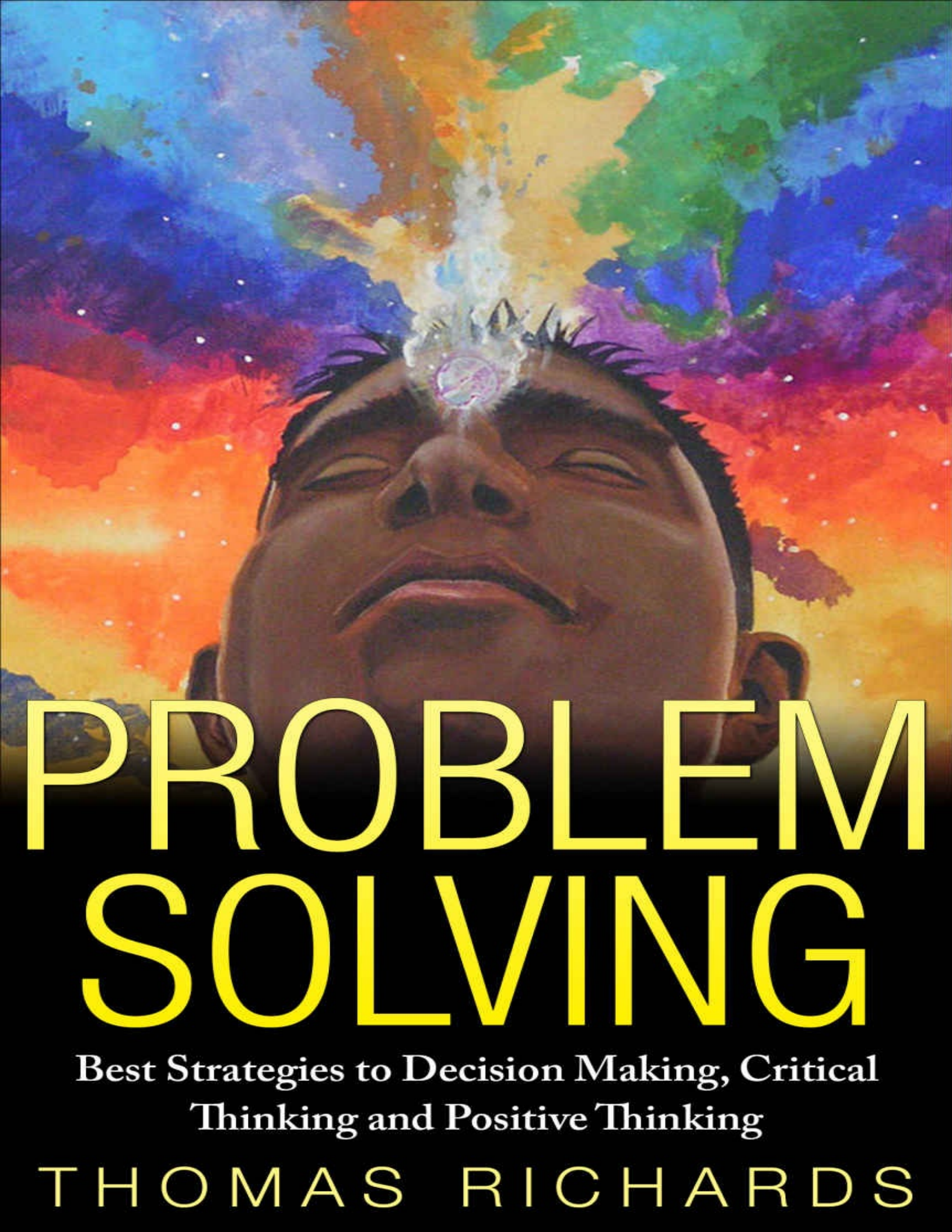

PROBLEM SOLVING

Best Strategies to Decision Making, Critical Thinking and Positive Thinking

THOMAS RICHARDS

Problem-Solving:

Proven Strategies to Mastering Critical Thinking, Problem Solving, and Decision Making

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Introduction

Thank you for downloading the book, Problem-Solving: *Proven Strategies to Mastering Critical Thinking, Problem Solving, and Decision Making.*

In this day and age of cut throat competition, everybody is either trying to out-think or out-do each other. Each and every aspect of life has now taken on a very different dynamic and everything ultimately leads to just being a “contest.”

While running the race to win the coveted first prize, people try to apply as much of their brain force as possible, in order to arrive at conclusive and advantageous decisions.

If you are one of those who is finding it tough to match the footsteps of such lateral and “out of the box” thinkers, then you have come to the right place.

This eBook will be dedicated to the cause of understanding the concept of critical thinking, analyzing its various aspects and looking at the different ways in which you can implement it to derive all its benefits. It will also provide you with detailed information on problem solving – the problems that we face and also the procedure to use. There are examples that have been stated across the book that will help you understand the situations better. You will find that problem solving, critical thinking and decision making go hand in hand. It is only through critical thinking and decision making that we will be able to identify a solution to any problem. These problems could be small or very big. But the process of problem solving is fool proof and helps you identify solutions with ease.

The chapters cover the different strategies that you could use to solve a problem. There is also a detailed explanation on the problem solving cycle. This process is usually used while working towards overcoming a problem.

Problem solving and critical thinking are usually directed towards managers and supervisors in a company. However this is not true! Every human being faces problems in life. This process can be used to deal with those problems as well.

The book will also look at your problem-solving skills and provide you with tips to increase your brain power and utilize common sense solutions to solving problems at an elevated rate.

This eBook will also help you improve your decision making capacity, and allow you to make full use of your potential, in understanding how the human brain works and how you can successfully improve your life by making the best use of your mind power.

By the time you have finished reading this book, you will start to realize how much more potential you have and be able to start to lay the groundwork for implementing critical thinking in your life.

I want to thank you for downloading this eBook and hope it helps you improve your problem solving and critical thinking skills.

Let us begin.

Chapter 1: Problem Solving

Problem solving is a term that every human being might have come across on multiple occasions. Everybody states that a manager or a supervisor has to be a master at problem solving. But this is not true! Every human being faces multiple problems in life that he must try to solve. For instance a housewife has to plan the expenditure for her house carefully. If she finds that she is running short of finances, she must work backwards and see how she can overcome the problem while purchasing the same amount of products for her house.

The process of problem solving is not relevant only to human beings. It could be related to most living beings. It was found that there are cats living in the arctic region. Its climate is terribly cold and there is barely any life in the region. There are cats in the region though! Surprising is it not? These cats are lean because their body burns the fat to keep it warm. It cannot last forever without food. There are rabbits in the arctic too. These rabbits are food for the cats. The cat cannot chase the rabbit all over the region. It cannot lose all of its energy in chasing a rabbit that it might not catch. The cat actually analyzes the situation and checks on whether or not it should chase the rabbit. It takes into consideration the distance between the rabbit and itself. If it feels that it can chase the rabbit and catch it, it goes on its hunt.

This is a classic example of problem solving. The problem at hand here is whether or not the cat must hunt for the rabbit. The cat uses the basics of physics in order to obtain a solution. The answer is very simple – yes or no. It is the method through which the answer is obtained that is problem solving!

This method generally consists of using ad hoc methods to identify solutions to problems of any magnitude. These methods though ad hoc are used in an orderly

fashion in order to obtain next to perfect results. A lot of these techniques are used in computer science, engineering and mathematics. These techniques have been developed through the techniques studied and used in psychology.

What is problem solving?

Problem solving is that term that has found its place in most fields. However, each of these fields has a different perspective on what problem solving exactly is. For example, in psychology problem solving would be defined as finding a solution to any mental issues or processes where as in statistics it would be defined as a method to obtaining a solution for a certain issue on how many fish are there in a lake.

One must remember that the problems can also be categorized. These categories would be well defined problems and ill – defined problems. Ill – defined problems, as the name suggests are problems that do not have a clear cut goal. It makes it difficult to come up with solutions to such problems. You might not be able to identify an expected solution. Well defined problems on the other hand are those problems to which solutions can be found easily. These problems have well defined goals which make it easier to estimate the magnitude of the problem and also identify feasible solutions to the same. We might also be able to plan in advance if we identify such a problem.

When you are faced with a problem in any field, or even in your life, you might either try to solve the problem through logic or by trying to interpret the problem. No matter which method you use, you have to first understand the goal of the problem and also try to identify the different routes you can take to solve the problem. This is the key to problem solving! You might sometimes have to resort to abstract thinking and try coming up with a creative solution.

For instance, consider that you teach a bunch of 10 year olds English. You have to cover the different parts of speech in an hour’s time. You know that the children that you teach have a low attention span. Your problem here is to grab the attention of the kids for an hour in order to help them understand the parts of speech. You could either go about teaching them in the regular manner by using the text or you can make it fun for them! This is a problem where you would use abstract thinking in order to find a creative solution. You know that your children love games. So you can come up with a brilliant game that they will enjoy. But ensure that this game also teaches them the parts of speech!

The Evolutionary perspective of Problem Solving

Everybody knows that the theory of evolution was stated by Charles Darwin. What we do not know is that this theory was developed to understand why there were so many categories of species that are found. It is also a very important theory in psychology since it explains how different species were created for a certain purpose. These purposes were often the goals that the species had to achieve. Psychology uses these goals since it helps in trying to explain and to predict the behavior of these species.

There are several components that are involved in evolution. The one that is most common is *natural selection*. Natural selection is a process where a design is chosen from a bunch of alternative designs depending on how it helps them reach closer to their goal. It is because of this component that everybody has to adapt to different situations. This is a major component in problem solving. The later chapters cover the use of alternate solutions (designs) to help a person achieve the goal – which is to solve the problem at hand. If the person finds that the adaptation was useful, it is passed on to the next generation. When compared to problem solving, the adaptations are the solutions which are passed down depending on whether or not they have worked well.

Another main component is the method of sexual selection. This process has the characteristic that individuals rival against people of the same sex and find themselves attracted immensely to individuals of the opposite sex. The concept of rivalry comes very often in problem solving. People might find it difficult to avoid blaming one another when under pressure. However, this problem can be overcome as well.

As mentioned above, every field uses problem solving and each field has a different perspective on how problem solving works for them. This section covers a few definitions of problem solving in four most common fields.

Psychology

Problem solving is used in psychology to try and obtain solutions to problems dealing with mental health. It refers to the state where you desire to reach a goal for a present condition that is close to the problem itself or near it or relatively far off from the goal. You might use complex logic to understand the condition and fill in the gaps if any in order to move closer to achieving the goal. However, problem solving is part of a big whole. You will first need to find and understand the problem and then try to give the problem a clear shape. Only then do you move into problem solving.

Problem solving is considered to be the most complicated function to the intellect. It is a process that requires the control over our cognitive minds and also over our fundamental skills. In this field, problem solving has two main categories – mathematical problem solving and personal problem solving. It is the latter that is harder to overcome. Although the most common method of problem solving that was used since the ancient times was mathematical problem solving, many psychologists have found evidences to believe otherwise. They believed that human beings use self – introspection, behaviorism and experimentation to find solutions to psychological problems.

For instance, if a person is depressed, he could use either self – introspection or experimentation to identify a solution to the problem. His goal is to overcome his feeling of depression. Once he has identified his goal he can self – introspect and try identifying the root cause of the goal and identify a solution for the same. However, if he does choose to use experimentation, he would have to conduct different social experiments on himself to identify the cause of the problem leading him to uncovering the solution to the problem too.

Computer Science and Algorithms

Every software company that develops new software has to troubleshoot and solve problems that the new software might have. In the field of computer science and artificial intelligence where algorithms are the methods through which the programs are designed, problem solving is a hero! However, it is not the only process that people working in these fields have to do. They have to first determine the problem that they face, then remove any duplication in the problem, analyze and then solve the problem.

For instance if the programmers or developers find that there is a bug in the coding of a new app, they will have to first identify the line at which the error occurs. Once they find the error they will have to check if the error has occurred anywhere else in the code. After identifying this they can work on solving the issue that is at hand. It could be that the programmer did not have enough knowledge and made the error. If that is the case, the supervisor or manager can work on improving the programmer’s knowledge or can assign the coding to another programmer.

Engineering

Problem solving in engineering is used to overcome product or process failures. It is usually done to rectify the problem and also to ensure that the problem does not occur again.

Problem solving can also be used to estimate a problem that might occur due to a process or a product and find a solution to prevent it. For this you will have to identify the problem and also analyze it before you move onto solving it or mitigating the problem. Sometimes you might have to work backwards to identify the cause of the problem. It could be a minor defect in the beginning of the process or at the beginning of the manufacturing of a product. You use reverse engineering to solve the problem. Other methods used are linear and nonlinear programming and simulation.

Characteristics of Difficult Problems

Difficult problems are those that are ill – defined. They have some characteristics that are typical. The following section focuses on those problems.

Lack of clarity

At times you might not know what the situation is. You might troubleshoot and realize that the problem at hand is not the one you had to work on. At times you might begin problem solving and might have reached a certain stage after which you might not know where to go. The goal to the problem is not explicitly defined making it difficult to identify a solution.

Multiple goals

There may be situations where there are multiple goals that you might have to reach. For instance consider a company that manufactures soap. There might be a problem where the different departments – production, sales and marketing, accounting – might have different goals. The production department might want to know what the problem with the quality of the *soap* is. The sales and marketing department might want details on how better to improve their advertisement in order to bring in more profits. This might create a problem since each department might want their problem solved first creating opposition.

Multiple items, decisions and relations

Based on the example above, every department in a company has different goals. These goals could either coincide or might be as different as night and day. It is when they differ that problems arise. There might be issues where there is no proper communication between the departments leading to problems with allocation.

Time

When considering a problem, we must estimate the time for which the problem might persist. If this is not done there is unpredictability and we will not be able to find a solution to the problem. There might be different effects on the problem due to external factors while trying to solve the problem. This may happen immediately or sometime later in the future. In order to avoid drastic effects of these factors on our problem, we must identify the dynamic state of the problem and also try to analyze the different factors that affect the problem. In this way we can avoid the effects of these factors on the problem, or prevent them from causing any drastic effects.

When you identify a problem first check if it has the characteristics stated above. If it does, then you will have to follow a different path in order to obtain the solution. Usually, you will directly have to attack these characteristics.

Representations of a Problem in the mind

In the recent years, psychological research has boomed tremendously. This boom has helped us distinguish between the external and internal representations of any event that might happen in our lives. The first kind of representation is linked to our emotions and memory. It is based on the knowledge that we have and the structure of our memory. The latter is based on our knowledge of the external factors like the environment – physical objects. It has also been found that the information that is a part of the internal representations is usually brought out through cognitive processes.

Problems are defined as models that represent the situation that the agent is experiencing. In order to represent a problem, you will have to analyze it and break it down into several smaller components to make it easy. These components are:

1. Objects
2. Predicates
3. State of mind and body
4. The environment
5. The operators – the causes of the problem
6. How do we select the problem and the causes

The efficiency of Problem Solving is dependent on how your mind represents any problem that you face. This representation is usually hindered by personal experiences and beliefs. When you analyze the problem and change the representation of the problem from one to another, you will find that you are creating a space that helps you understand the problem in a new light. This is called restructuring. Look at the example below to have a clear understanding about restructuring.

‘*There are two boys of different ages. They are playing badminton. The older boy is a trained badminton player making him more skilled. Whenever the two of them play a match, it is easy to predict who the winner might be. The younger boy is defeated continuously and starts to lose interest in the game. Now the older boy has a problem! He has nobody to play the game with. There are four ways in which you can solve this problem:*

1. *The older boy can be nice to younger boy by letting him win at least one game*

2. *The younger boy can agree to play another game*

3. *The boys could stop playing*

4. *The older boy can shame the younger boy into playing another game*

However the older boy does not necessarily have to select the solutions stated above. Instead of playing a game of competition he can agree to play a game of cooperation. He can tell the younger boy that he will help him master the game like he did. They could begin with simple shots. Once they realize that the younger boy is not dropping any of the easy shots they can move to the harder shots. That way the older boy is helping the younger boy learn the game better

and he has found a solution to his problem as well. Since this benefits both the younger and the older boy, it is accepted happily.'

The important thing to notice in the above example is that the older boy restructured the problem that he was facing. He understood that he had adopted a wrong attitude in the beginning which made it hard for the younger boy to keep playing. This is how representations work in the mind. We try to analyze the problem deeply and see if there is any other way to represent the problem. You might surprise yourself when you realize that the problem that you are facing has a very simple solution. However, new representations can make problems difficult or easy depending on the magnitude of the problem.

Barriers to Problem Solving

Problems are barriers themselves. But there are barriers that we might face when we are trying to find solutions to problems. The most common barriers that people usually face are irrelevant information, bias towards confirmation, baseless constraints, mindset and fixedness to one method of solving problems. The following section covers these constraints in detail.

Irrelevant Information

As the name suggests, problems might sometimes have information that is neither relevant to the problem at hand nor of any importance to the person solving the problem. This kind of information serves no purpose in trying to solve a problem. It has a detrimental effect on the problem solving process. This barrier is dangerous in its own way. While problem solving, you might not know that the information provided is in fact not of importance. You might spend days trying to analyze the information only to find that it has slowed you done and has not brought you closer to the solution.

Consider a simple arithmetic problem. Let us say that you have been asked to calculate the area of a room. You have been given the number of chairs in the room, the number of people occupying those chairs, the color of the walls, the quality of wood used for the door, the number of windows in the room and the number of fans in the room. Most of this information is irrelevant. You could probably use the number of chairs in the room to help you get an idea of the perimeter of the room. But apart from that you cannot use the information that is provided. Sometimes you might not even realize that this information is useless

to you. You might become solving the problem when you realize that it was a waste of time. This is in fact a very simple example.

Consider a problem that is faced while developing software or after having developed the software. The company might have spent a billion dollars on the project. Assume that there is an error in the algorithm of the software. You might have to use reverse engineering to identify and rectify the error. If the information that is provided to you does not have the line in the algorithm where the error occurs but information that is worthless to you, you might be spending another billion dollars in order to rectify the problem.

Irrelevant information is a red herring. This is because of how the information is represented. A problem has to be represented properly if we are to find a solution to it. It could be represented visually, verbally, mathematically, statistically or even as a book. But if there is irrelevant information provided, it might take you a very long time to solve a simple problem. Sometimes you might not be able to find a solution to the problem itself. Consider the Buddhist monk example. This is a brilliant example on how irrelevant information deters you from finding a solution and also shows you how the irrelevant information is provided.

‘A Buddhist monk begins at dawn one day. He walks up a mountain and reaches the summit at sunset. He meditates at the summit for several days until one day at dawn he begins to walk down the mountain. Making no assumptions about his starting or stopping points, or about his speed of walking, prove that there is a place on the path that he occupies at the same time during the day on the journey up and down the mountain.’

This problem is one that is next to impossible to solve. This is because of how the information has been represented. Since it is done verbally, we try to associate an image to every word that has been stated in the problem. This is very difficult to do since there is a lot of information that is irrelevant to the problem. It is easier to understand this problem had it been represented visually. That way there would be no difficulty in trying to understand the problem or to imagine the scenarios. Had it been represented visually, it would have been easier to solve the problem.

If you identify the perfect way to represent a problem, you will see that it is easier to solve the problem no matter how difficult. Such problems are often used to test potential clients. It is a strategy where the client is tested on his ability to remove irrelevant information. You will have to master the act of identifying irrelevant information. Only then you will be able to identify a solution to the problem.

Bias towards Confirmation

There is a fundamental clause that a statistician has to follow. When a statistical survey is conducted, he must try to obtain all the information for his hypothesis from the sample without favoring any observation in the sample. He must observe impartially and use the information that he obtains in order to find the solution to the problem. It has been proved that any person following the above theory obtains solutions with ease. These solutions are accurate and can be used immediately to solve any problem. This method is not limited only to statisticians. Every person in their respective field can use this. It can also be done in your personal life.

This bias is usually defined as one's unintentional need to corrupt the information that is obtained. For instance, if the statistician has to conduct a survey on the effects of smoking on life, he will first collect data. He could use any method of collection – he could verbally ask questions, or have questionnaires and schedules filled up. He might have a notion where he believes that smoking causes death to the smoker and also to the people around the smoker. He might try to lean his analysis towards that notion. This is done unintentionally but might make it difficult to identify a suitable solution.

Mindset

This barrier was first stated by Abraham Luchins. He had deduced this barrier through his popular water jug experiments. The experiment dealt with having the participants or subjects fill a jug with a certain amount of water. They had to achieve this by using three other jugs that were of different quantities. They could only use these jugs one time each to fill the jug up. This was the first set of problems that were given to the participants or the subjects. Ideally this problem could be solved in a very simple manner involving a single technique.

After this step, Luchins gave his subjects another problem that they could solve using the same methods that they used to fill the jug with water. They could however use a simpler technique to solve the new problem. Luchins realized that his subjects tended to use the same methods that they are accustomed to. There might be other simpler techniques that they could use but they prefer to use the methods that they are familiar with.

For instance, consider a mathematics problem. Let us assume that the students

have been given a problem on integration. They might be accustomed to solving it in a certain method since they have been taught that way. However, there might be simpler ways to solve the problem at hand. But when given this problem, the students might choose to use the lengthier and tedious process since they are used to it.

The mindset plays a great role when it comes to the attempt to solve problems. We solve these problems using a technique that has been proved successful to us over the last few experiences that we might have had. But this does not necessarily mean that the solutions obtained through this method will derive optimum or accurate solutions to the similar problems that we might face now. It is ideal for people to think beyond their experiences and find solutions to the problems they might be facing.

This was demonstrated by Norman Maier in 1931. His experiment challenged his subjects to solve a problem using household tools – pliers. They were asked to use these tools in an unconventional manner. It was observed that the subjects could not view the object any differently from how they had viewed it over the last few years of their lives. They had created an image of the object in their mind and had associated a use to that object which prevented them from thinking otherwise.

Most people avoid deviating from their mindsets. This phenomenon is termed as fixation. Fixation is a psychological phenomenon that is an obsession with strategies that have been attempted previously. These strategies are usually unsuccessful in solving problems that are new but similar to the old ones. It was revealed by Jennifer Wiley, in the late 1990s that people with expertise in a certain field were bound to create a mindset. She conducted thorough research and concluded that these people who were considered experts in their field were

in fact people with the problem of fixation.

Chapter 2: Problem Solving Strategies

We have covered the different barriers that a person might face when trying to solve a problem. This Chapter covers the different strategies that can be used to solve problems. However, it is not limited just to these. There are many other methods. These methods are a few of the most common strategies that have been used in the process.

Problem solving strategies are those steps that are used to identify the problems that one faces while trying to achieve a goal. This is usually referred to as the '*problem solving cycle*'. The cycle usually begins with identifying the problem, followed by defining the problem – the goals; try to identify a strategy that could be used to decide on the problem, separate the relevant and irrelevant information and land on an accurate solution. This is called a problem solving cycle since problems keep arising. The minute you finish solving one problem, you have the next problem right before you. This problem solving cycle is explained in detail in Chapter 3.

The techniques given below are the strategies that are most commonly used while solving problems.

Abstraction

Abstraction is a technique where the actual problem is broken down into smaller problems. Each of these problems is first solved in order to find a solution to the bigger problem. These solutions are first tested on a system. If the solution works, it is applied to the real system. Another name for this technique is to divide and conquer. This technique was used by most armies while invading any country during the medieval period.

For instance, consider a mathematics problem on differentiation. The problem here is to identify whether the function provided is a maximum or a minimum function. For this, we have to find the first and second derivatives. Once we find the first and second derivatives, we can deduce whether or not the function is maximum or minimum. Here you have used abstraction to solve the problem. You have identified your set goal and divided the problem into smaller problems and used the solution obtained in those problems to solve the bigger problem.

Brainstorming

Brainstorming is a perfect strategy to use when there is a group of people involved in solving the problem. This is a great technique since multiple methods to solving a problem come up during discussions. Each member of the group can see how the problem at hand can be solved. Based on their perspectives, they can provide solutions to the problem. These solutions can be combined and developed to form an accurate or optimum solution.

Hypothesis Testing

Hypothesis testing is a common statistical method where assumptions are made to explain the problem at hand. The method works towards proving the assumptions that have been made.

For example, we have to identify if there is a relation between smoking and lung cancer. The problem here is to identify the relationship. The assumption (hypothesis) made could be that there is no relationship between smoking and lung cancer. The alternative to this assumption (hypothesis) is that there is a relation. Since our main assumption is that there is no relation, we have to find certain techniques to prove whether this hypothesis is true or not. That way we will be able to identify a solution to the problem.

If there is no connection then we do not have to come up with further solutions. However, if the hypothesis is proved false, we have to identify certain solutions to reduce the effect of smoking on the lungs.

Lateral Thinking

Lateral thinking is thinking out of the box. The major barrier to this strategy is the mindset. One cannot think out of the box since he is used to a certain method of solving problems. Lateral thinking often obtains solutions which make the problem seem very obvious.

For example, the production of soap was supposed to be 2000 per hour. Over the last few days, the production dropped to 8o0 soaps an hour. Through the other strategies you try to identify ways to overcome this problem and increase the production rate. However, it is different in lateral thinking. The solution to the problem might state that there is no harm in a drop in production since this would mean that the quality of the soap has increased. This increase in quality would mean a greater number of sales implying a higher profit. This would in turn motivate the workers and the employees to do better!

Means End Analysis

In means end analysis you create sub goals in order to reach the final goal. You try to bridge the gap between the initial state and the final goal state. There are many examples to this method of problem solving that are very popular. One of the best examples is the '*Towers of Hanoi*'.

While using this strategy you have to identify the initial state and also your final goal. The initial state to this problem is represented by the first three disks of the tower being stacked in the order of the size of the disk on the first peg, also called the start peg. The goal is to represent these disks being stacked on the last peg, or the end peg, which is the third peg. This must be done in exactly the same order!

The rules to this problem are:

- You can only do this by moving one disk at a time.
- You can only move a disk that is on top of the stack
- You cannot put a bigger disk on top of a smaller disk.

Since we are using the technique of means end analysis, we will have to first create our sub goals. Below is one possible way of creating sub goals.

- Move the disks that are on the largest peg onto the second peg

- Move the biggest disk to the third peg

- Move the other disks onto the third peg as well.

This can be applied continuously in order to reduce the magnitude of the problem. You will finally come to a stage where you will only have to move one disk to reach your final goal. You can use this strategy to solve problems that you might face in your daily life as well – identify the correct train connection, correct road map to follow to go on a road trip. You will have to identify every aspect of your journey in order to reach your final goal. These small aspects of your journey are your sub goals.

Analogy

Analogies are another common strategy to solve problems. Here similar problems are viewed and solved. Using these solutions the problems that are being faced now can be solved. A recent study was conducted where a song that is stuck in your head was compared to an itch. You can only let go of the song or forget the song by singing it repeatedly. That solution is something similar to relieving yourself off an itch by repeatedly scratching yourself. This is also called restructuring.

The perfect example for this is the radiation problem that was stated by K. Duncker in the year 1945. When you have a patient with a tumor, you might have to use radiation in order to get rid of the tumor. This ray is harmless. But when the intensity of the ray increases, it kills the tumor inside the body but also harms the other healthy tissue that comes in its way. The problem here was to identify how to prevent the latter. When the experiment was conducted on a certain number of subjects, they were asked to identify a solution to the same problem. They were stumped and could not identify a solution. The problem was then restructured. The subjects were told a story that went along these lines:

'A General was looking at capturing his enemy's fortress. He decided to launch an attack at the enemy. He had a large army and was confident of winning. Then he learned that every road that led to the fortress was rigged with mines. Only small groups of men could pass through those roads without setting the mines off. He then divided his men into smaller groups and then led the attack on the enemy's fortress.'

Here the General was compared to as the source of the problem, the enemy's fortress was compared to radiation, the fortress was compared to the tumor and the big army was compared to the ray. The solution that was obtained through this method was that the ray had to be subdivided into smaller rays which could then be sent in without harming the healthy tissue in its way. That way only the tumor would be harmed.

It was then stated that this strategy was a three step strategy:

Notice

You will have to try to identify or notice an analogical connection that might exist between the source of the problem and the target problem.

Map

Once you identify the problems, you will have to map the attributes in the analogous problem to the problem at hand.

Apply

You will have to then use the solution that was used in the source problem to solve the target problem.

Proof

In this strategy you have to be pessimistic in the beginning and state that the problem cannot be solved. You will then have to prove why this problem cannot be solved. The minute you reach the stage where you find that it is difficult to prove your assumption, you will have to begin solving the problem.

Reduction

Reduction is a combination of both Abstraction and Analogy. You will have to break the problem down through abstraction and by using analogy you will have to identify solutions to those smaller problems. Using these solutions, a consolidated solution is found for the bigger problem.

Trial and Error

Trial and error is one of the most common strategies that are used to solve problems. However, this is very tedious and might take a lot of time. Here you will have to try and use all the different solutions that you might find to solve a problem. You will have to see which solution worked best to solve the problem. You might not find the accurate solution in the first go. The barrier, mindset, might actually prove helpful in this situation. You can use all the solutions that you are used to in order to solve the problem at hand.

Chapter 3: The Problem Solving Cycle

Problem solving is usually looked at from two perspectives. The first perspective is that there is only one solution to the problem that is at hand. Mathematical problems are a classic example of such problems. If you have an equation with one unknown, you only have one solution. You cannot have multiple solutions to solve an equation. This type of a perception is grounded by psychometric intelligence. The second perspective is problems that have solutions that constantly change. These are usually socioemotional problems. For example, your favorite color is a problem since it changes almost every day and it might sometimes depend on your mood. Another example would be what to get you for your birthday. You might not know what you want or you might want so many things making it hard for you to decide.

This chapter covers the general problem solving cycle followed. This is a rational approach. You must remember that all problems cannot be solved using this approach. However, this will help you get started and will help you work towards solving your problem whatever it might be.

Define the Problem

Defining the problem is the hardest part. We usually tend to worry about the problem before trying to identify what the problem actually is. We perceive a problem, which might not actually be the problem and start worrying about it. Instead, try to define the problem!

Defining the Problem with help from others

When you are trying to define the problem, you must ask yourself and others involved in the problem the following questions.

a. What are the causes to the problem? Here you might not identify the main causes as such but it is a start. You have to keep in mind that you are not blaming somebody as a cause to the problem right at the beginning. The person might be the cause, but see what led to that person being the cause of the problem.

b. Where is the problem actually occurring?

c. How is the problem occurring?

d. At what times specifically is the problem occurring?

e. Who is the problem happening with?

f. Why is the problem arising? Here you will have to jot down the exact

details as to why the problem is occurring.

Finally, you will have to take a sheet of paper and summarize the above answers. You could begin with “The following is not happening because of _____”.

Defining Complex Problems

This step also requires you to follow the steps a – f that have been state above. However, since you find that the problem is overwhelming, you will have to break it down and make it simpler. Repeat the steps a – f for these smaller problems in order to define the complex problem as a whole.

Check your understanding of the problem

Since you are working with other people in identifying the problem, you will find it easy to verify whether your understanding of the problem is the same as your peers.

Prioritize your problems

We usually confuse important problems with urgent problems. Important problems are those that need to be addressed first. For instance, while at work you might be answering calls that you deem are urgent. Since these calls are urgent, you do not necessarily have to answer those over important calls. In order to help you answer these calls, you can create a system that screens your calls. Most smartphones have the option where you can prioritize the contacts in

your phone and only receive calls or messages from those contacts when you are busy. These are important calls.

At times, you might have to deal with multiple problems. You cannot work on all the problems simultaneously since you would not be doing justice to either problem at hand. What you could do is segregate these problems into the categories of '***Important***' and '***Urgent***'. This categorization is similar to that of your phone calls!

Identify your role

It is essential that you identify your role in the problem. The way you perceive your role in the problem greatly influences how you perceive another's role in the problem. For instance, if you are stressed out, you might find that everybody else who is a part of the problem is stressed out. You might also blame somebody else in haste. If you feel guilty, you might excuse another person's role in causing the problem. You might end up taking the complete blame.

Identify Potential Causes for the problem

There is a lot to know about things you do not know. Since you do not have too much information about the problem at hand, you will need to use help from your peers. You will need to understand the perspective of the people who are facing the problem just like you are. People however might not be willing to provide the information that you might ask. They might be influenced by others making it difficult for you to gauge the cause of the problem. You might have to obtain the information separately. You must write down your perception on the causes of the problem as well. You can then compare the different perspectives and then identify the actual cause or causes of the problem.

You must then clearly define the cause. You can follow the steps that are provided to you when you are trying to define your problem. Repeat the steps a – f to help you define the cause. This brings you one step closer to identifying a solution to your problem.

Try to identify a strategy and a solution

Now that you have defined the problem and also identified the causes to the problem, you will have to work on identifying the solutions. If this is a problem that you and a group of others are facing, you can use the strategy of brainstorming to identify solutions that will help you solve the problem with ease. You cannot always use this strategy. If this is a problem that you are facing on the personal front you might not want to involve any other person. At such a time, you can use the strategy that you feel most comfortable with. The different strategies that are commonly used are described in Chapter 2. You have also been given examples to complex strategies that will help you identify the best strategy that you can use!

Select the most feasible solution

You would have identified a lot of solutions to your problems through the previous step. You will have to now select the best approach to solving your problem. You will have to consider the following when identifying the best solution to your problem.

a. Which solution will solve the problem for the short term as well as the long term?

b. Are there any risks associated with the solutions?

c. Is it a realistic goal to use the solution to solve the problem?

d. Is it financially viable?

e. Do we have the time to solve the problem through this method?

If it is a personal problem, you do not have to answer the fourth question for obvious reasons. You might find it strange to answer the second question too. But you must realize that there are risks that we might face in life when trying to solve a problem. There might be repercussions to any problem that might have been solved using a particular method.

Plan on how to implement your most feasible solution

The following section helps you plan on how to use your most feasible solution to solving a problem.

a. You will have to remember that there are two sides to a coin. In the same way there might be two sides to a solution that is used to solve a problem. The solution could either create a good effect or a bad effect. You will have to carefully consider the consequences – good or bad – to the solution.

b. What steps should be taken to use this solution?

c. Are there any changes that you might need to make in your systems? If this is a personal problem, you might have to identify if there is anything that you might have to change about yourself in order to overcome the problem.

d. You will need to verify whether or not the steps in the solution are being addressed. This is a check point for you. You will be able to estimate the time in which the problem can be solved.

e. Do you need any extra resources? If it is a personal problem, you might need to talk to a friend about the same. You will have to identify that friend and see if that friend is available for you as support. You cannot use resources that have crossed their lifetime. You can only use the support that is stable and will provide you with the required output.

f. You will need to schedule your entire approach. You must identify the time that you will take to solve your problem. Your schedule must time box all your activities right from the start of the activity to the end of the

activity.

g. You will have to identify the person who is responsible for ensuring that your plan takes perfect shape.

h. You will then have to create a separate plan for yourself in order to reach your end goal. This is your Plan of Action and you will need to follow it word for word.

The most important thing to remember is that you must observe this plan continuously. You must be open to taking feedback as well. If they identify that there is a certain aspect to the plan, give feedback and make the necessary changes. You must also be open to taking feedback – negative or positive. That way you will be able to come up with a fool proof plan!

You can also use the concept of SMART goals to create the perfect plan. SMART is an acronym for

S – Smart

M – Measurable

A – Achievable

R – Realistic

T – Time Bound

This acronym helps you create goals with ease. The words speak for themselves

and do not require too much of an explanation. You can use this as an alternative to create an easy and accurate plan!

Constant Observation

You will have to monitor the implementation of the solution closely. You will have to create indicators at every step of your plan to identify your successes. You can frame these questions at every stage to check whether you have achieved your minor goals.

a. Are you happy with what you are receiving as an indicator? You might have decided that if you have overcome a particular aspect of the problem, you have achieved success in that endeavor. However, you might not be satisfied after having achieved this. You might then want to change your indicators. It is advisable to do it at this stage.

b. You will have to see whether your plan is going according to the schedule. If you find that your plan is getting over before schedule it is a good thing since you will be able to address other problems. However, if you find that the plan is going over schedule, you might have to allocate more time. But remember that this will change your entire plan of action.

c. There might be times when the plan might not be working according to your satisfaction. You might have to identify whether the plan that was decided upon was realistic and whether or not was time bound. You might have to change your SMART goals. At times you might just have to time box it slightly differently.

Check whether or not the problem has been solved

This is the final step to the problem solving cycle! This one step gives you all the joy in the world since it bears the fruit of your hard work. One of the best ways to check whether the problem has been resolved is to revert back to the regular flow in the organization. Although the problem has been solved, there are some aspects to consider:

a. What can be done to avoid similar problems like the one faced in the future? Do changes have to be made to existing policies, technologies, and work ethics?

b. Identify the learning from the entire process. You might have identified solutions for problems that have not taken shape yet. You must keep a tab on all the learning in order to safeguard your organization. If it is a personal problem that you have overcome, you can see what changes you can make in your behavior to avoid facing such similar problems in the future.

Write a brief memo to keep the spirits of your peers and yourself up. Highlight the best parts of the problem solving process and ensure that everybody knows about it!

Let us now work on a personal problem. We will try to identify the process of trying to solve the problems a person with a chronic illness faces on a regular basis.

Problem Solving for personal issues

Now that we have covered the strategies and the problem solving cycle, we have a good idea on how to solve problems. However, it is difficult to do so when you are suffering from personal issues. You face a few more problems when compared to the corporate problems. You will need to follow a systematic method of solving these problems.

Take for instance your car. You know how to fix it when it breaks down. But do you know how to communicate your fears to your family, friends and your doctors? It is true that personal problems are usually hard to solve. But you can learn to deal with them effectively. Let’s begin!

How does problem solving help with personal issues?

There has been tons of research conducted on how problem solving had helped people suffering from personal issues. It was found that people were able to focus on multiple problems without a fear of failure. They were able to work on these problems and find constructive solutions to the same. Read on to find out how this can be done!

Identify the problem

Like stated in chapter 2, the first step to problem solving is to identify the problem. The main problem that you might face when you have personal issues is that you might not be able to meet the demands of your family, friends, work or your health. After having identified that try to see if you can describe some of your observable behaviors. These behaviors can be changes to help overcome the problem as well.

You must be aware that at times there might be more than one problem that you might have to solve. These problems could be interrelated. You might find that even after solving one problem you have difficulty since the root problem was not addressed. You must aim to find the root cause of the problem since that makes it easier for you to create a plan and progress towards achieving your goal.

Look at the following example. '*Adam and Eve have had a baby. After taking care of the baby for three years, Eve wants to get back to work. Adam would love it if Eve had a career but he is worried about child care. He feels that Eve should not go back to work because it is not financially viable to spend on child care. He is afraid that she might find him less interesting once she makes friends at work. Eve senses Adam's unease and does not bring her dream up after the first time. She does not want to lose Adam. She starts losing confidence about starting her career once again. But she brings it up when they face a financial crisis. She states that they would not have been in this situation had Adam let her go back to work*'.

In the above example, there are multiple problems that could be identified.

a. No good child care

b. Difficulty in communication

c. Eve's lack of confidence

d. The mismatched expectations

e. Fear of losing each other.

Adam and Eve might only identify the problem of child care and might work around their finances to provide the best for their child. However, they might continue to fight because of the latter issues.

Identify the Causes of those Problems

Now that you have identified the problem, you can try to understand the cause behind those problems. The main cause of the problem here is finances.

Set goals

Sometimes you might be unable to identify the goals that you can set to overcome a problem. You can always talk to people you know who have faced a similar situation and ask for help. You will need to understand the perspective of the people who are facing the problem just like you are. People however might not be willing to provide the information that you might ask. They might be influenced by others making it difficult for you to gauge the cause of the

problem. You might have to obtain the information separately.

You will have to ensure that the information that you are procuring from others is not biased. It has to be valuable information that you can use. Discard information that is irrelevant to you.

Set goals that will help you in overcoming the problem. These goals have to be realistic! You can use the acronym SMART for this! Also you must consider what you are compromising on. The goals that you come up with must not be good enough. They have to be the best to ensure that the problem never comes back.

Brainstorm

The next step was to identify a strategy to bounce around ideas to identify the perfect solution to your problem. In personal problems, brainstorming is the best strategy since you have another person to help you with ideas. You will be able to come up with alternative solutions to the problem that you are facing. The most important thing is that you generate multiple solutions. They rightly say '*The more the merrier*'.

You can also list out certain changes that you might want to make. You must remember that these changes must help you in solving the problem at hand. Since you are bouncing around ideas, you must reserve your judgment. You should not reject any idea. The craziest idea might in fact be the perfect one for

you to use to solve the problem. It is great to involve others since they have a fresh perspective. They would not be biased to either of you and might give you the best solution.

In the above example, if Adam and Eve had talked to each other they could have come up with a certain plan to overcome all their problems. Here brainstorming would have been perfect since they would have a lot of ideas that they might come up with that favor both Adam and Eve.

Choose a solution

You would have identified a lot of solutions to your problems through the previous step. You will have to now select the best approach to solving your problem. You will have to identify the consequences to all the solutions. You should consider the long term and short term consequences that might affect you and the people who are important in your life.

In the same way, you can try to identify a solution that Adam and Eve could use to solve their problems. Once they brainstorm, they can select a feasible solution. This solution must be financially viable for them since that is the main cause of the problem.

Describe the plan

You must define your plan and time box all your activities. You should create a schedule. While creating the schedule try to understand what the potential roadblocks might be. Also ask yourself and others involved on how you can overcome these roadblocks and if you could eliminate them what methods should you use.

Identify the people who should be involved in helping you overcome the problem. This person has to be someone you can rely on and someone who will be committed to helping you achieve your goal.

When you are creating your schedule try to identify what your end goal is for each aspect of your problem. You will have to have check points to see whether or not you are closer to achieving success. Put your plan into place but always be open to taking feedback on whether or not the plan is working successfully.

Review and Revise

You will have to keep a constant check on the plan that you have constructed. You will have to have a rating scale that will help you measure the effectiveness of the plan. You could have a simple rating scale of 1 – 10, 1 being the lowest mark and 10 being the highest.

It is a great idea to keep a note of all the things that went well when you were executing your plan. You have to also keep note of the things that made you feel happy. Even if the plan was not the perfect plan, you might have made some

changes that have impacted your life for the better.

To know what to do better next time, you will have to keep a track of all the mistakes that you might have made while executing the plan. You have to evaluate the difference between your expected outcomes and also your observed outcomes. It will help you plan better for the future. You can use the feedback that you have received in this problem to help you overcome other problems in the future.

Problem solving is a process that repeats itself. That is why it is called a cycle. There might be occasions when you are standing face to face with the biggest problem in your life. The first time you use the process might not fetch you the results that you had expected. It might take you repeated attempts to identify the perfect and optimum solution to the problem. However it is a good idea to keep a track of your progress. You might have developed your mind into solving problems with ease.

Remember that if the solution that you have designed does not work for you, it is not a bad solution. Everybody learns through their mistakes. After all failures are the stepping stones to success. You will be able to learn more and will learn which path to avoid while trying to solve problems. Do not lose faith in yourself but keep forging ahead!

Chapter 4: What is Critical Thinking? Exploring Various Aspects

Before you start to look at the true meaning of critical thinking, it is helpful to first have a look at how the dictionary defines the term.

"The objective analysis and evaluation of an issue in order to form a judgment"

As is apparent from the definition, the meaning of the word is pretty clear cut. It stands for the in depth analysis of a problem in order to arrive at the best possible solution in order to solve it.

So it is safe to assume that critical thinking is meant to be used as a tool to solve everyday problems, regardless of their size and nature.

Here is another definition, to help you understand the concept better. This definition is courtesy of The National Council for Excellence in Critical Thinking:

"intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action"

This definition goes a step further and explains, in detail, the various steps that are involved in critical thinking. It speaks of the various elements of consideration, in terms of the number of things that you must consider, before arriving at a decision.

So, to put it simply, critical thinking refers to a person observing a situation, identifying the problem, analyzing it through the lens of experience and arriving at a conclusive decision to solve it rationally.

It will allow the individual to arrive at clear cut solutions to tackle these everyday problems head on and to solve them.

A critical thinker will have a data bank of the various problems and will only have to think a little to retrieve the data, which will help tackle problem posed by the current situation.

Critical Thinking and Intelligence

Critical thinking and intelligence are believed to go hand in hand. Unfortunately, that is one of the biggest misconceptions in regard to the subject. Intelligence refers to a person being extremely capable of solving difficult problems, just with maximum use of his/her brain.

Critical thinking, on the other hand, refers to people critically analyzing a situation and arriving at feasible solution, which may not necessarily be prompted by intelligence. So the two thought processes can differ in many ways and are not interdependent.

An intelligent person might have lots of memories, data and information stored up, which he/she can immediately access in order to arrive at a solution.

A critical thinker might not have such data readily available and will have to thoroughly analyze the situation and spend a little time in thinking of a solution. Both aspects can be critical in helping a person attain an applicable solution to the problem in question and it is just the process of getting there might differ.

For example, when presented with similar problems, an intelligent person might think for just a few minutes and devise a plan to tackle the problem. A critical thinker, on the other hand, might have faced a similar problem in the past and will immediately put into action a preset solution to the problem.

Aspects of Critical Thinking

There are many elements that are part of the critical thinking process. Each of them is explained below:

Arguments

The most important aspect of critical thinking is coming up with feasible arguments. Arguments are nothing but premises and conclusions. Although this is seen as being the last step, it is also one of the most important. A critical thinker is required to set up arguments and draw logical conclusions from it.

Analyzing arguments

Once the various arguments are finalized, a person must identify the vague and incoherent arguments. In order to do so, the thinker must view the argument through the lens of suspicion and identify the solutions that are most vague.

Safeguarding the facts

The next step for a critical thinker involves identifying all the facts and making

sure that nothing has been left out. It will be important to safeguard the facts so as to avoid losing any crucial data and also not allowing it to get mixed with illogical arguments. Once all the facts have been established, the thinker can safely move to the next step.

Evaluation

Critical thinkers are required to analyze if the existing premises point toward conclusions. That is to say, if the premises hold any truth to them, then so should the conclusions. They need to be interdependent and, more or less, extremely similar in nature. If they are too vague, then that might cause problems during the implementation of the solution.

Implementation

Once all the solutions have been arrived at through critical evaluation, *viz.* evidence collection, argument formation, fact differentiation *etc.* they need to be applied practically. This is one of the main steps, as no problem can be solved without practical application of feasible solutions.

Arguments against critical thinking

Many people argue that critical thinking will diminish a person’s creativity as he/she will always apply a preset or predefined solution. That will, in turn, not allow him/her to think laterally, thereby not promoting creativity.

That is not true. No critical thinker will apply the preset solutions as is. They will have to modify it to suit the current situation. There can never be a proper and preset solution that will be readily available and only an outline or a skeleton will be present. It will be the thinker's duty to fill in the muscles and the organs.

There is also the argument that states how critical thinking might throw a person off course and cause him/her to complicate a situation rather than to solve it.

That statement, however, is also completely false. The very concept of critical thinking is to help a person deduce the most feasible solution and not waste time with unwanted ones. The process of critical thinking will allow a person to go through all types of solutions and only implement the best one.

These arguments cannot possibly diminish the value of critical thinking and only help in promoting its true value.

Chapter 5: Critical Evaluation and Brain Mechanism Explained

In the previous chapter, we looked at the meaning and the various aspects of critical thinking and in this chapter; we look at the process that occurs during critical thinking.

Before we look at the very process itself, it is important for you to understand that this is just a generic structure and it can differ from person to person. This explanation is only to help you start with the process and allow you to implement it on a daily basis. It is only through regular practice that you will be able to become a bona fide critical thinker.

Recognition

The first step involves recognizing the problem. When presented with a situation, it is for you to understand it and pinpoint the actual problem. Many times, the problem might not be apparent or it might have a deep rooted connotation. So you have to decide on what the problem truly is and, if it is not too apparent, then what you must do to find out. You might have to make use of certain tools that will be in your power such as vision, hearing, *etc.* Once you successfully recognize the problem, you have to prepare yourself for the next step.

Analysis

The next step of the process is for you to analyze the problem. You have to interpret it in a manner that will allow you to understand it thoroughly and also make way for you to dissect it. Only through dissection will you be able to make sense of it and thoroughly understand its various dynamics. If you simply identify the problem and start to apply solutions in general terms then it will be useless. You might waste time in doing so and so, it will be important for you to completely and thoroughly analyze and understand the problem. And this simply has to be a follow up to the first step, as it will be critical for you to follow a set pattern every single time.

Gather information

The next step will require you to gather all the pertinent information in regard to the problem. You might have to go to the extent of acquiring both primary and secondary data and then make a comprehensive set of data. The information must be pertinent to the situation and the problem and you must avoid collecting and gathering data that will not be of any use to the situation, thus recognizing data that is only vaguely related to it.

At the same time, you have to also try and collect lateral data that will allow you to question the truth and thereby strengthen your analysis. So don’t be shy to collect data that will be abstract in nature.

Logical analysis

Once you gather the information, you have to apply your mind to it and practically try and apply the solutions to the recognized problems. All the data that is collected needs to be interpreted thoroughly so as to allow you to arrive at feasible and situation-specific solutions. Again, the solutions must be specific and not generic. For example, if a baker wants to expand his business, then he must ideally invest in more equipment as opposed to expanding the size of his physical shop. All the data that is collected must be put to use as the dynamics of the solution can vary depending on the amount of data that is analyzed.

Arguments

One of the most important aspects of critical thinking is devising arguments. Arguments are nothing but a set of statements, with one being the solution and the rest being premises to it or mere assumptions. It is the critical thinker’s duty to surmise which statement is the solution and which one is a mere assumption.

Decision making

Once all the solutions have been obtained, after careful analysis and practical application, only the best solutions must be finalized. You have to make the decision of finding the best solutions and also use bona fide foresight. You have to be able to tell the consequences that your actions will have and know how effectively you will be able to solve the problem. You have to be able to draw conclusions and analyze them through a logical lens. As much as you would like to take a risk, it is better that you only choose the solution that will garner sure-shot results.

Dedication

Once you devise the solution to the problem, you have to be quick in implementing it. What is the point in wasting time, once you have the solution in your hands? You have to put all your solutions and conclusions to the test and not stop until the results are apparent and are satisfactory. If you stop half way, then you will end up losing out on the chance of successfully beating out a problem.

Question

Once the problem is successfully solved, you can start to create a data bank in your mind. But before you do so, you have to question yourself on whether what you implemented was the best solution and whether you are satisfied with the time that it took. If you are, then you can store the information as is, but if you feel that you could have gone about it in a smoother manner and in a quicker time, then you must alter the incident and store the data as an edited version.

Chapter 6: Applying Critical Thinking To Everyday Problems

It is important for you to apply critical thinking on a daily basis, in order to successfully turn it into a habit. In this chapter, we look at the various ways in which you can make the most of your everyday problem solving and try and practice critical thinking on a daily basis.

Make the best use of time

Make the best use of the time that you have on your hands. Most people do not realize how much they are wasting their time. They tend to watch television, listen to music or play games. Instead of doing all that, just by sitting down for an hour and looking back at the day that has passed, can help in the process of developing critical thinking. Doing this on a daily basis will help you identify your strengths and your weaknesses.

Tackle one thing at a time

When you analyze your daily activities and identify your strengths and weaknesses, you must try and tackle one problem at a time. Start by listing out all your weaknesses and tackling them one at a time. Once you find that you are able to conquer your weaknesses, work on your strengths. Your strengths should be in terms of your capacity in performing critical thinking and being able to take rational decisions. You must try and build arguments for the various situations and problems in your life.

Step by step approach

You were made aware of the various aspects of critical thinking in chapter 1 and were also exposed to the mechanism that the brain employs while making rational decisions. Thus, in order to establish the habit of critical thinking, you must practice each step. Try and concentrate on the observational aspect for a week and then move on to the process of building arguments and so on and so forth. Make sure that you practice on everyday problems and mundane situations.

Record your progress

Maintain a book and record your progress. One of the best ways to keep yourself motivated is to maintain a book. Record your progress by analyzing a situation and how you tackle a problem. Write down a step by step guide for easy reference and you will start to see an apparent difference as time passes. Write down a lesson at the end of each page so as to understand the right and the wrong approaches that you have learned.

Modify your habits

You must modify your daily habits in order to incorporate critical thinking. Consciously make time for the habit and try to spend some time on a daily basis trying to improve your thinking capacity. Understand your forte and try to indulge in diverse activities.

Tackle your autopilot mode

You must learn to tackle your auto pilot mode and try to stop taking unconscious decisions. Before you arrive at a solution and implement it, spend some time to evaluate whether you are subconsciously taking the decision. If you are, then analyze the situation again and apply critical thinking. You have to try and have a control over your mind to the highest possible level in order to think critically, every single time.

Change perspective

You must change your perspective every now and then. When faced with a problem that involves another person, try and think of it from their point of view as well. That will allow you to arrive at a decision at a faster pace. For example, if you are fighting over something and have reached deadlock then try to think from the other person’s perspective, in order to find the most feasible and fast solution. That way, you will derive dual benefits. Not only will you save time but you will also be able to increase your critical thinking skills.

Be reasonable/ practical

In all of your critical thinking practice, you have to be reasonable and practical to the farthest extent. Although it is advised for you to make a list of all abstract solutions as well, just to build a counter argument to your feasible solutions, it is recommended that you be as reasonable as possible. If you assume that by thinking in extremes, you will be able to devise quick solutions that will not fail you then you might be thinking wrongly. Although critical thinking does encourage creativity, it does not do it to an extent that allows you to be vague. You have to work within acceptable limits and be able to find contradictions, which will help you deduce the right solution.

Have a partner

When you take up something new, it is advisable that you have a partner to assist you. Not only will you remain motivated but also have the opportunity to enact the various problems and help find feasible solutions. And if you do it with someone that you love or who loves you like a life partner or best friend, then you will help each other develop mental sharpness.

Chapter 7: Improving Decision Making Skills

In this chapter, we focus on how you can improve your decision making skills. One thing that is worth bringing to your notice is that your critical thinking capacity and decision making capability will only improve if you make the most of your brain. And in order to do so, you can apply either a direct or an abstract approach.

The following are a combination of both these approaches, where some will directly improve your decision-making skills and some will have an indirect bearing upon them. You must practice each one on a daily basis, in order to reap its full benefits.

Distraction

When faced with a problem or a decision-making opportunity, you must simultaneously look for a distraction. The distraction will help you concentrate better on the problem. The distraction should be within limits and allow you to unwind. It can be a hobby like painting or something that will have a therapeutic effect on you. You can also join a class like a dance or opera class and as long as it will allow you to completely cut out the problem for a few hours; you will help sharpen your decision and thinking skills.

Learn new languages

One of the best things that you can do to improve your decision making skill is to learn a new language. As vague and abstract as that may sound, it has scientific backing. When you learn a new language, your brain starts to grow bigger and, in turn, allows you to think better. And when you think better, you automatically start to make better decisions. Make sure that you learn a foreign language as opposed to a local one. Try to start with a simple one and then move to a tough one like Mandarin. Make sure that you learn 1 new language a year and avoid going for too much too soon.

Exercise

You must exercise on a daily basis, in order to cut down on the level of cortisol in your brain. Cortisol is the chemical that can cause you to undertake stress, which can, in turn, affect your decision-making capacity. You have to try and work out for at least 30 minutes a day and try to keep it as varied as possible, to avoid monotony. You can try cardio one day, lift weights, take up swimming, perform aerobics *etc.* You must also take a couple of days off, otherwise you might overdo it.

Diet

You must consume a balanced diet, in order to develop a good critical thinking and decision making capacity. Make sure you eat lots of fresh fruits and vegetables. You must also incorporate at least 8 glasses of water a day or balance it out by consuming juices. Try and avoid buying processed foods, as they will contain unsaturated fats, which can cause your body more harm than good. You must also avoid consuming junk foods, as they will also contain fats and unhealthy ingredients, which can cause your brain to secrete cortisol. Try to make your own junk food substitutes as much as possible.

Meditate

Meditation is a great way for you to relax your mind. If you wish to be a critical thinker and also be able to take timely and important decisions, then you must meditate or take up a relaxing stance. Meditating can help improve your memory power and also keep stress and tensions at bay. You can improve your mind’s capacity for analyzing a situation and coming up with bona fide solutions and conclusions. That will allow you to turn into a proficient thinker and also help you be a calmer and more rational person.

Social life

In order to have increased mental development, you have to have an extensive social life. You have to have a big friend circle and also try and have friends of all ages. When you interact with such a wide group of people, you develop the tendency of thinking at all levels. You will be capable of understanding and analyzing a situation from the various lenses and be able to set a large argument base. You can indulge in small talk with strangers, in order to expand your social circle.

Read

To be very honest, this is one of the most ideal ways for you to expand your mental capacity. You have to read on a daily basis, in order to understand the various ways in which you can increase your potential. You must read the newspaper daily and be up to date with all the latest news. You must also read books of all genres. You can join a book club in order to keep you motivated and meet other readers and openly propagate your thoughts and opinions. You can also read a book in a foreign language, which will keep you more concentrated on the subject matter.

Explore

You have to travel around, in order to expand your mental horizons. How can you live under a rock and be intelligent? You have to get out there and explore the world. You must make the effort of going to the various places the world has to offer and try understanding each and every culture you come across. You can also take your family along; as it will help you establish a better bond. When you feel connected with them, you feel relaxed and rest assured that come what may, you will always have their support. That assurance will allow you to take risks and arrive at better decisions.

Chapter 8: Benefits of Improving Thinking Capacity And Decision Making

Now that we have looked at the various things that you can do on a daily basis to improve your decision-making skill, it is worth looking now at the benefits of utilizing critical thinking in problem solving.

Professional benefits

Idea building

Critical thinking can help in building new ideas. Say, for example, a new problem arises at your workplace. By employing group critical thinking you can come up with a lot of solutions, which will help in the formulation of arguments. Once the arguments are analyzed, you can zero in on the best solutions. Slowly, you will create an effective databank and be able to solve problems at a faster pace on a daily basis, thereby increasing your productivity.

Team work

Critical thinking can help build teamwork. When a problem arises, everybody will have to discuss and determine the various ways in which that problem can be tackled. When such group meetings occur, people are bound to grow closer. Teamwork building will help everybody that is involved and help you to find answers that suit the team.

Progress

No company will stagnate when the workers employ critical thinking. There will be no room for monotony as creativity will be encouraged every time that there is a problem. The company is sure to progress and so will the company

employees.

Client building

By providing meaningful and feasible solutions to your clients, you will increase your customer base. And by doing so, you will increase your profits and allow your business to grow. Your customers and clients will be appreciative of your lateral and “out of the box” thinking methods in providing them with quick solutions and, through word of mouth, your business will grow.

Social

Better compatibility

Critical thinking can promote open mindedness. With such an attitude, it will be easy for people to get on together. Society will come together as an entire unit and try and find feasible solutions to the various problems that arise. Compatibility is one of the main factors that determines whether a society can survive and progress together and through the implementation of critical thinking and subsequent problem solving, it will be extremely easy to establish compatibility. There will be less fights and more progress.

Bigger reach

When you apply critical thinking and solve problems, people will take an instant liking towards you. You will be much appreciated and your friend circle will grow. You will start to make friends with people at all levels, which can, in turn, improve your professional life as well. You can also attain a very influential position and can command a lot of respect. You will drive away any negativity and allow only positive people and circumstances to surround you.

Personal

Less misunderstandings

When you have critical thinking as an option, you can help avoid fights and distance misunderstandings. With fewer problems on the home and personal front, you will be able to concentrate better in your workplace. It will help you in increasing your productivity and making the most of your intelligence. You will not have to worry about going back to people who do not understand you and, just by thinking from their perspective every now and then, you will be able to help them look from yours. And with such compatibility, you will remain motivated to practice more and more critical thinking and apply it to all the various problems in life, small and big.

Better genes

If you include the habit of critical thinking into your life on a daily basis, then you can imbibe it in your genes. And once it is completely imbibed and a part and parcel of your DNA, then you will pass it on to the next generation. You will help your children and grandchildren develop the same habits as you and thereby create a bright future for them. And if you can get your partner to join in and practice critical thinking on a daily basis, then you will double the chance of your kids developing the habit and consequently leading better lives.

Conclusion

I thank you once again for downloading this eBook and hope you had a good time reading it. As is apparent, the book's main aim was to propagate the idea of lateral and critical thinking and showing you how you can solve your problems on a daily basis. The idea is to also help you understand the process of problem solving. There is a chapter that gives you the steps that you can follow to overcome any problem. Under the same chapter you have been given an example which shows you how you can solve the problem of facing a chronic disease.

At times you might be the only one facing a problem and might not want everybody to see that you are uncomfortable or are deeply affected by the problem. Problem solving saves the day during such situations. These problems can be large or small but as long as they are helping you to find feasible solutions, you will be required to tackle them with rationality. That is where you will be required to put on your critical thinking caps. Problem solving and critical thinking go hand in hand. It is only when you think creatively or out of the box that you will be able to identify a solution to the problem.

As we saw in the first portion of the book, critical thinking is the process of observing a situation and arriving at feasible solutions to the problems that are part of that situation. It stands for the entire process of decision-making starting right from observation of a problem and ending with a conclusion.

The rest of the book was focused on understanding the process of critical thinking and how you must apply them in your day to day life, and included how you can successfully improve your decision making capacity as well as how it is possible to alter it through direct and indirect means.

Finally, we shed some light on the various ways in which you can benefit from

critical thinking and solve problems in your personal, social and professional lives.

I hope you make the most of all the information that was provided in this book and also try and act on it immediately. It is also hoped that you increase your level of thinking and develop the confidence of solving any problem with rationality and increase your productivity at the same time.

Good Luck!

Free Bonus Video: Improve Your Problem Solving Skills

Life is a series of problems to be solved and difficulties to overcome. Your problem solving abilities are essential to getting paid more and promoted faster. Success is the ability to make a decision and achieve an ideal solution.

Bonus Video: https://www.youtube.com/watch?v=s1lt6pwIF1o

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