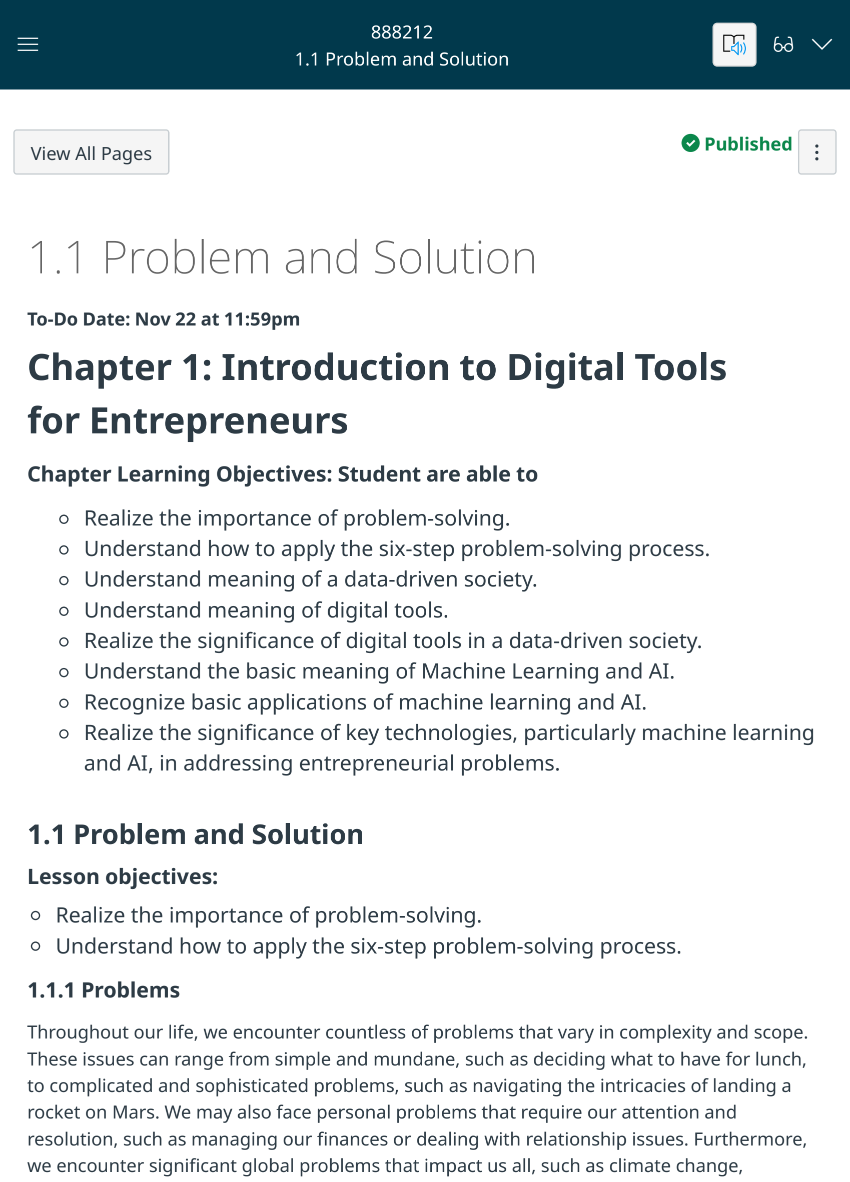


1.1 Problem and Solution

To-Do Date: Nov 22 at 11:59pm

Chapter 1: Introduction to Digital Tools for Entrepreneurs

Chapter Learning Objectives: Student are able to

- Realize the importance of problem-solving.
- Understand how to apply the six-step problem-solving process.
- Understand meaning of a data-driven society.
- Understand meaning of digital tools.
- Realize the significance of digital tools in a data-driven society.
- Understand the basic meaning of Machine Learning and AI.
- Recognize basic applications of machine learning and AI.
- Realize the significance of key technologies, particularly machine learning and AI, in addressing entrepreneurial problems.

1.1 Problem and Solution

Lesson objectives:

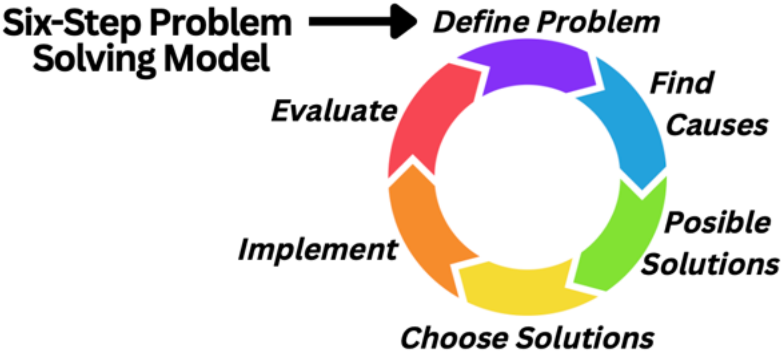
- Realize the importance of problem-solving.
- Understand how to apply the six-step problem-solving process.

1.1.1 Problems

Throughout our life, we encounter countless of problems that vary in complexity and scope. These issues can range from simple and mundane, such as deciding what to have for lunch, to complicated and sophisticated problems, such as navigating the intricacies of landing a rocket on Mars. We may also face personal problems that require our attention and resolution, such as managing our finances or dealing with relationship issues. Furthermore, we encounter significant global problems that impact us all, such as climate change, pandemics, and pollution. Regardless of their nature, each of these problems requires unique and thoughtful solutions to address them effectively.

When we encounter a problem, we require solutions that can effectively address or mitigate the issue. Problems can arise in various situations and contexts, and finding appropriate solutions is crucial for success. There are multiple approaches to problem-solving, each with its unique strengths and limitations. In this note, we will focus on one specific approach known as the "Six-Step Problem Solving Model." This model provides a systematic and structured framework for identifying, analyzing, and resolving problems. By following this model, individuals can approach problem-solving in a methodical and efficient manner, ultimately leading to more effective and satisfactory solutions. The Six Step Problem Solving Model comprises six unique steps, which are as follows: defining the problem, identifying the causes of the problem, generating alternative solutions, selecting a solution, implementing the chosen solution, and evaluating the outcome.

1.1.2 Six-Step Problem Solving Model



The Six-Step Problem Solving Model includes six steps, as its name suggests, including the following:

Step 1: Define the problem

- Identify and clearly articulate the issue or challenge that needs to be addressed.
- Clearly state the objectives and constraints related to the problem.

Step 2: Determine the causes of the problem

- Investigate and analyze the root causes behind the identified problem.
- Understand the contributing factors that led to the issue.

Step 3: Develop alternative solutions

- Generate a range of possible solutions or strategies to address the problem.
- Encourage creative thinking and consider different perspectives.

Step 4: Select a solution

- Evaluate and compare the potential solutions based on criteria such as feasibility, effectiveness, and practicality.
- Choose the most appropriate solution that aligns with the defined objectives.

Step 5: Implement the solution

- Put the chosen solution into action.
- Develop a plan for execution, allocate resources, and communicate the changes to relevant stakeholders.
- Monitor and adapt the implementation as needed to ensure success.

Step 6: Evaluate

- Assess the effectiveness of the implemented solution.

- Measure outcomes against established criteria and goals.

- Identify lessons learned and areas for improvement in the problem-solving process.

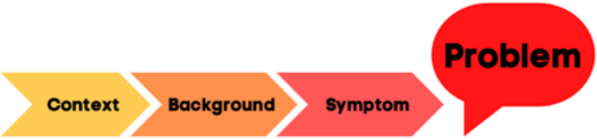
1.1.3 Six-Step Problem Solving Model in Detail

Let's delve into each step in more detail.

Step 1: Define the problem

The first step in the Six-Step Problem Solving Model is to define the problem. This step involves identifying and articulating the issue that needs to be resolved. Defining the problem is a critical step because it sets the foundation for the subsequent steps in the problem-solving process. If the problem is not defined accurately, it can lead to incorrect analysis, wrong assumptions, and ineffective solutions. Therefore, it is essential to ensure that the problem statement is clear, specific, and unambiguous.

To effectively define a problem, it is crucial to have a comprehensive understanding of the current situation and the desired state. This involves analyzing various aspects of the problem, including its context, background, and symptoms.



Context: The context of the problem refers to the broader circumstances and factors surrounding the issue. This may include the social, economic, cultural, or political context in which the problem is occurring. Understanding the context can help to identify potential causes and contributing factors that may be influencing the problem.

Background: The background of the problem relates to the history and development of the issue over time. This may involve tracing the origins of the problem and understanding how it has evolved and changed over time. Examining the background can provide insights into the root causes of the problem and potential solutions.

Symptoms: Symptoms of the problem are the observable and measurable effects or outcomes of the issue. These may include physical, emotional, or behavioral symptoms that are indicative of the problem. Identifying and analyzing the symptoms can help to clarify the nature and extent of the problem, as well as provide a basis for evaluating potential solutions.

By considering these three key issues – context, background, and symptoms – we can gain a deeper understanding of the problem and develop more effective solutions to address it. To diagnose 3 component of a problem including context, background and symptom. There are many techniques that we can use to in this step such as:

Technique 1: Brainstorming

Brainstorming

Brainstorming is a creative problem-solving technique that involves generating a large number of ideas within a group setting. The goal is to encourage open and spontaneous contributions, fostering creativity and innovation. Participants in a brainstorming session are encouraged to express any ideas that come to mind, without immediate evaluation or criticism. This free-flowing process often leads to the exploration of various perspectives and the generation of diverse solutions to a particular problem. Brainstorming is widely used in team settings to leverage the collective creativity of individuals and stimulate innovative thinking.

To apply brainstorming to STEP 1: Define the problem, you and your team can begin by listing all possible contexts, backgrounds, and symptoms related to the problem. Subsequently, engage in discussions to determine the primary context, background, and symptoms of the problem. This collaborative process helps in consolidating ideas and arriving at a clearer understanding of the core aspects of the issue.

Technique 2: Interviewing

Interviewing is a method of gathering information or conducting a conversation between an interviewer (the person asking questions) and an interviewee (the person responding). This method is commonly used in various contexts, such as employment, research, journalism, and information gathering. The purpose of an interview is to obtain insights, opinions, or factual information directly from the interviewee. Interviews can be structured or unstructured, and they may involve a range of questions depending on the goals of the interviewer. The effectiveness of the interviewing method often relies on the skill of the interviewer in asking relevant and probing questions while establishing a rapport with the interviewee.

To implement the interviewing method in STEP 1: Define the problem, you should seek out individuals who have experienced the problem. Engage in conversations with them, inquiring about the context, background, and symptoms of the problem. Following these in-depth discussions, analyze the gathered information to determine the core aspects of the issue.

Technique 3: Questionnaires

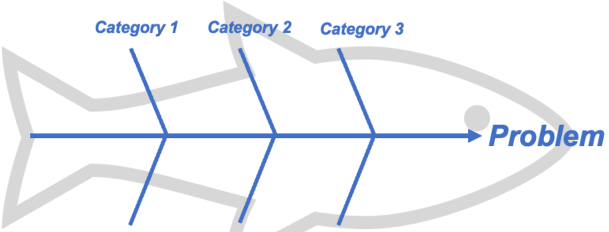
The technique involves gathering data from respondents through a set of pre-designed questions. Commonly employed in surveys and studies, this method aims to collect both quantitative and qualitative information. To conduct a questionnaire, you need a prepared list of questions. Subsequently, present these questions to individuals, collect their responses, and then summarize the findings.

To incorporate the questionnaire method in STEP 1: Define the problem, begin by compiling a list of questions that pertain to the context, background, and symptoms of the problem. Transform these questions into a questionnaire. Proceed to administer this questionnaire to individuals. Finally, summarize the results obtained from the questionnaire responses to identify the key aspects related to the context, background, and symptoms of the problem.

Step 2: Determine the causes of the problem

Once we have a clear understanding of the problem, the next step in solving it is to identify the root causes. By identifying the underlying factors that contribute to the problem, we can develop targeted solutions that address the source of the issue, rather than just treating the symptoms. There are several techniques that can be used to identify the root causes of a problem. For tools that we can use for this step are such as: Fishbone diagram

Technique : Fishbone diagrams



Category 4
Category 5
Category 6

Fishbone diagramsalso known as Ishikawa diagrams or cause-and-effect diagrams, are a tool used to identify and organize the potential causes of a problem. This method is called a "fishbone" diagram because the diagram resembles the skeleton of a fish, with the problem statement or effect being the head and the branches representing the potential causes.

Note that there are other techniques that can be used in this step, such as Pareto analysis, Affinity diagrams, and the 5 Whys method.

Step 3: Develop alternative solutions

Next step after realizing the root causes of the problem, we then generate solutions for the problem. In this state, we have to be creative and think out of the box to create a variety of solutions as many as possible. Therefore, we will focus on:

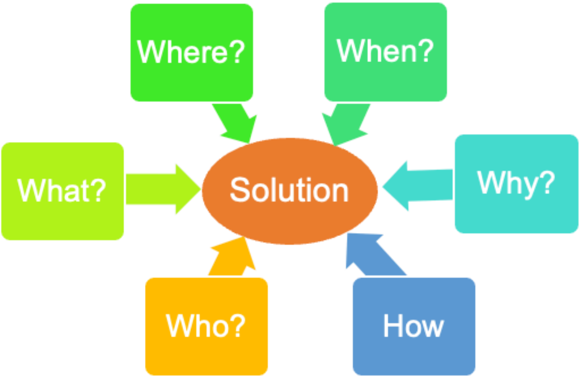
- Generate as many as possible solutions (do not worry about how stupidity it is).
- Considering how each solution be related to the causes and symptoms of the problem.
- Check if different solutions can be combined or merged to generate a better solution.

Step 4: Select a solution

Now we need to choose a solution from many that we get from step 3. We will need to evaluate potential solutions, and then select one. Two keys to be considered including: **Feasibility and Favour**

To determine the feasibility of a proposed solution, many factors need to be taken into consideration, such as:

1. **Time:** Ensure the solution can be implemented within the required timeframe.
2. **Cost:** Ensure adequate financial resources for implementing the solution.
3. **Resources:** Examine the availability of human and physical resources required for the solution.
4. **Legal and Regulatory Compliance:** Ensure the solution aligns with relevant laws and regulations.
5. **Market Demand:** Analyze the market to determine if there is a demand for the solution. Assess competition and understand how the solution meets or exceeds market expectations.
6. **Scalability:** Evaluate whether the solution can accommodate future growth or changes in requirements.
7. **Etc.:** Consider additional factors specific to the context of the proposed solution.



In this stage, we will use the **5W1H method** to assist in making a decision. We will ask for examples:

- What do we need to implement a solution?
- Who will take action?
- Where is the place we can implement a solution?
- When is a good time to implement a solution?
- Why is a solution more suitable than other solutions?
- How will a solution be implemented?

Step 5: Implement the solution

In this step, we implement a solution from the step 4. During the implementation, we will need to keep record how good and bad of this solution. There are many factors that we may record, for example time that will use, money and resources that will need to spend for the solution, how people feel about this solution, etc.

To implement a solution, follow these steps:

1. Define the Solution: Ensure that everyone involved understands the selected solution and how it will address the problem. Develop a clear and concise description of the solution, including its goals and expected outcomes.

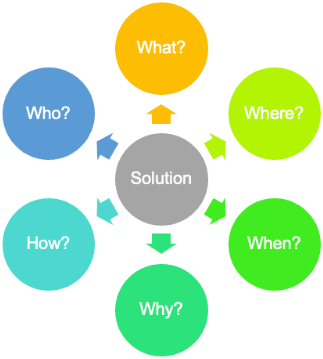
2. Develop an Implementation Plan: Create a detailed implementation plan that outlines the steps required to implement the solution. Determine who will be responsible for each step, the timeline for implementation, and the necessary resources required.

3. Communicate the Plan: Ensure that everyone involved in the implementation process understands the plan and their role in it. Communicate the plan clearly and frequently to keep everyone informed and engaged.

4. Implement the Plan: Follow the implementation plan closely, ensuring that each step is

completed on time and according to plan. Address any issues or obstacles that arise promptly and work to resolve them.

In this stage, you can also use **5W1H method** to assist in making an implementation plan for the solution. These can be examples questions can be asked during this stage.



- What are the specific goals and objectives of the implementation?
- Why is this solution necessary?
- Where will the implementation take place initially, and what is the scope?
- When is the planned timeline for the implementation?
- How will the implementation be carried out?
- Who is responsible for technical aspects such as customization and integration?
- What resources are needed for successful implementation?
- What is the communication plan?
- How will the solution be evaluated during and after implementation?
- Are there any potential risks or challenges associated with the implementation?
- How will the success of the implementation be measured?

Step 6: Evaluate

After the implementation, we will assess the effectiveness of the chosen solution. We will examine the following:

1. Is it on schedule?
2. How many resources did we use?
3. To what extent does it address the problem?
4. Can it complete the necessary tasks?

To evaluate the solution's effectiveness, it's crucial to establish criteria or a method for assessing the results. You must clearly define the criteria or approach you'll employ to determine whether the solution implementation is successful. This typically involves verifying that the solution:

- Is completed within the specified timeframe
- Stays within the allocated budget
- Meets all predetermined criteria

ASSIGNMENT (In Class Activity) 1%: Group work. Choose a problem from your daily life and apply the 6-step problem-solving process to address it.

Step 1: Understand the problem -> Utilize brainstorming.

Step 2: Determine the causes of the problem -> Employ Fishbone diagrams.

Step 3: Develop alternative solutions -> Engage in brainstorming.

Step 4: Select a solution -> Discuss and determine the most feasible and favorable option.

Step 5: Implement the solution -> Discuss the implementation plan for the chosen solution.

Step 6: Evaluate -> Discuss the process for evaluating the results after implementing the solution.

Then present 5 minutes.

References

- Six-step problem solving: https://www.uapb.edu/sites/www/Uploads/Assessment/webinar/session%203/NewFolder/6%20Step%20Problem%20Solving%20Process.pdf
- Fishbone diagram: https://www.cms.gov/medicare/provider-enrollment-and-certification/qapi/downloads/fishbonerevised.pdf

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