



Technical Thought Process

Techno Functional Soft Skills

What you will learn

At the core of the lesson

You will learn how to do the following:

- Identify the different phases in a problem-solving process.
- Use multiple tools to support the thought process that is used in problem solving.
- Practice problem-solving skills in a group assignment.

Key terms

- Problem-solving model
- Brainstorm
- Whiteboarding
- Flowcharts
- Fishbone chart



Solving problems as a process

Problem-solving model

- The process of solving a problem typically includes the following steps:
 1. Define the problem.
 2. Brainstorm solutions.
 3. Choose a solution.
 4. Implement the solution.
 5. Review the result.
- Would you add any steps?

The problem-solving model describes the successive process steps for solving problems.

Helpful tools

Tools to support the problem-solving thought process

- Brainstorming
- Whiteboarding
- Using flowcharts
- Using fishbone charts

- Brainstorming – A method to come up with multiple ideas and solutions around a central theme or question
- Whiteboarding – A method that is used in meetings to visualize ideas and create solutions or as an alternative way to conduct meetings
- Flowchart – A graphical representation of the steps in a process
- Fishbone chart – A cause-and-effect diagram that is used to analyze the relationship between an event (or problem) and the reason why it happened

Helpful tools: Brainstorming

What is brainstorming?

Brainstorming is a way to generate ideas within your group. Brainstorming is an effective method for generating multiple ideas and solutions.

How does it work?

- Choose a question or topic with your group.
- Gather around a table.
- Aim for a specific number of ideas.
- Team members take turns to express an idea or solution.
- Team members don't interrupt each other or discuss each other's input.

Helpful tools: Whiteboarding

What is whiteboarding?

Whiteboarding is used in meetings to visualize ideas and create solutions. It can also be used as an alternative way to conduct meetings.

How does it work?

- Members of the group draw images and text on an erasable board, or they can place files on the shared screen of a computer. Several people can add, adjust, or remove items at the same time.
- The following are the benefits of whiteboarding:
 - Increases participant engagement
 - Sparks creative thinking
 - Increases collaboration within a group

Helpful tools: Flowcharts

What is a flowchart?

A **flowchart** is a graphical representation of the steps in a process. It can also be described as a diagram that represents a step-by-step approach for solving a problem.

What does it do?

- Flowcharts help teams to identify different steps or elements in a process or workflow.
- They also help teams analyze the process and understand the relationship between the different steps in it.
- Problem-solving flowcharts or decision trees are used to demonstrate what to do when you encounter a specific (recurring) problem.

Helpful tools: Fishbone chart

What is a fishbone chart?

A **fishbone chart** is a cause-and-effect diagram that is used to analyze the relationship between an event (or problem) and the reason why it happened.

What does it do?

- Problems might have more than one cause. The fishbone chart can help visualize different potential causes.
- It can also help identify the root cause of a stated problem.

Problem solving: Group activity 1 (1 of 2)

The Hanoi tower

- Group activity
- Time: 60 minutes
- Activity
 - Solve the puzzle with your group.
 - The objective of the puzzle is to move the entire stack to another rod by following these rules:
 1. Only one disk can be moved at a time.
 2. Each move consists of taking the upper disk from one of the stacks and placing it either on top of another stack or on an empty rod.
 3. No larger disk can be placed on top of a smaller disk.



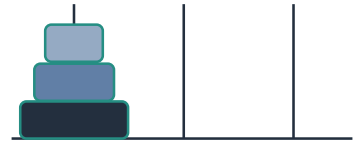
The Hanoi tower

Problem solving: Group activity 1 (2 of 2)

The Hanoi tower

Evaluation

- When your group is finished, search online for the correct solution.
- Check your group's results against the solution.



The Hanoi tower

Problem solving: Group activity 2 (1 of 2)

Scenario and problem

Scenario

You are responsible for a fleet of Linux machines, and you must access the log files for each machine. Unfortunately, you are not responsible for setting up the machines, and the log configuration on the Linux machines can't be tampered with.

Problem

You can't change the Linux setup, but you still must transfer the log files of any Linux machine to your own server.

How would you solve this issue?

Form groups of five participants for this activity.

Problem solving: Group activity 2 (2 of 2)

Instructions

- Group activity
- Time: 60 minutes
- Activity
 - Describe the exact problem.
 - Create a list of possibilities.
 - Filter out the best solution.
 - Implement the solution on paper.
- Evaluation
 - Each group will present their solution to the class.



Thank you



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Thank you for completing this module.