

Cognitive psychology

Assignment on:

Problem Solving

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Problem Solving:

In cognitive psychology the term *problem-solving* refers to the mental process that people go through to discover, analyze, and solve problems. This involves all of the steps in the problem process, including the discovery of the problem, the decision to tackle the issue, understanding the problem, researching the available options and taking actions to achieve your goals. Before problem-solving can occur, it is important to first understand the exact nature of the problem itself. If your understanding of the issue is faulty, your attempts to resolve it will also be incorrect or flawed.

Mental Processes at Work During Problem-Solving:

There are a number of mental processes at work during problem-solving. These include:

- Perceptually recognizing a problem
- Representing the problem in memory
- Considering relevant information that applies to the current problem
- Identify different aspects of the problem
- Labeling and describing the problem

Problem-Solving Strategies:

- Algorithms:

An algorithm is a step-by-step procedure that will always produce a correct solution. A mathematical formula is a good example of a problem-solving algorithm. While an algorithm guarantees an accurate answer, it is not always the best approach to problem-solving. This strategy is not practical for many situations because it can be so time-consuming. For example, if you were trying to figure out all of the possible number combinations to a lock using an algorithm, it would take a very long time!

- Heuristics:

A heuristic is a mental rule-of-thumb strategy that may or may not work in certain situations. Unlike algorithms, heuristics do not always guarantee a correct solution. However, using this problem-solving strategy does allow people to simplify complex problems and reduce the total number of possible solutions to a more manageable set.

- Trial and Error:

A trial-and-error approach to problem-solving involves trying a number of different solutions and ruling out those that do not work. This approach can be a good option if you have a very limited number of options available. If there are many different choices, you are better off narrowing down the possible options using another problem-solving technique before attempting trial-and-error.

- Insight:

In some cases, the solution to a problem can appear as a sudden insight. According to researchers, insight can occur because you realize that the problem is actually similar to something that you have dealt with in the past, but in most cases, the underlying mental processes that lead to insight happen outside of awareness.

Obstacles in Problem-Solving:

Of course, problem-solving is not a flawless process. There are a number of different obstacles that can interfere with our ability to solve a problem quickly and efficiently. Researchers have described a number of these mental obstacles, which include functional fixedness, irrelevant information, and assumptions.

- Functional Fixedness:

This term refers to the tendency to view problems only in their customary manner. Functional fixedness prevents people from fully seeing all of the different options that might be available to find a solution.

- Irrelevant or Misleading Information:

When you are trying to solve a problem, it is important to distinguish between information that is relevant to the issue and irrelevant data that can lead to faulty solutions. When a problem is very complex, the easier it becomes to focus on misleading or irrelevant information.

- Assumptions:

- When dealing with a problem, people often make assumptions about the constraints and obstacles that prevent certain solutions.

- Mental Set:

Another common problem-solving obstacle is known as a mental set, which is the tendency people have to only use solutions that have worked in the past rather than looking for alternative ideas. A mental set can often work as a heuristic, making it a useful problem-solving tool. However, mental sets can also lead to inflexibility, making it more difficult to find effective

solutions.

Here are seven-steps for an effective problem-solving process.

- Identify the issues. Be clear about what the problem is.
- Understand everyone's interests.
- List the possible solutions (options) .
- Evaluate the options.
- Select an option or options.
- Document the agreement(s).
- Agree on contingencies, monitoring, and evaluation.



1. Identifying the Problem:

Identifying the problem seems like the obvious first stem,

but it's not exactly as simple as it sounds. People might identify the wrong source of a problem, which will render the steps thus carried on useless.

For instance, let's say you're having trouble with your studies. identifying the root of your failure is your first priority. The problem here could be that you haven't been allocating enough time for your studies, or you haven't tried the right techniques. But, if you make an assumption that the problem here is the subject being too hard, you won't be able to solve the problem.

2 .Defining/Understanding the Problem:



It's vital to properly define the problem once it's been identified. Only by defining the problem, further steps

can be taken to solve it. While at it, you also need to take into consideration different perspectives to understand any problem; this will also help you look for solutions with different perspectives.

Now, following up with the previous example. Let's say you have identified the problem as not being able to allocate enough time for your studies. You need to sort out the reason behind it. Have you just been procrastinating? Have you been too busy with work? You need to understand the whole problem and reasons behind it, which is the second step in problem solving.

3. Forming a Strategy:

Developing a strategy is the next step to finding a solution. Each different situation will require formulating different strategies, also depending on individual's unique preferences.

Now, you have identified and studied your problem. You can't just simply jump into trying to solve it. You can't just quit work and start studying. You need to draw up a strategy to manage your time properly. Allocate less time for not-so-important works, and add them to your study time. Your strategy should be well thought, so that in theory at least, you are able to manage enough time to study properly and not fail in the exams.

4. Organizing Information:

Organizing the available information is another crucial step to the process. You need to consider

- What do you know about the problem?
- What do you not know about the problem?

Accuracy of the solution for your problem will depend on the amount of information available.

The hypothetical strategy you formulate isn't the all of it either. You need to now contemplate on the information available on the subject matter. Use the aforementioned questions to find out more about the problem. Proper organization of the information will force you to revise your strategy and refine it for best results.

5. Allocating Resources:

Time, money and other resources aren't unlimited. Deciding how high the priority is to solve your problem will help you determine the resources you'll be using in your course to find the solution. If the problem is important, you can allocate more resources to solving it. However, if the problem isn't as important, it's not worth the time and money you might spend on it if not for proper planning.

For instance, let's consider a different scenario where your business deal is stuck, but it's few thousand miles

away. Now, you need to analyze the problem and the resources you can afford to expend to solve the particular problem. If the deal isn't really in your favor, you could just try solving it over the phone, however, more important deals might require you to fly to the location in order to solve the issue.

6. Monitoring Progress:

You need to document your progress as you are finding a solution. Don't rely on your memory, no matter how good your memory is. Effective problem-solvers have been known to monitor their progress regularly. And, if they're not making as much progress as they're supposed to, they will reevaluate their approach or look for new strategies.

Problem solving isn't an overnight feat. You can't just have a body like that of Brad Pitt after a single session in the gym. It takes time and patience. Likewise, you need to work towards solving any problem every day until you finally achieve the results. Looking back at the previous example, if everything's according to plan, you will be allocating more and more time for your studies until finally you are confident that you're improving. One way to make sure that you're on a right path to solving a problem is by keeping track of the progress. To solve the problem illustrated in the first

example, you can take self-tests every week or two and track your progress.

7. Evaluating the Results:

Your job still isn't done even if you've reached a solution. You need to evaluate the solution to find out if it's the best possible solution to the problem. The evaluation might be immediate or might take a while. For instance, answer to a math problem can be checked then and there, however solution to your yearly tax issue might not be possible to be evaluated right there.

References

Cherry, K. (2019). *Everything psychology book*.

Shrestha, P. (2017). Psychological steps involved in problem solving. *Psychestudy*, 55-60.