Bonus Activity (online only)

Applying The Problem Solving Methodology

Learning skills: *interpreting, translating and making connections*

Why

The Problem Solving Methodology is a tool to help you improve your proficiency at the process of problem solving. Without a methodology, most people are more easily lost and ineffective when it comes to solving difficult problems. Having a common methodology to use in problem solving contexts increases your confidence and the quality of solutions and decisions you make.

Learning Objectives

1. Gain a better understanding of the Problem Solving Methodology and how it can be used to develop proficiency with the process of problem solving.
2. Learn to apply the Problem Solving Methodology by applying it to an actual example.

Performance Criteria

Criterion #1: your team's application of the Problem Solving Methodology

Attributes:

a. complete fully each step of the Methodology
b. validation of solution is correct

Criterion #2: the insights about the Problem Solving Methodology

Attributes:

a. articulate, in summary, two good insights about the process
b. able to generalize from solution

Plan

1. Read about the Problem Solving Methodology in Chapter Five of *Foundations of Learning*.
2. Review the case study in Activity 5.1.
3. Form teams of four or five people.
4. Follow the steps in the Methodology to come to a solution.
5. Document three discoveries or insights about problem solving your team makes during the activity.

Case Study

Scenario: You have just gotten your dream job. As a team, you get to decide where it is, but it should be in an urban area. You need to decide whether to find housing within walking/biking distance to work or out of town, where the rents/taxes are cheaper, but the commuting costs are much higher.

Define the Problem: State the problem or question as precisely as you can. Ask yourself why is this a problem? Be sure you write a problem statement and not a potential solution.

Identify Key Issues: What are the issues that must be addressed by your solution?

Collect Data and Information: What information is required to solve the problem? What information is available?

Identify Assumptions: What assumptions are you making that will help to establish the scope of the problem and influence your ability to successfully solve your problem?

Break the Problem Apart: Separate the problem into smaller sub-problems if necessary.

Model the Subproblems: Identify a series of analytical, math-based steps required to quantifiably describe your situation. Assumption(s) should be built into the model. How will this information be used to identify possible solutions? Have you changed any assumptions to explore what-if scenarios?

Integrate Solutions: Put together the solutions from the sub-problems to solve the larger problem.

Test and Validate: Does your solution make sense? Think of ways to validate it using a different method than you used to solve it.

Generalization: A solution is much more valuable if it solves more than one unique problem See if you can think of a group of problems that your solution may apply to.

Communication: A poorly-communicated solution may be ignored. Communicate your solution in a way that makes it irresistible to your audience.

Critical Thinking Questions

1. What step in this process was the most difficult? Why?

2. Were this steps in this process that you found less useful than others? Explain.

3. Provide three insights you have about the Problem Solving Methodology after completing this activity.

4. Evaluate your team's work on this activity. How could your team have worked more effectively?