How to solve a problem

(Effectively)!!!

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Problem solving is a skill that all of us must utilize daily.

Let’s say you’ve been tasked with solving a particularly hard problem on your homework, or your job requires you to work through tough issues on the spot.

Whatever the case may be, these steps will help you tackle any problem that you might encounter with the maximum amount of efficiency.

1.

Identifying the problem

Identifying the problem

- Though it may seem obvious, the first step in the problem solving process consists of isolating and defining the issue at hand.
- Not all problems can be concretely defined, so this step might require a bit of flexibility and creativity in some cases.

This can look like.....

"I need to use the skills that I've learned so far in math class to find the X value in this word problem."

"Customers at my job are getting frustrated with the long checkout lines, so I must find a way to make the checkout process more efficient."

"I keep getting distracted while I try to complete my work, so I need to establish a system that will help me stay focused."

2.

Choosing & developing a strategy

Choosing and developing a strategy

- So you've defined your problem at hand. Now you find yourself asking the question: "How do I go about solving this problem?"
- You need to work on developing an organized method that will aid you in discovering a solution to your problem.

Some common helpful strategies include.....

- SUBGOALS
- ALGORITHMS
- HEURISTICS

SUBGOALS

- The process of utilizing subgoals involves breaking the discovery of your solution down into smaller, more manageable parts.

Utilizing subgoals might look like.....

"I need to discover the type of chemical that I was randomly assigned in my biology lab.

First, on Monday, I will research the types of properties and reactions that different chemicals may display.

From Tuesday to Friday, I will perform different tests/observations on my chemical and record the results.

Finally, on Saturday, I will compare my chemical's results from each test to those of each possible solution. By the next Monday, I will have discovered the solution to my problem through the use of subgoals throughout the week."

Algorithms

- Algorithms are a specific type of strategy that were built to yield a definite solution to a problem.

Utilizing algorithms might look like.....

"I need to find the area of this triangular prism. In my algebra class we were taught a formula that gives us the area of shapes like this when certain information is plugged in to the equation. By plugging the information I've been given into this formula, I can trust that I will receive a solution due to my use of algorithms."

"My mother wants me to prepare a cake for her birthday, but I have no experience in baking. I found a recipe for birthday cake online, and by following each step precisely, I am utilizing an algorithm that will definitely produce a desired result."

Heuristics

- Heuristics are similar to algorithms, but they are more like shortcuts to a problem's solution.

- Unlike algorithms, heuristics do not promise a precise solution to a problem at hand. They "narrow down" a path to an answer.

- Heuristics are also used more frequently than algorithms.

Utilizing heuristics might look like.....

"I need to find a moisturizer that will not cause irritation to my skin. Through trial and error, I will test out different brands on my skin until I find one that produces the desired result."

"On a particular essay, one of my professors did not specify how they wanted our sources to be cited. Normally, the professor prefers our class to use MLA citations for assignments. Through the use of an educated guess, I can assume that the professor wants us to use MLA formatted citations in this essay."

3.

Evaluating the solution

Evaluating the solution

- Now that you've discovered a solution for your problem by laying out a specific strategy, you must <u>assess the effectiveness of the solution you've landed on</u>
- In order to clearly asses the response, it is helpful to establish the guidelines by which you'll be evaluating your solution. (ex: Did I get the math problem correct? Did the professor give me credit for my citations?)

This can look like.....

"I used the area formula that was given in my algebra class on my homework, and I got all of the problems correct."

"When I called my coworker to the registers for backup, the checkout lines began to move faster and customers became less frustrated."

"The professor did not accept the MLA citations that I included in the essay."

4.

Keep adapting: reassessing your problems & solutions over time

Reassessing your problems and solutions over time

- Good problem solvers are always on the lookout for new ways to improve the lives of themselves and those around them.
- Trying out different strategies can lead to the discovery of more effective solutions for the problems at hand.
- If a solution to a problem does not give you the results you want, it's important to keep employing the use of different tactics and evaluations.

This might look like.....

"I've been using trial and error when solving this type of math problem, but I never receive credit for my answers. I might need to look for a new way to solve these problems."

"My current method to keep myself focused while reading textbooks has been becoming less effective lately. I should discover a new way to study by utilizing a fresh strategy."

Sources

- King, Laura A. *The Science of Psychology: An Appreciative View*. McGraw-Hill Education, 2020.
- Presentation template by SlidesCarnival