# Working in a Digital World: Professional Skills

## Solving Problems with Critical and Creative Thinking

# Introduction

## Course welcome

**5** Minutes

### Why do you need to focus on solving problems?

People constantly deal with a wide range of problems in their lives and work. It's always necessary to solve problems—whether they are internal or for a customer, large or small, simple or complex. Learning better ways to solve problems can also benefit your work performance. Since problems are at the center of what many people do at work every day, having good problem-solving skills can make a huge difference to your career.

A lot of the work in problem solving involves understanding what the underlying issues of the problem really are—not only the symptoms. Dealing with a customer complaint is part of the problem that needs to be solved. The employee dealing with the complaint should also be asking what has caused the customer to complain in the first place to remove it from occurring in the future.

You'll find that problem solving is much more effective if you begin with clarity and the right focus. It's also important not to rush directly to the solution process. This course will help you gain clarity on a problem before you try to solve it.

Ask anyone in the workplace if problem-solving is part of their daily work and the answer is "Yes!" Problem solving is a critical element of our work, but do we know how to do it effectively?

## What you'll learn in this course

You'll learn how you can solve problems using a five-step problem-solving process. You'll focus on work-related problems that you can influence, control, and resolve, with a view to helping you be more proactive and effective at work.

### Content covered

- Before you begin
- Step 1: Identify - What's the problem?
    - Writing problem statements
- Step 2: Analyze - What's really going on?
- Step 3: Explore - What are the options?
- Step 4: Select - What's the best solution?
    - Ease and Effectiveness matrix
- Step 5: Implement - What will success look like?
- Show what you know! - Course summary and final assessment game

### Estimated duration

100 minutes

**BADGING OPPORTUNITY**

### Completion criteria

You need to visit all the pages in this course and attempt all the assessment questions to complete the course.

This course is 1 of 5 in the Professional Skills series. Complete all of 5 courses, including the quizzes and assessments, and earn the **Working in a Digital World: Professional Skills** badge.


> ### Ready to get started?
>
> You're already finished your first lesson!
>
> When you're done with a lesson, click **I've checked it out!** to collect your learning credit and confirm completion!
>
> Then, click **Let's Keep Going!** and continue to the next lesson in the course where you'll review how to solve problems in five steps.



# Before you begin ...

## The five steps

**10** Minutes

> ***"A problem well stated is a problem half solved."***
> – Charles Kettering, American inventor, engineer, and head of research at General Motors from 1920 to 1947

People constantly deal with a wide range of problems in their lives and work. Learning better ways to solve problems can benefit your performance at work and just about everywhere else. And given the agile way of working, being skilled at problem solving helps you get over hurdles quickly and move on to the next challenge.

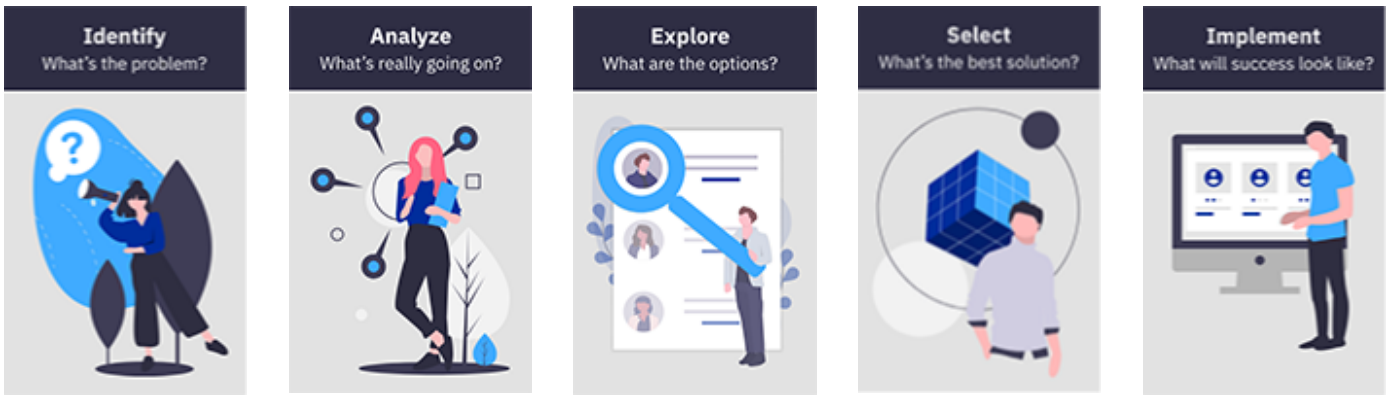
## The problem-solving process

This course takes you through a creative and analytical approach for defining problems, articulating the problem statement, identifying the root cause for a problem, and ways to select and implement the best solution for a problem. This five-step process helps recognize and avoid common pitfalls that can harm the intended result. It helps you to think through a problem and arrive at a suitable solution and gauge if the solution works.

Once you understand the five steps of problem solving, you can build your skill level in each one. Some people are naturally good at a couple of the steps and not as naturally good at others. Some people are great at generating ideas but struggle implementing them. Other people have great execution skills but can't make decisions on which solutions to use. Knowing the different problem-solving steps allows you to work on your weak areas, or team up with someone whose strengths complement yours.

*Click each button to learn more about each step of the problem-solving process.*

### The five-step problem-solving process



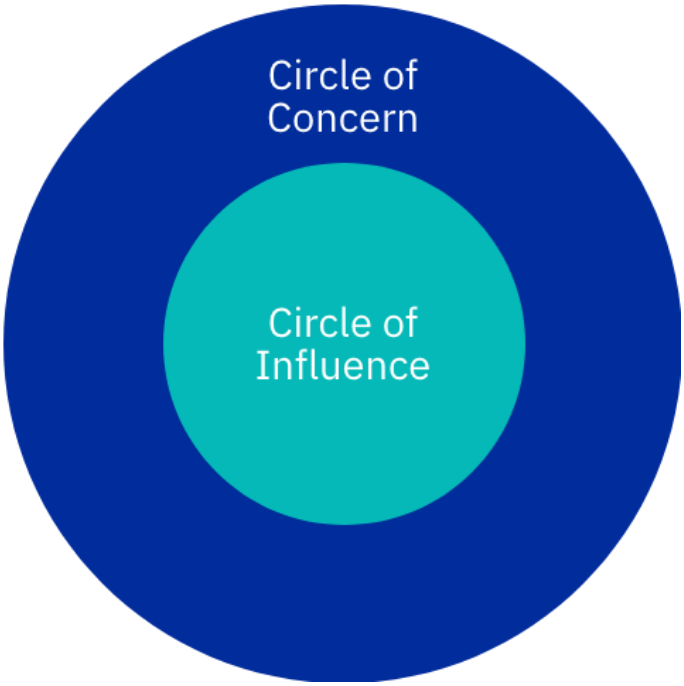

## What problems do you focus your time and energy on?

You face different kinds of problems on a daily basis, some of which you can influence and resolve and some that you have no control over. Stephen Covey, an American educator, author, businessman, and keynote speaker, has explained this concept, which is widely known as the **Circle of Concern** and the **Circle of Influence**.

- The **Circle of Concern** comprises all your problems. This includes some that you can influence and some that you cannot.
- The **Circle of Influence** is a smaller circle of influence that falls within your circle of concerns. It includes all problems that you can influence, control, and resolve.

When faced with these two types of problems, it isn't the best use of your time to focus your attention on problems that fall outside your Circle of Influence—things that you have no control over, such as traffic, economy, or organizational changes.

What does make sense is to focus on things that you can control. Highly effective people prefer to focus their time and energy on issues where they can **actually** make a difference, and you are encouraged to do the same.




## Solving problems requires a combination of critical and creative thinking

Critical thinking involves **convergent thinking** (tending to come together or merge) and focuses on coming up with a single solution to a problem. Creative thinking involves **divergent thinking** (tending to differ in opinion or branch off) and generates many creative ideas by exploring many possible solutions. Together, critical and creative thinking give you powerful ways to solve problems.

### Critical thinking

Critical thinking means identifying and analyzing a problem, and then using facts and logic to evaluate ideas to decide which potential solution is likely to deliver the best outcome.

This method applies **convergent thinking** because you begin with pieces of information and converge around a solution.

### Creative thinking

Creative thinking means generating creative ideas by brainstorming potential ways to solve a problem.

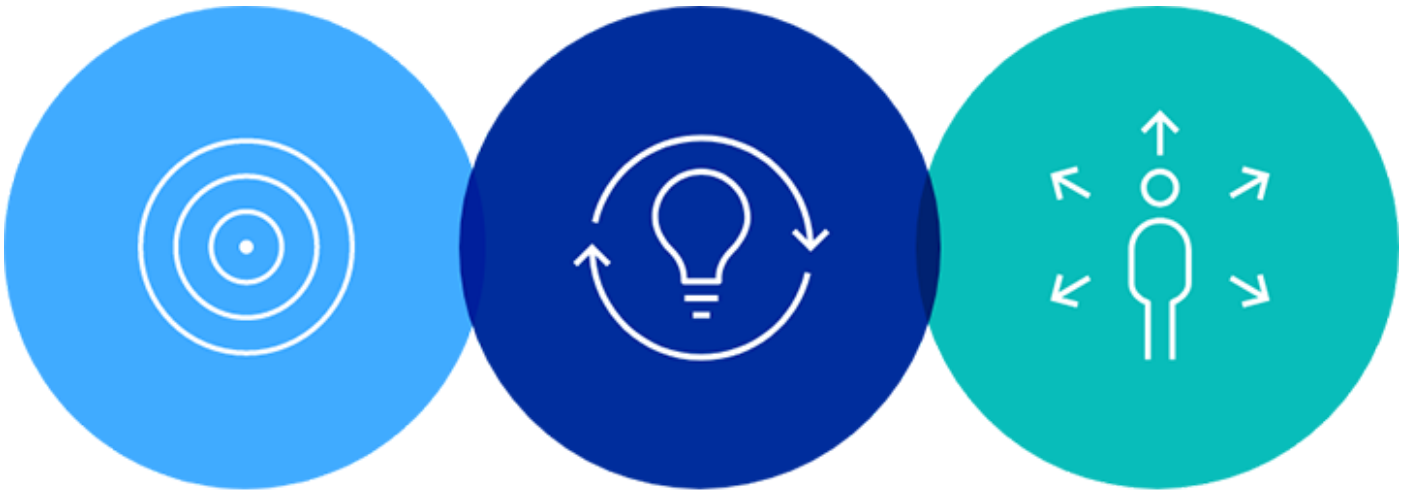
This method applies **divergent thinking** because you begin with a prompt or question and generate many solutions.

## How can you solve problems in an agile way?

These three agile principles enable you to work out the best solution without getting stuck. Agile ways of working encourage you to:

1. Begin with clarity of outcome
2. Listen, iterate, and course correct

3. Be self-directed



An agile approach to problem solving means that you:

- Clearly understand the problem before trying to solve it
- Keep improving the solution
- Take the lead in tackling problems head-on instead of avoiding them

## What do you think?

**What are some areas where problem solving can help you personally?**

*Enter your response in the provided text box. (Your response is saved here while you complete the course and is for your personal reflection only.)*

1. Establish the criteria for success
This defines what "success" looks like for Georgia.

Success criteria:

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### Evaluate your thinking

When considering some areas where problem solving can have a real impact for you, does your answer account for some of these areas?

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**Click here to check!**

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As you progress through this course, consider using problem-solving techniques to:

- Decide on your field of study

- Find ways to better manage your time
- Improve your grades or work performance
- Complete assignments or team projects

**Key learning points in this topic**

- Problems are at the center of what many people do at work every day, so learning better ways to solve problems can benefit your work performance.
- This course explores a five-step problem-solving process. It includes a creative and analytical approach for defining problems, articulating the problem statement, identifying the root cause of a problem, and ways to select and implement the best solution for any problem.
- The Circle of Concern comprises all your problems, which includes some that you can influence and some that you cannot.
- The Circle of Influence is a smaller circle of influence that falls within your circle of concerns. It includes all problems that you can influence, control, and resolve. Highly effective people focus energy on the circle of influence.
- Critical thinking involves convergent thinking and focuses on coming up with a single solution to a problem.
- Creative thinking involves divergent thinking and generates many creative ideas by exploring many possible solutions.
- Using agile principles encourages you to begin with an understanding of the problem; listen, iterate, and course correct; and be self-directing, individually or as a team.

Continue with the next topics in this course to discover more about each step of the problem-solving process!

# Identify: What's the problem?

## Step 1

**5** Minutes

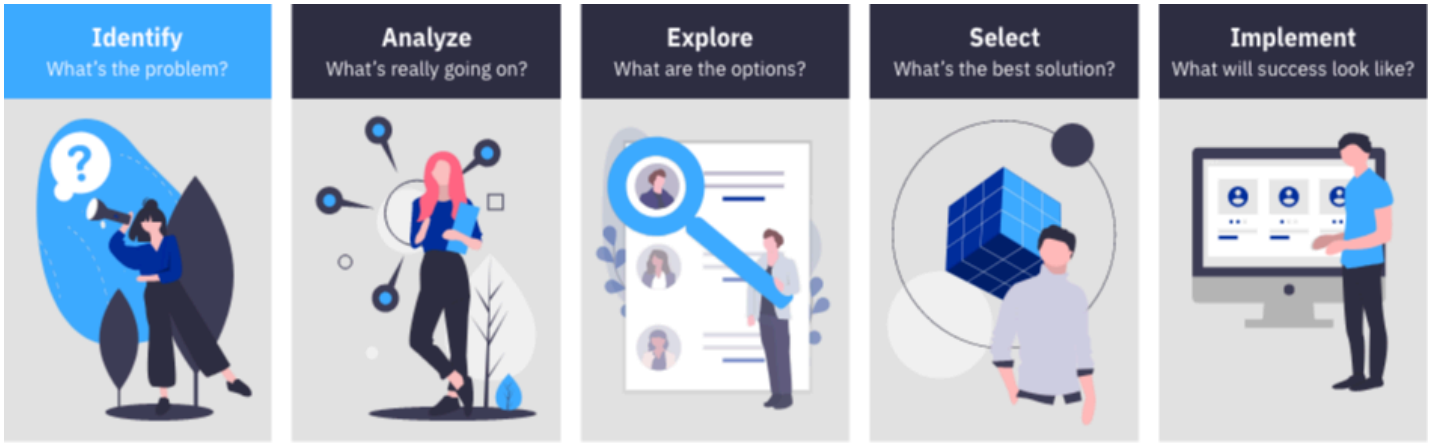
To arrive at an effective solution, you have to first correctly **identify the problem**. While this might seem obvious, many people do not take the time and effort to do so.

Problem solving is much more effective if you begin with clarity and the right focus. It's important not to rush to the solution process.

## But, first, what is a problem?

A problem might arise from a goal that's difficult to achieve, and it might revolve around something that needs more attention. But it always has the potential of leading to a negative outcome. If there is no negative outcome, then it is not a problem. This is an important distinction, and it's one of the first things to consider when you start to solve a problem.

## Step 1: Identify - What's the problem?




The first step of the problem-solving process is to identify the problem as precisely as possible. By answering the **who**, **when**, **where**, and **what** questions, you'll understand the situation better.

This step is aligned with the agile principle of beginning with clarity on the problem before you try to solve it. You'll then have to consider the present situation and evaluate how it differs from a more desirable situation.

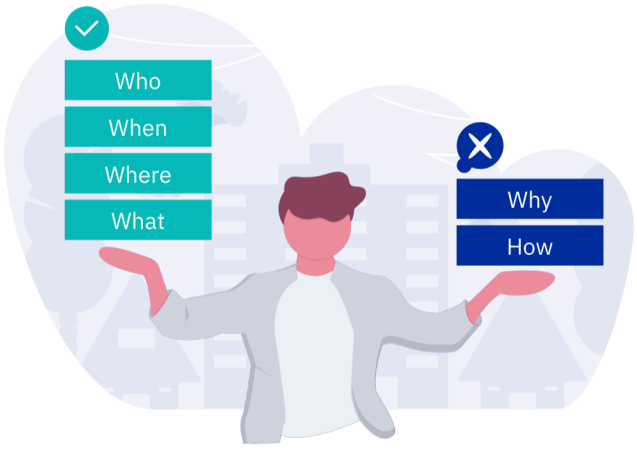
It might be helpful to come up with a concise description of the problem.

## Writing a problem statement

Writing a problem statement helps you put together the key facts of the problem and provide a concise, accurate description of the problem. This agile technique helps you to clearly articulate what you want to achieve.

To write a problem statement, you should include key information about the **who**, **when**, **where**, and **what** of the situation.

**Tip:** Omit the situation's causes such as **why** and **how**, and do not predict solutions because it is too early in the process to begin identifying potential solutions.




**EXAMPLE**

Here's an example of a good problem statement:

> *Albert loads the presentation for a virtual meeting that begins in 10 minutes. One hundred people have logged into the session. His system crashes.*

This is a good example of a problem statement because it includes key information about who, when, where, and what, and it does not get into the situation's causes such as why and how.

Next, you'll identify the key information needed for a problem statement and practice writing one.

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# Identify: Writing problem statements

## Step 1, continued

**15** Minutes

### Now it's your turn to write a problem statement

Help Georgia identify her current problem and create a problem statement for her.

Georgia is the manager of a team of five people that processes travel expense claims.

It is December 15th, and her team has to process and check 100 expense claims so that refunds can be made by December 31st—the end of her organization's financial year. Earlier in the year, Georgia had approved leave for one team member starting on December 19th. This leaves her with only four people to do the work.

However, today another team member phoned in to say that her youngest daughter has chicken pox. This team member will, therefore, have to stay at home for the next 10 days to care for her child.

Georgia isn't too worried because she still has three people on the team, and they are confident about processing the

claims before the deadline. But then Georgia's manager informs her that her team will have to process 100 additional expense claims before the end of the year. Georgia doesn't know how her team is going to process 200 expense claims by December 31st with only three people on her team available to do the work.

### Activity 1: Identify Georgia's problem

Consider Georgia's situation and take a few minutes to write a problem statement.

*Enter your response in the provided text box. (Your response is saved here while you complete the course and is for your personal reflection only.)*

Georgia is facing a critical resource shortage in her expense claims processing team. Initially tasked with processing 100 claims by December 31st, her team of five was reduced to four due to pre-approved leave starting December 19th. Now, an unexpected absence due to a team member's family emergency has further reduced her team to three. Compounding the issue, Georgia has just

### What do you think?

**Which option could be Georgia's problem statement?**

A. Georgia's team downsized unexpectedly causing a shortage of people to handle the workload. ☐

B. Georgia's team of 5 people must process 200 expense claims by the end of the month. It's now the 15th of the month, and the team will soon have only 3 people available to do the work. ☐

C. Georgia was wrong to approve the leave of one person in her team when the workload is expected to be high. ☐

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**Check your answer here!** ✕

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Option **B** is a good example because it includes all the key information needed for a problem statement:

- **Who:** Georgia's team of 5 people (soon to be 3 people to do the work)
- **When:** By the end of the month
- **Where:** The date is now the 15th of the month
-

**What:** The team must process 200 expense claims by the end of the month

Also, the statement does not get into the situation's causes such as why and how.

## How do you know if a problem is worth solving?

A great way to determine whether a problem is worth solving is to ask a series of questions:

1. If you take no action, what will be the most likely result?
2. How will this result affect you?
3. How will this result affect your colleagues and your organization's objectives?
4. If you do take action, what are the risks and how big are they?
5. Is it within your or your organization's power to implement a solution?
6. Do you own the situation?
7. Can you define where the situation starts and stops?

### Activity 2: Is Georgia's problem worth solving?

Evaluate whether Georgia's problem is worth solving by thinking of suitable answers to the series of questions.

*Enter a response to each question above in the provided text box. (Your response is saved here while you complete the course and is for your personal reflection only.)*

1. If you take no action, what will be the most likely result?
If Georgia takes no action, her reduced team of three will likely be overwhelmed and unable to process all 200 expense claims by the December 31st deadline.

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### Evaluate your thinking

So, did you have responses to each of the seven questions like these? Is Georgia's problem worth solving?

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**Click here to check for possible answers to the questions!**

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**1. If Georgia takes no action, what will be the most likely result?**

- The team will not process all the expense claims in time.

**2. How will this result affect Georgia?**

- It creates high levels of stress for her.
- It requires her to work extra hours to help the team.
- It requires her to work with her management to find a solution.

**3. How will this result affect Georgia's organization and its employees' objectives?**

- Many employees might not get their money on time, leaving them out of pocket at a time of the year that might be expensive for many of them.
- Expenses that should be incurred in the current year will be carried over to the following year.

**4. If Georgia does take action, what are the risks and how big are they?**

- There is a risk that other work being done might have to be put on hold so that resources can be moved to this work.

**5. Is it within Georgia's power to implement a solution?**

- Yes

**6. Does Georgia own the solution?**

- Yes

**7. Can Georgia define where the solution starts and stops?**

Yes. It starts in the present with 200 claims and stops by the end of the month with those claims either processed or unprocessed.

> ### Solve or don't solve?
>
> Based on the answers to these questions, **yes**, Georgia should solve the problem.

### Key learning points in this topic

- A problem is always associated with a negative outcome.
- A problem statement helps clarify the problem with agility. Remember that a well-written problem statement should be concise, complete, and answer the who, when, where, and what of the problem. It should be accurate and factual and should not mention the situation's causes, provide possible solutions, or use judgmental language.
-

Use seven questions to evaluate if it is worth investing the time and effort it will take to solve the problem.

In the next topic, you'll learn why it's necessary to examine the problem carefully to really understand what is causing the problem.

# Analyze: What's really going on?

## Step 2

**10** Minutes

The most common mistake in problem solving is jumping to a solution immediately after you realize you have a problem. Problem solving works better if you wait until you've fully investigated what is going on.

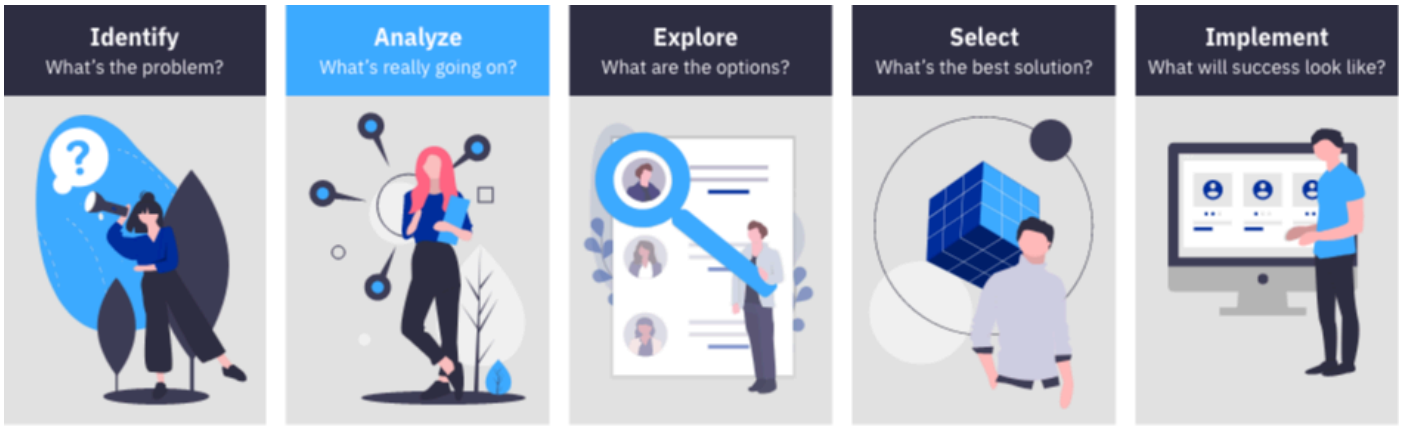
To find the best solution, start with multiple ideas to solve the problem. Then, you can pick the one that might work best.

**So, how do you get to a point where you have several options to choose from?**

✓ Answer

Examine the problem carefully and then think of different ways to solve it!

### Step 2: Analyze - What's really going on?




You should not assume that you understand a problem just because you defined it with a problem statement.

To really understand a problem, you first need to find its **root cause**. Spend time learning more about the problem. Try to view the problem not just from the perspective of those working to solve the problem, but also from the perspective of the stakeholders most affected by the problem. Do not make the mistake of assuming you know what is causing the problem without fully investigating it first.

### What happens when you jump to conclusions?

Suppose you took a quick look at Georgia's situation and jump to the conclusion: *Georgia should have planned better. There's not much she can do now.*

Based on that, you might advise her to tell her employees, "We're just going to have to work harder to complete the work."

What do you think might happen as a result of such a "quick-fix" solution?

It won't solve the problem! If the solution does not address the constraints that Georgia's team faces, no amount of pressure or extra work will solve it. It might even make things worse.

So, how would you start to analyze a problem? One simple technique that's surprisingly effective is called the "Five Whys."

## A technique for the Analyze step: The Five Whys

The Five Whys technique helps you clarify what it is that you need to fix before you work towards the solution. It's simple to do: Ask "why?" repeatedly, at least five times, until you get to the root cause of the problem.

**Just remember:** The Five Whys is a highly effective way of sorting through a lot of information to determine the real flow of cause and effect. Sometimes you'll find more than one root cause. And sometimes it takes four or maybe six questions.

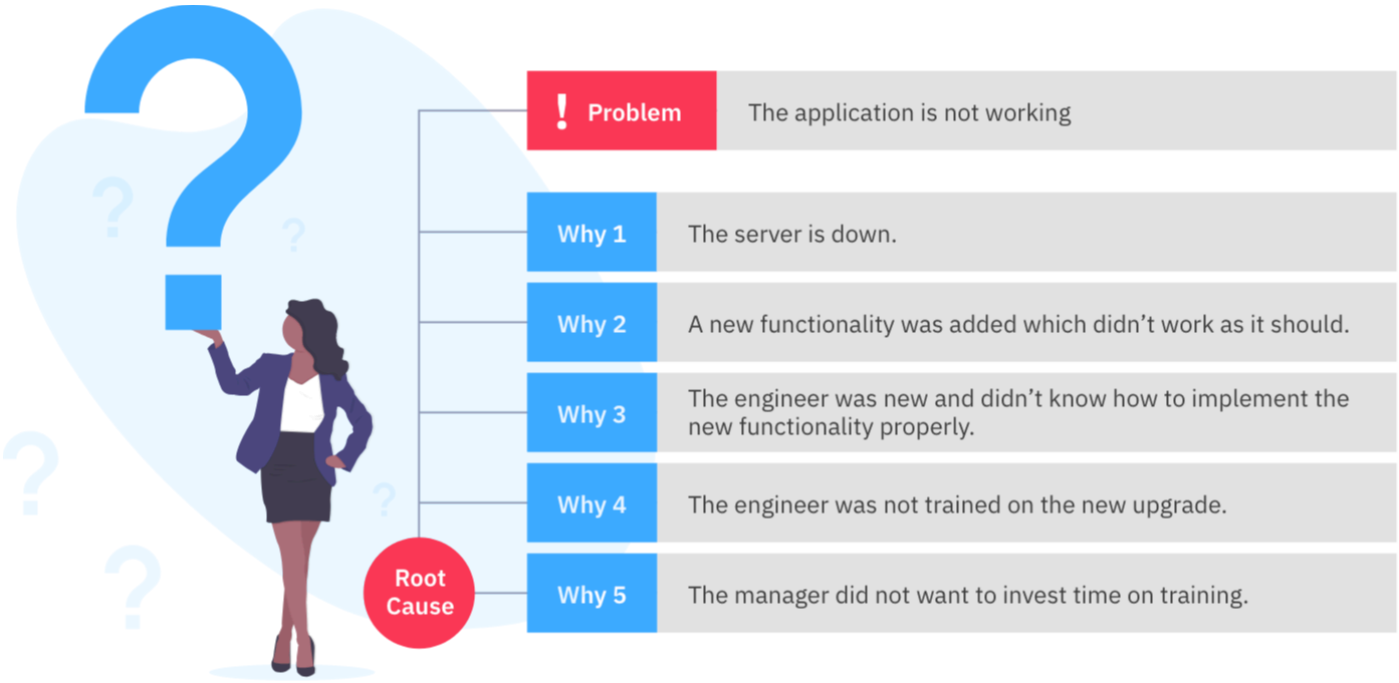
### A Five Whys story

An online retailer's payment app stops working and the support team quickly gets it back up. This is a repeat occurrence, so an expert is brought in to analyze why the app failed. The expert uses the Five Whys technique to

arrive at the root cause.


1. He asks, "Why did the app fail to function?" It turned out the server was down.
2. He asks why a second time, "Why was the server down?" Because the newly added functionality wasn't working as it should.
3. He asks why a third time, "But, why didn't it work as expected?" Because the engineer who implemented it was new and wasn't sure how to do it.
4. He asks why a fourth time, "Why didn't the engineer know the how to implement it?" Because the engineer was never trained on the new functionality.
5. Finally, the expert asks why a fifth time, "Why wasn't the engineer trained?" It turned out that the manager did not want to invest time on training.

What seemed to be a technical problem turned out to be a **human problem**! Using the Five Whys is a simple, yet straightforward, way to reach the root cause of the problem.




## RECAP OF GEORGIA'S SITUATION

Georgia is the manager of a team of five people that processes travel expense claims. It's December 15th and her team has to process and check 100 expense claims so that refunds can be made by December 31st—the end of the organization's financial year. One of her team of five is on vacation starting December 19th. Another team member will be out with a sick child for the next 10 days.

Georgia's manager informs her that her team will have to process 100 additional expense claims before the end of the year. There is now a team of 3 to process 200 expense claims by December 31st.

### Activity: Use the Five Whys to clarify Georgia's problem

**Try using the Five Whys now to uncover the root cause of the problem that Georgia's team faces.**

**Recall the problem statement:** Georgia's team of 5 people must process 200 expense claims by December 31. It's now the 15th of the month, and the team will soon have only 3 people available to do the work.

*Enter your preliminary thoughts in the provided text box. (Your response is saved here while you complete the course and is for your personal reflection only.)*


Your text has been saved. Click "X" to continue.

## Evaluate your thinking

So, did you find yourself using some of the five whys technique to find the root cause of the problem that Georgia's team faces? Are you seeing more clarity in the real issues?

**Click here to check possible answers to the Five Whys.**

Here are some "why" questions to consider when looking for the root cause of the issue:

1. **Why can't Georgia's team process 200 expense claims by December 31?**
   Because there are fewer people than needed to process the claims. The team's experience or speed is not an issue here.
2. **Why are there fewer people than needed to process the claims?**
   Because a person took an unplanned leave. There are fewer people than needed to process the claims. It doesn't have anything to do with the team's professionalism or attitude.
3. **Why did the unplanned leave affect the work?**
   Because there was no backup plan for such an event. The unplanned leave affected the work and schedule. It was not because of a lack of planning the work.
4. **Why was there no backup plan?**
   Because the team was confident of completing the work even with fewer hands than needed. This was an unplanned event at a bad time for the department.

5. **Why is the team no longer confident of completing the work?**
   Because the team has received a higher volume of claims than expected. It is not about doubting the team's ability or any stress felt by the team.

**The root cause**

Even if one member of the team hadn't taken time off work, the team would have been pressured to complete the additional work in the time frame requested.

The problem has nothing to do with Georgia's ability to plan. Knowing this, she can make a better decision about how to solve the problem rather than tackling the problem without clearly knowing what has caused it.

## Many tools can help with root cause analysis

The Five Whys is not the only way to identify the underlying causes of a problem. If you search the internet for "root cause analysis", you'll find many tools such as those listed here; some easy to use and some more complex. It doesn't matter which tool you use as long as it helps you get to the root cause of the problem.

Are any of these tools or techniques familiar to you?

- Cause and effect diagrams
- Pareto charts
- Histograms
- Frequency plots
- Flow diagrams
- Process failure mode effect analysis
- Fault tree analysis
- Gap analysis
- Statistical process control
- Process capability analysis

### Key learning points in this topic

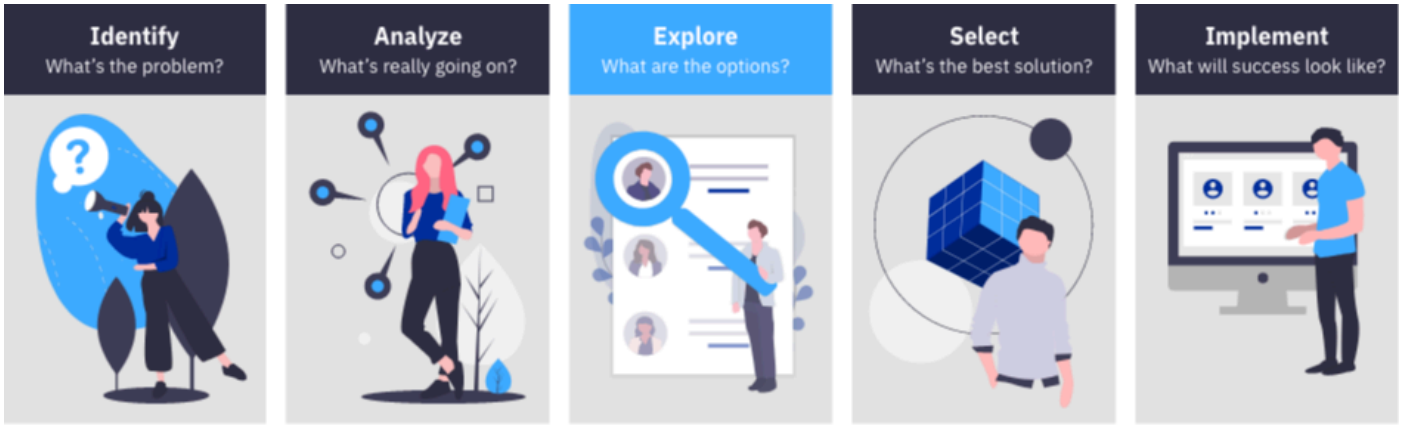
- **The Five Whys** is a simple technique that you can apply to almost any problem. Ask yourself why the problem exists. The answer to the first "why" prompts another, then another. Continue to ask "why" until you uncover the source of the problem.
- Once you know the underlying cause of the problem, you can decide how to handle it. This clarity is essential before you solve the problem.

In the next topic, you'll learn about the creative step, which is to use brainstorming to explore multiple options to solve a problem.

# Explore: What are the options?

## Step 3

**15** Minutes




The third step in the problem-solving process is **Explore**. In this step, you develop several ideas to solve the problem. A common mistake that people make when solving problems is focusing only on one approach.

Here are some other mistakes people commonly make:

- Coming up with one idea and then stopping
- Not listening to ideas from other people
- Killing good ideas too quickly because they sound strange
- Letting one person dominate discussions on the best solution
- Wanting every proposed idea to work perfectly right from the outset

One great way to ensure that you explore multiple options for solving the problem is to **brainstorm**.

### Brainstorm to get plenty of ideas

Brainstorming is an informal way to come up with ideas for solving a problem. It is quick and easy, and it works for problems that you need to solve quickly. Though it's usually done in a group, you can also use brainstorming techniques if you're solving a problem by yourself.

Most people are familiar with the brainstorming process. But, did you know that brainstorming can be ineffective when it's limited to your area of expertise?

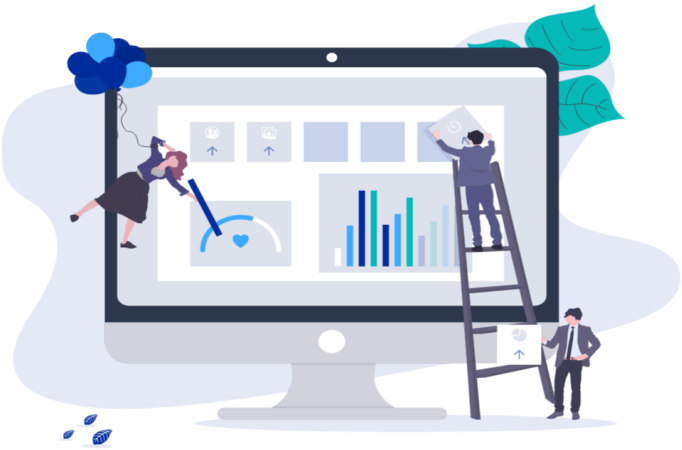
### Look at this scenario that a design team experienced

A design team has to present a new design concept to the new vice president, but the team was asked to present only one slide. The team members have lots of data and struggle to decide what and how much of it to show. They brainstorm as a team and decide to use only the data points connected to the basics of the concept. But this did not convey the concept effectively.

They decide to take their brainstorming further.

The design team connects with the Graphics and Media team to understand their perspective on the problem. And surprisingly, even though the Graphics and Media team belonged to another profession, the ideas that emerged from their team led to a solution.

The design team used infographics to combine different data points to effectively convey the whole concept on one slide. Not only did they make their point, they were also complimented on how clear and attractive the slide looked!



## Brainstorming rules

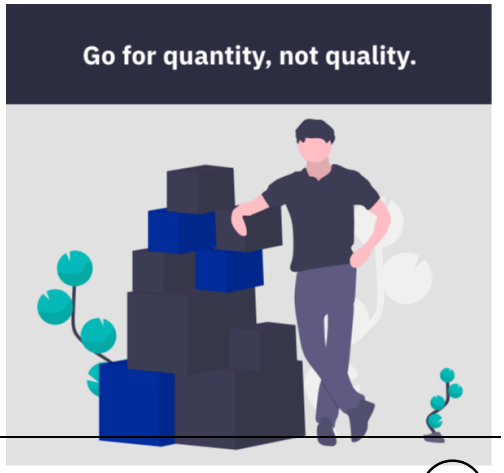
Brainstorming can be more effective by looking outside your experience and area of expertise because it can uncover ideas that your team might not think of.

*Click these sections to explore techniques for effective brainstorming.*

### Go for quantity, not quality

At this point, creativity is more important than practicality. Your goal is to uncover as many approaches as possible. Later, you'll worry about which ideas will work best. Right now, the more ideas you have to choose from, the better. You can find ideas from surprising sources.

When brainstorming, particularly if it is a complex problem, involve people who are not directly impacted by the problem, such as people in different job roles, locations, or departments who might have experienced a similar problem. A change in perspective can lead to valuable new ideas.




### Expand and improve other people's ideas

It's fine to build on other people's ideas and even take them off into new directions. The emphasis now is on being creative. It's not important who owns an idea or who gets credit for it.

Take an agile approach and allow one idea to transform into another and then to transform again as many times as people find new ways to imagine it.

Try combining ideas from different domains to form a new solution. Sometimes, the most creative and effective solutions emerge from this process.


## Do not criticize

It's important to avoid "killing" an idea just because you see a problem with it. Stay positive and come up with alternate versions.

It's common for an idea that sounds absurd to inspire a second, excellent idea a few minutes later. But that can't happen if there is a critic in the group who crushes anything that's out of the ordinary or that doesn't work perfectly on the first try.

Don't be that person. Stay positive!


## Now it's your turn to brainstorm

Though brainstorming is usually done in a group, you can try solving a problem by yourself. Look at the problem from different directions, not limiting yourself to just your own area of expertise.

### RECAP OF GEORGIA'S SITUATION

Georgia is the manager of a team of five people that processes travel expense claims. It's December 15th and her team has to process and check 100 expense claims so that refunds can be made by December 31st—the end of the organization's financial year. One of her team of five is on vacation starting December 19th. Another team member will be out with a sick child for the next 10 days.

Georgia's manager informs her that her team will have to process 100 additional expense claims before the end of the year. There is now a team of 3 to process 200 expense claims by December 31st.

### Activity: Brainstorm to solve Georgia's problem

Brainstorm on your own to come up with as many **alternate ideas** as you can to explore some options for Georgia.

*Enter your preliminary thoughts in the provided text box. (Your response is saved here while you complete the course and is for your personal reflection only.)*

Your text has been saved. Click "X" to continue.

## Evaluate your thinking

So, did you find yourself using some of the brainstorming techniques just covered to come up with alternate ideas to Georgia's problem? Do you see how you could have generated even more ideas by working with others?

**Click here to check for possible brainstorming ideas!**

Ideas on how Georgia could finish the workload in December include the following:

- Allow the person caring for her child to work part-time from home.
- Get resources from other teams to help.
- Finish as much as possible with the team.
- Ask the three remaining team members to work more hours during the weekday, or possibly during the weekends.

### Key learning points in this topic

- Use brainstorming to generate creative ideas to solve a problem.
- Be agile by taking the lead to collaborate and brainstorm with others.
- A collaborative approach brings diverse thinking styles and experience into play. This increases the richness of ideas explored, which helps you find new and better solutions to the problem.

- Remember the rules of brainstorming:
  - Go for quantity, not quality.
  - Expand and improve other people's ideas.
  - Do not criticize.

In the next topic, you'll learn about the techniques to select the best solution for your problem.

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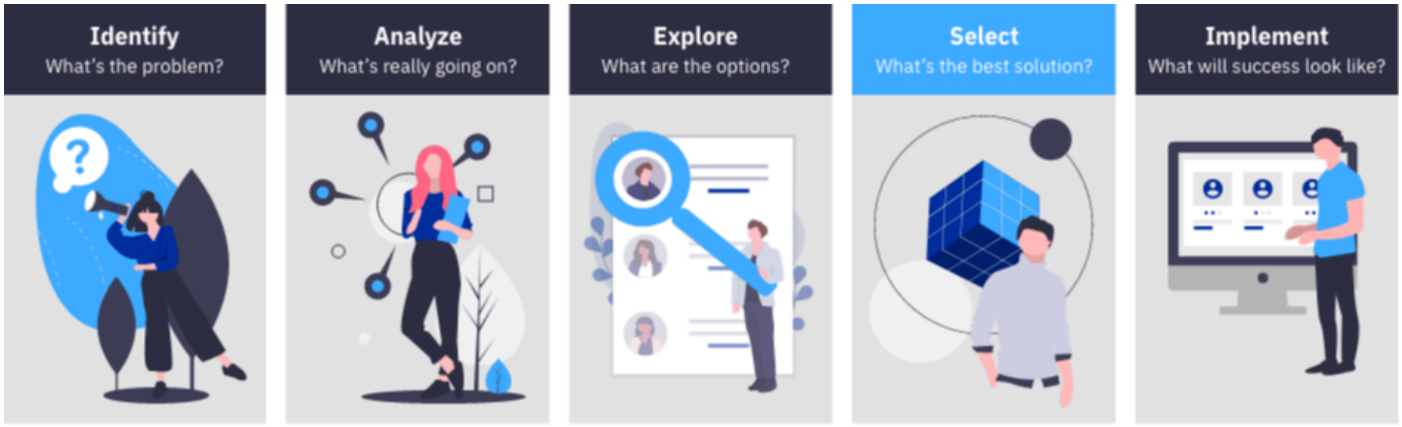
# Select: What's the best solution?

## Step 4

**15** Minutes




To choose the right solution, you'll often find yourself weighing several factors, including the solution's cost and effectiveness. What other important factors might be considered when selecting the best solution? Here are a few:

- How long will it take to implement the solution?
- Who will do most of the work?
- Does it have approval from someone else, for example, a leadership or management team?
- Is it scalable and sustainable?

> *"Genius is one percent inspiration and ninety-nine percent perspiration."*

> – Thomas Edison, American inventor

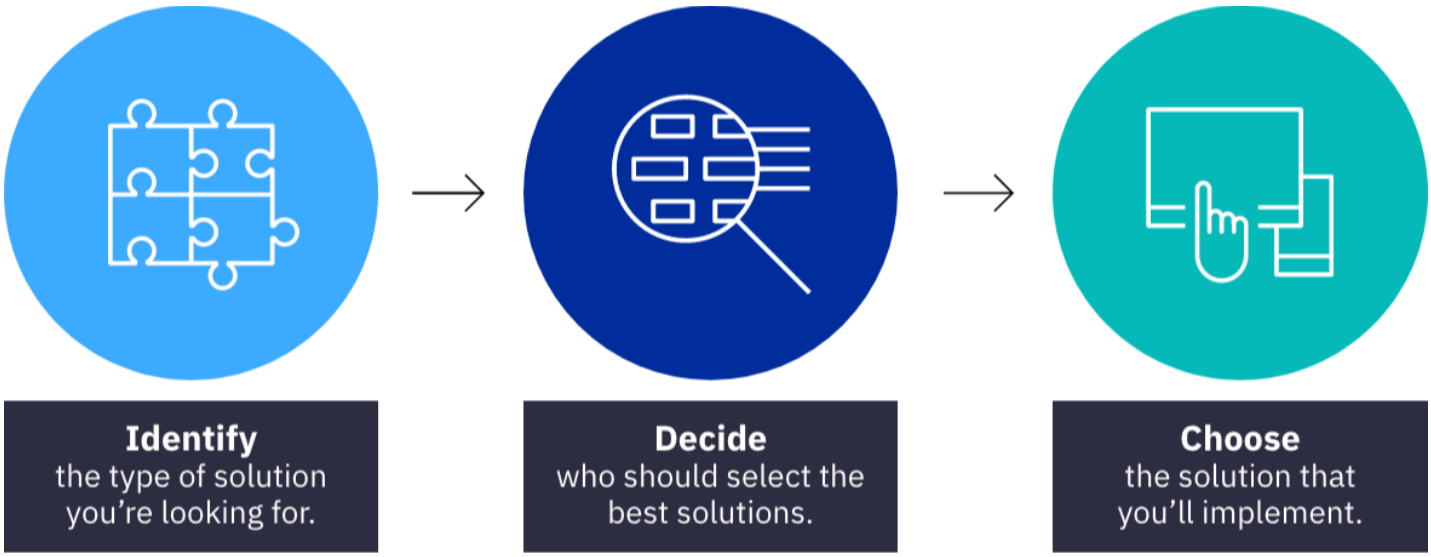
Selecting the best solution depends on hard work and adherence to processes. Don't select a solution because it's easy or quick to implement. Look for a solution that fits the problem. How do you do that? The next step in the problem-solving process will show you.

## Step 2: Select - What's the best solution?

The fourth step of the problem-solving process is Select. It involves going through a list of potential solutions and making an informed decision about the best solution. You use critical thinking to select the best solution because you require logic rather than invention to select and implement a solution.

Your focus in this step should be to ensure that you select the solution that will lead to a positive outcome and achieve desired results.

### How do you select the best solution with ease?




The selection process can be easier when you answer three questions:

1. **Identify** – What type of solution are you looking for?
2. **Decide** – Who will help you make the decision?
3. **Choose** – Which solution will you actually implement?

Finding answers to these questions helps you demonstrate the agile principle of being self-directed. Selecting the best solution won't be possible if you don't take ownership to identify the appropriate solution type. You also need to collaborate with others to identify who'll select the solution. Next, you'll examine each of these three questions in detail, starting with the type of solution.

## Five types of solutions

All possible solutions for a problem, whether good or bad, fall into one of these five categories.

*Review each solution type to learn what it is and how you can use it.*

| Solution type | What it is and how to use it |
|---|---|
| Corrective | A corrective solution **corrects or fixes** the root cause of the problem, after which the problem disappears.<br><br>This type of solution is highly desirable, but it's not always possible. |
| Adaptive | An adaptive solution **accommodates** the problem.<br><br>This type of solution is a workaround that doesn't fix the root cause, but reduces the impact of the problem. |
| Interim | An interim solution is a **make-do** type of solution.<br><br>This type of solution puts a temporary "bandage" over the problem. It can buy you time while you continue to search for something better. |
| Contingent | A contingent solution is a **backup plan**.<br><br>You have this type of solution ready in advance, in case the problem develops in the future. |
| Preventive | A preventive solution is **created before a problem occurs**, but you don’t just keep it ready.<br><br>You implement this type of solution so that the problem is prevented and will never occur. |

## Now it's your turn to evaluate five solutions to one problem

Read the following scenario to understand the problem.

### SCENARIO

Your company's Global Product Management team is scheduled to meet face-to-face in a different city for a team-building program in 2 weeks.

You are in charge of organizing this! All arrangements for the meeting including hotel and flight bookings are completed. But you just learned that the city where you plan to meet is experiencing political unrest and will not be safe. There is no update on when the situation will be under control.

### What do you think?

*Decide if you think each solution is viable (Yes) or not a viable option (No). (Hint: More than one solution might be viable!) Click **Submit** to check your answers.*

| Consider each of the following solutions to the scenario. | Yes | No |
|---|---|---|

Corrective solution: You could change the location of the meeting. This solution corrects the root cause of the problem, but you'll need to make sure that hotels and flights are available for the new location.

Adaptive solution: You could ensure that all activities are scheduled inside the hotel; that way, the team members will not need to go outside and compromise their safety. This does not fix the real problem of safety, but definitely reduces the danger.

Interim solution: You could postpone the meeting to a later date when the political unrest settles down. You might have to make new flight and hotel bookings, but the safety of your team members will not be compromised.

Contingent solution: As a backup plan, you could keep the setup ready for doing a virtual meeting in case a face-to-face meeting runs into hurdles.

Preventive solution: You could run a virtual team-building exercise; that way, the political unrest in the city will not affect the team plans in any way.

Submit Reset

## Evaluate your thinking

Did you pick the best solution? Compare your selections with these.

**Click here to check which solutions are best, and which are "no-go"!**

## Viable options

The **adaptive** and **interim** solution work best for this scenario.

- The adaptive solution is a workaround and the best option. By scheduling all activities inside the hotel, the team manage the problem and meet the deadline. The solution does not make the problem go away, but will definitely help and keep employees safe.
- The interim solution (postponing the event) would be another good option. An interim solution temporarily takes care of the problem. It does not make the problem go away, but will definitely help the team manage the problem and meet the deadline.

## Not viable

**Corrective**, **contingent**, and **preventive** solution do not work as well for this scenario.

- The corrective solution isn't an option because the problem's root cause is not in the team's control, so they can't make it go away.
-

The contingent solution is not a good option either. It's too late for contingent solutions because the problem has already occurred.

- It's too late for preventive solutions because the problem has already occurred.

## Remember Georgia's problem?

### Which type of solution do you think would work for Georgia?

In Georgia's case, it's too late for **contingent** or **preventive** solutions because the problem has already occurred. A **corrective** solution isn't an option either because the problem's root cause is not in Georgia's control, so she can't make it go away.

An **adaptive** or **interim** solution would, therefore, be the best option. An adaptive solution is a workaround, while an interim solution temporarily takes care of the problem. Both these solutions do not make the problem go away, but they will definitely help Georgia manage the problem and meet her deadline. That's what she wants most of all.

### RECAP OF GEORGIA'S SITUATION

Georgia is the manager of a team of five people that processes travel expense claims. It's December 15th and her team has to process and check 100 expense claims so that refunds can be made by December 31st—the end of the organization's financial year. One of her team of five is on vacation starting December 19th. Another team member will be out with a sick child for the next 10 days.


Georgia's manager informs her that her team will have to process 100 additional expense claims before the end of the year. There is now a team of 3 to process 200 expense claims by December 31st.

## Use these factors to identify who should choose a solution


Knowing who should choose a solution is not always obvious. Making this decision involves balancing three factors:

time, quality, and buy-in. Dealing with these factors is often a balancing act. You need to identify who should be involved in arriving at a solution based on each factor.

1. **Time** – The time factor indicates how soon an action needs to be taken. If there isn't much time available, do not involve a lot of people. Large groups often make decisions more slowly than small groups or individuals.
2. **Quality** – The quality factor focuses on how completely the action must solve the problem. Remember, better solutions may require input from experts.
3. **Buy-in** – The buy-in factor highlights the extent to which others need to commit to, or buy-in to, the solution. Consensus-building yields the greatest buy-in, but it takes more time and can complicate an otherwise simple problem.

Next, you'll learn about another technique to select the best solution called the Ease and Effectiveness matrix.

# Select: Ease and effectiveness matrix

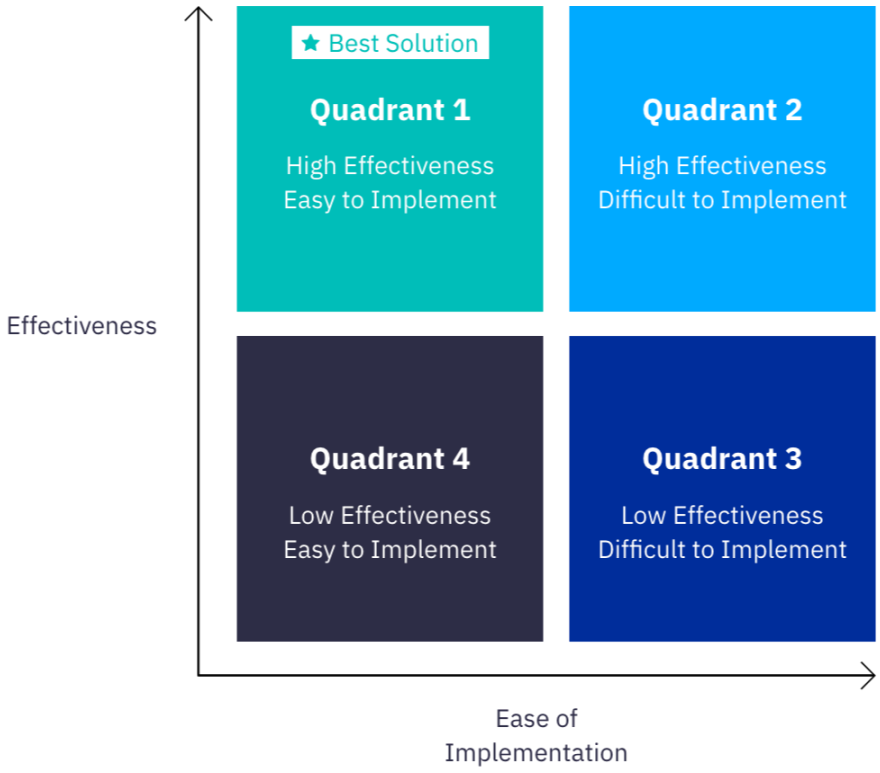
## Step 4, continued

**10** Minutes

### Use the Ease and Effectiveness matrix to select the best solution

Once you have potential solutions in place, selecting the best one is not difficult. A good way to make this decision is by using the **Ease and Effectiveness** matrix. This matrix helps you decide what solutions you should prioritize and the ones you should avoid, if you want to make the most of your time and opportunities.

The best solutions will be those situated in the **High Effectiveness and Easy to Implement** quadrant.




### Now it's your turn to work out the best possible solution

**SCENARIO**

You lead a team of 24 service analysts. On reviewing the team's performance, you realize that the team members need to improve their skills in the operations excellence tools that they use. After much planning and effort, you've organized a workshop to be conducted on two dates to allow the full team to participate.

For a workshop to be cost-effective and of good quality, you need a minimum of nine participants. However, with the first workshop a week away, you find out that only five participants have registered. Many participants have cancelled their registration because of high workloads.

### Activity: Use the Ease and Effectiveness matrix

What can you do to run the workshop successfully? Here are some potential solutions to this scenario:

- Begin the first workshop with five participants to start the skill-building process.
- Reschedule the workshop to a later date when there are a minimum of nine participants.
- Identify colleagues to assist interested participants with their work so they can enroll in the workshop.
- Create a plan to manage the workload and timelines of projects to allow those who cancelled their registrations to enroll.

**Now, your task is to use the Ease and Effectiveness matrix to determine the best solution.** Take a look at the **four potential solutions and identify where they fit in the following Ease and Effectiveness matrix. Remember, the solution in the High Effectiveness and Easy to Implement quadrant is the optimal solution.**

*Click the button for the appropriate quadrant to match the potential solution with that quadrant. After you have made your selections, click* ***Submit****.*

## Ease and Effectiveness matrix

| | | |
|---|---|---|
| A | Begin the first workshop with five participants to start the skill-building process. | **Q1** **Q2** **Q4** **Q3** |
| B | Reschedule the workshop to a later date when there are a minimum of nine participants. | **Q1** **Q2** **Q4** **Q3** |

C Identify colleagues to assist interested participants with their work so they can enroll in the workshop.

Q1 Q2 Q4 Q3

D Create a plan to manage the workload and timelines of projects, to allow those who cancelled their registrations to enroll.

Q1 Q2 Q4 Q3

**Quadrant 1** **Quadrant 2**

Easy to implement
High effectiveness

Difficult to implement
High effectiveness

**Quadrant 4** **Quadrant 3**

Easy to implement
Low effectiveness

Difficult to implement
Low effectiveness

Submit Reset

## Evaluate your thinking

Were you able place the potential solution for the workshop in the right quadrant?

---

**Click to learn more about where each solution should be placed in the matrix!**

---

**Quadrant 1: Easy to implement and high effectiveness**

**Option D**: Create a plan to manage the workload and timelines of projects to allow those who cancelled their registrations to enroll.

*This seems to be the best available solution given all the constraints. This solution factors in high workloads and makes room for participants to manage work and attend the workshop.*

**Quadrant 2: Difficult to implement and high effectiveness**

**Option C**: Identify colleagues to assist interested participants with their work so they can enroll in the workshop.

*It might be a challenge to find a peer with the same expertise and available time to fill in for the participants.*

**Quadrant 3: Difficult to implement and low effectiveness**

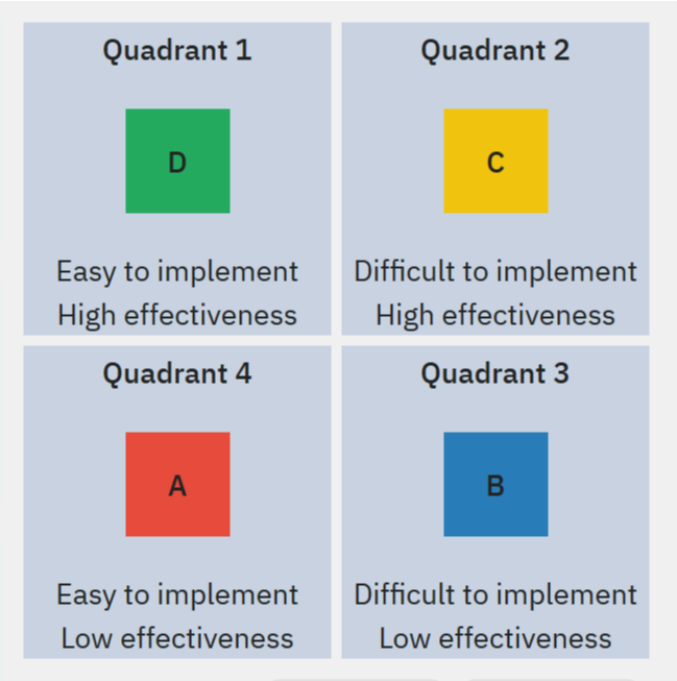
**Option B:** Reschedule the workshop to a later date when there is a minimum of nine participants.

*Keep in mind, it will be difficult to get nine participants even at a later date because of high workloads. Also, as this is a skill-building workshop, the quality of work that the team produces will be affected.*

**Quadrant 4: Easy to implement and low effectiveness**

**Option A**: Begin the first workshop with five participants to start the skill-building process.

*Keep in mind, conducting the workshop now won't be cost-effective and the discussions during the workshop won't be robust.*




**Key learning points in this topic**

- There are five types of solutions: corrective, adaptive, interim, contingent, and preventive.
- To identify the right solution, balance three factors: time, quality, and buy-in. Changing one factor can lead to a different decision.
- The Ease and Effectiveness matrix helps to identify a solution that is easy to implement and highly effective.
- Take the lead to collaborate with others to choose the best solution.

In the next topic, you'll learn to build a plan to implement your solution and design a method to measure its effectiveness.

# Implement: What will success look like?

# Step 5

**10** Minutes

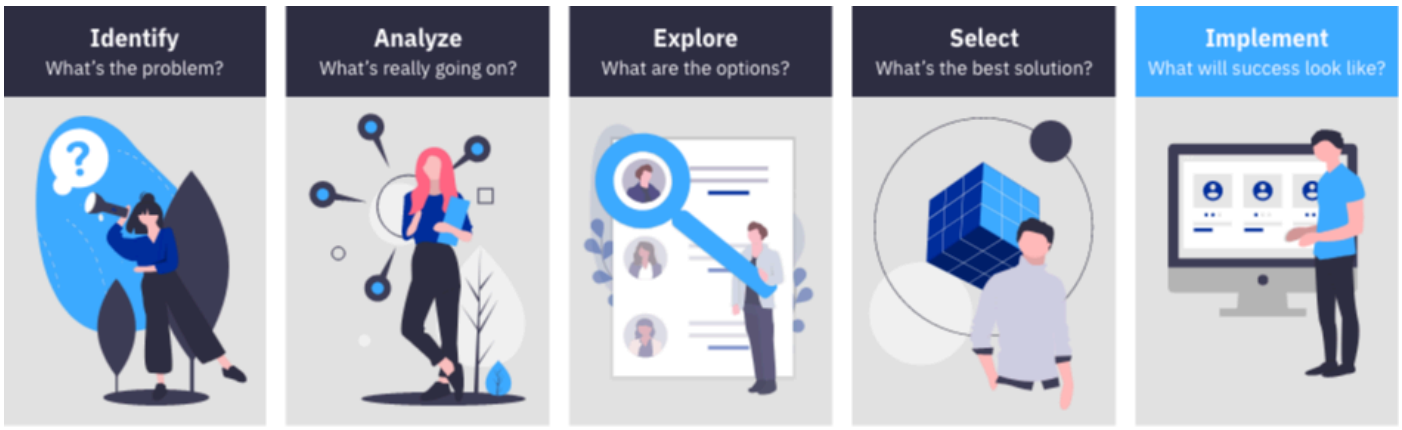
You've identified effective and easy-to-implement solutions. Now there's only one thing left to do: **implement your solution**.

Take a moment to consider the following quote in the context of solving problems.

> ***"Perfect solutions to our difficulties can't be found in an imperfect world."***
>
> – Sir Winston Churchill, Prime Minister of the United Kingdom during the Second World War

Perfect solutions work only in a perfect world. The world is full of complexities. So, even the best solution may not work perfectly.

## Step 5: Implement - What will success look like?




The final step of the problem-solving process is Implement. In this step the question to ask is, *What will success look like?*

When it comes to implementation, the best order in which you should do things might surprise you. Acting on the solution should not come first.

The first part of implementing a solution is to **design a method to measure its effectiveness**. Start by planning how you'll measure the solution. This can help uncover details about the solution that you might not have thought of before—details that can help implement your solution well. And, it will help build the measurement into your plan from the beginning, so it doesn't get overlooked.

The second part of implementing a solution is to **build a plan to implement your solution**. Here, you get tactical about what tasks need to be done, in what priority, by whom, and by when.

## Design a method to measure a solution's effectiveness

How will you measure a solution's effectiveness? Three things that can help you measure any solution's effectiveness. You need to:

1. Establish the criteria for success. (In other words, what constitutes success?)
2. Determine what you will measure to gauge that success.
3. Decide how you will measure it.


## Remember Georgia's problem?

At first, it can be difficult to differentiate between these steps to measure the effectiveness of a solution.

So, consider them in the light of Georgia's situation.

### What do you think?

**Considering the three steps to measuring success, how can Georgia measure her solution's effectiveness?**

*Enter your response in the provided text box. (Your response is saved here while you complete the course and is for your personal reflection only.)*

### RECAP OF GEORGIA'S SITUATION

Georgia is the manager of a team of five people that processes travel expense claims. It's December 15th and her team has to process and check 100 expense claims so that refunds can be made by December 31st—the end of the organization's financial year. One of her team of five is on vacation starting December 19th. Another team member will be out with a sick child for the next 10 days.

| December | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | | | | |

Georgia's manager informs her that her team will have to process 100 additional expense claims before the end of the year. There is now a team of 3 to process 200

expense claims by December 31st.

Your text has been saved. Click "X" to continue.

### Evaluate your thinking

Does your answer account for some of these points about measuring for success?

**Click here to check how Georgia might evaluate her solution's effectiveness.**

**Step 1: Establish the criteria for success**

Success for Georgia's problem would be achieving the goal of the team accurately processing 200 expense claims by the end of the month.

**Step 2: Determine what you will measure**

Counting the number of expense claims accurately processed would measure the team's success.

**Step 3: Decide how you will measure it**

Measuring the number of expense claims (accurately and inaccurately) processed by the end of the last day of the month would reveal how successful Georgia's solution would be.

## Build a plan to implement your solution

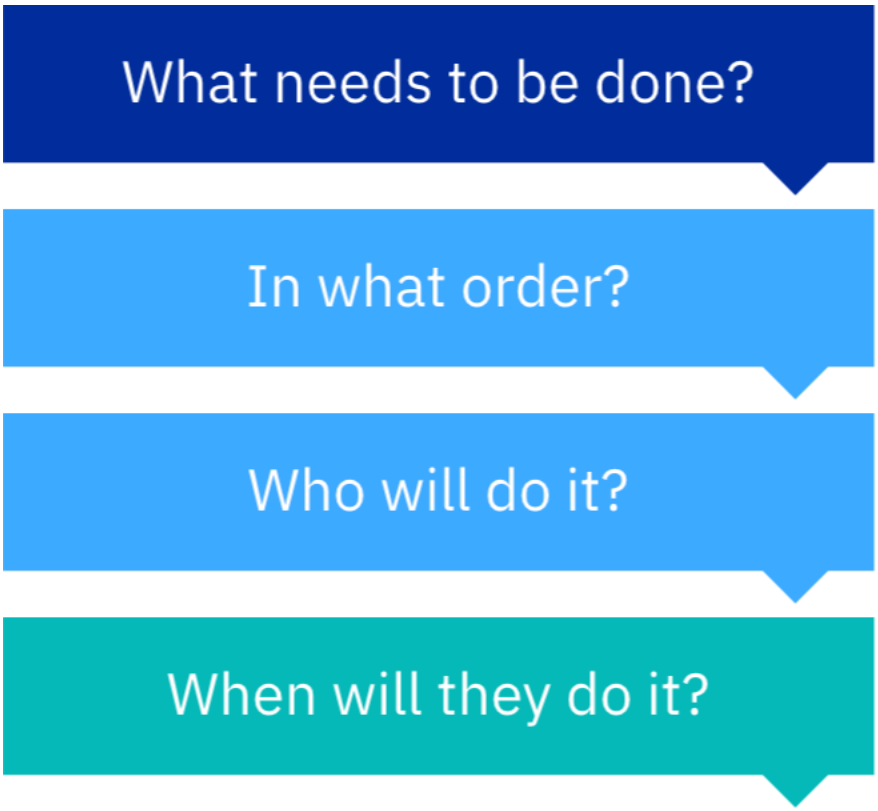
### If you can’t measure it, you can’t manage it!

Measuring the solution lets you know the extent to which your solution is really solving the problem. So, if your solution involves things that cannot be measured, then you might not be able to determine if it is working. It also serves as an early warning system in case the solution doesn't meet expectations.

If the measurements indicate your solution is not working as well as you hoped it would, this is where agile principles of working and adjusting the solution come in. Improving a solution and choosing the next best solution are ways of being agile as opposed to waiting to identify the perfect solution. Be open to feedback, learn from it, and adjust your solution accordingly.

## Build an implementation plan

You've decided how you will measure your solution. Now, it's time to build an implementation plan. This plan involve answering four questions:




If you've correctly performed the previous steps of the problem-solving process, answering these questions should not be difficult. You just build a prioritized list of tasks to implement your solution. In the measurement part of your plan, be sure to include the following:

- Your measurement steps
- A step where you evaluate the results of the measurement
- A step where you make changes to the solution if necessary

## Plan to implement the solution

First, list out the tasks that need to be done to implement the solution you identified. Then, decide who will do those tasks and when. You've arrived at the solution that is most likely to help meet your goal and built measurements into the plan. So, you'll know how well it's working and whether you need to take action to fine-tune it.

Once your task list and assignments are complete, your implementation plan is ready. Now, all you have to do is put this plan into action.

### Key learning points in this topic

Two parts make up step five of the problem-solving process, **Implement**:

1. In the first part, you **design a method to measure a solution's effectiveness**. Measuring the solution is an effective way to embody the agile principle of iteration and course correction. If the solution isn't working as expected, keep iterating until it works or change course to select the next best solution.
2. In the second part, you **build a plan to implement your solution**. Be sure to include your measurement plan in the implementation process.

Are you ready to put your knowledge about problem solving to the test? Go to the next topic to show what you know!

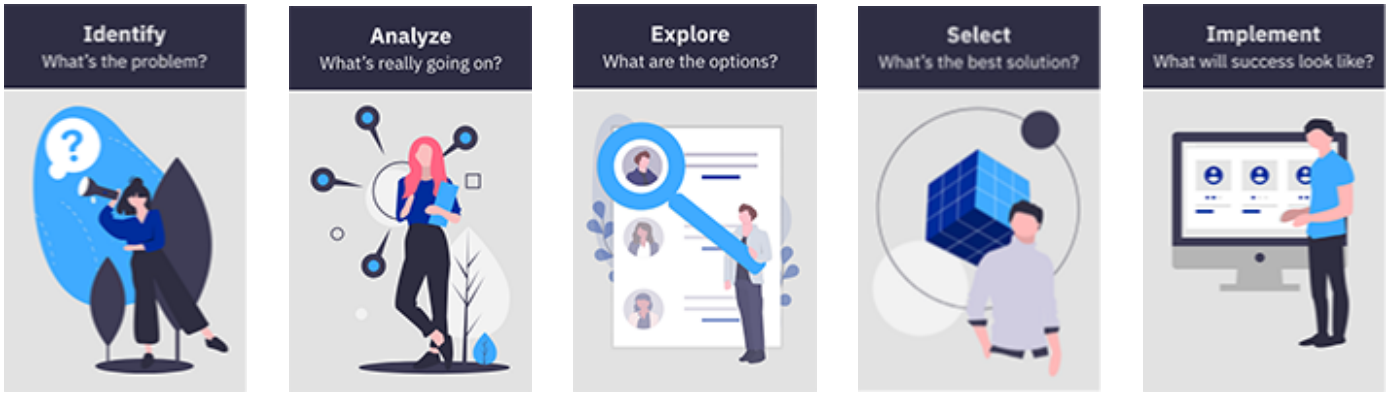
# Show what you know!

## Summary and quiz

**15** Minutes

### Summary: The problem-solving process

*Click each button to review the steps of the problem-solving process.*




### End-of-course assessment

How much do you know about the five-step process for solving problems with critical and creative thinking?

**Remember:** You must get **80 percent** to pass the assessment. Don't worry! If you aren't successful at first, you can retake the quiz as many times as needed to pass.

Click **Let's Play!** to show what you know and complete this learning.