Name: Polya's Problem-Solving Principles

Short Description: Polya's Problem-Solving Principles offer a four-step framework for solving problems effectively. The steps are: understanding the problem, devising a plan, carrying out the plan, and looking back (reflecting).

Full Description: Polya's Problem-Solving Principles, introduced by mathematician George Polya in his book "How to Solve It," provide a structured approach to problem-solving that can be applied to a wide range of disciplines. This framework emphasizes a systematic process to tackle problems, moving beyond simply finding an answer to developing a deeper understanding of the problem-solving process itself. The principles encourage careful analysis, strategic planning, diligent execution, and thoughtful reflection to improve both the solution and the solver's skills.

Application Area: Polya's Problem-Solving Principles are applicable in any domain where problem-solving is required, including:

- Mathematics
- Computer Science
- Engineering
- Physics
- Economics
- Everyday decision-making

Step-by-Step Guide How to Apply:

1. **Understand the Problem:**
   - Clearly identify what the problem is asking.
   - Define the knowns and unknowns.
   - Restate the problem in your own words.
   - Consider any diagrams or visual aids that might be helpful.

2. **Devise a Plan:**
   - Explore possible strategies or approaches.
   - Consider similar problems that have been solved before.
   - Break the problem down into smaller, more manageable parts.
   - Some strategies include:
     - Looking for a pattern
     - Working backward
     - Guessing and checking

- Using a formula

- Drawing a diagram

3. **Carry Out the Plan:**

   o Implement the chosen strategy carefully and systematically.

   o Persist with the plan, but be willing to change direction if it's not working.

   o Keep accurate records of your work.

4. **Look Back (Reflect):**

   o Check the solution to ensure it answers the problem.

   o Verify the solution using a different method if possible.

   o Evaluate the effectiveness of the strategy used.

   o Consider how the strategy could be applied to other problems.

   o Identify any lessons learned from the problem-solving process.

Link: https://www.opepp.org/lesson/hsdm-unit7-tool-for-field/