the current state of 40% to 70% by 2011 (10% +/each year).

# Test of a Good Problem Statement

- Current state and desired state contain measures
- Time-limited
- No “implied causes”
- “Short and sweet”-no more than 10 or 15 words if possible
- Can pass the “So what?” test- Is the problem worth solving?
- Problem Statement:  
To increase the proficiency of our ESL subgroup in Math from the current state of 40% to 70% by 2011.

# Clarify the Problem

- Use AIM to get beyond the symptoms and better define the problem
- A= Affinity Diagram
- I= Interrelationship Diagram
- M= Matrix

# Affinity Diagram

- Brainstorm the barriers to/causes of your problem statement using post-it notes (one cause per post-it note)
- Brainstorm means no evaluating or combining ideas, only...
- Clarifying questions – did you mean?
- Arrange in groupings...See next slide
- Discuss and name each group/“bucket”

# Affinity Diagram continued

- NO TALKING during next step!
- Arrange post-it notes into groups on table or chart
- What possible causes seem to “go together?”
- Anyone can move post-it notes until everyone satisfied groupings make sense
- Ok if there is a “loner:” single cause by itself

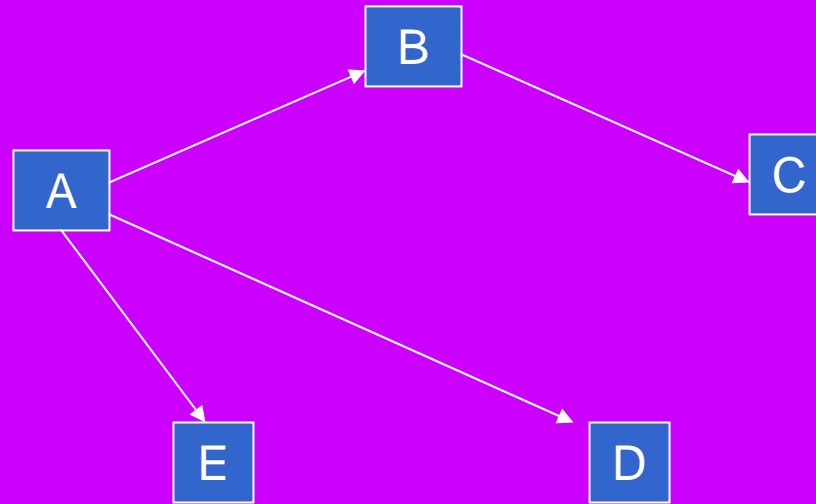
# Affinity Diagram continued

- NOW you can TALK!
- Label each grouping/category with a descriptive TITLE post-it note
- For example, LACK of STUDENT MOTIVATION, INEFFECTIVE INSTRUCTION, TEACHER TURNOVER
- Group can discuss/rearrange post-it notes under each category title
- See next slide for example

# Affinity Diagram

A Low staff exp	B Lack bkgrnd (student)	C Lack skills (student)	D Lack parent support	E Loner Ineffectiv schedule
Poor = dumb	Lack exper	MS failure	No books	N/A
Making excuses	Poverty	Poor elem inst	Won't come to school	N/A
Tracking	ESL	Can't read	Won't return calls	N/A

# Interrelationship Diagram



- Does A cause B ?
- Does A cause C?
- Does A cause D?
- Now repeat for B: Does B cause A? C? D?

# Matrix

HEADER	IN	OUT
“A” bucket	0	4
“B” bucket	1	2
“C” bucket	2	2
“D” bucket	4	0



# Step 2 – To further analyze the Problem

- Collect data on the current state
- Analyze and display data using the statistical tools
- Identify the key causes or barriers to success for this problem

# Key Causes

- The two or three most likely root causes can be viewed as separate problems
- Analyze each likely cause by asking “Why?” several (five or more ) times.
- Key root causes are derived from the repetitive “Why?” analysis

# Key Causes

Example:

Problem: Teachers do not have adequate training to meet needs  
Of ESL students.

Ask “WHY” 5 or more times

Last “WHY” answer: Lack of resources

# Step 3 – Generating Potential Solutions

- Brainstorm potential solutions
- No criticism, judgments, evaluating
- Clarify
- Combine similar ideas
- Check to ensure the solutions address the key causes

# Step 4 – Selecting and Planning the Solution

- Select criteria to judge solutions against
- Determine if any criteria should be weighted more heavily than others
- Use the solution selection worksheet to tally the ratings

# Solution Selection Worksheet

Criteria	A	B	C	D
Control				
Resources				
Time				
Contracts				
Board				
Policy				
Causes				
Total				

# Step 5- Implementing the Solution

- Develop an implementation plan
- Divide the solution into sequential tasks
- Include what, who, when
- Schedule inspection/progress sessions
- Incorporate a contingency plan
- Points to Consider
- What specific opportunities and threats may occur?
- How will we deal with those opportunities and threats?
- What can be done to prevent those potential problems?

# Step 5 Implementing the Solution (cont.)

- Establish an action plan schedule
- Action Step Task/Activity
- Responsible Person/Group
- Begin Date
- End Date
- Estimated Hours
- Cost

# Evaluation Solution

- Analyze data after plan is implemented
- Summarize results achieved
- Calculate savings
- Review for opportunities for further improvement
- -Repeat six-step process to address additional problems as needed
- -Has the “desired state” been accomplished?