



Problem-Solving

Lesson 1 MANUAL

Strategies and Techniques for Real-World Challenges: Introduction to Problem-Solving

Problem-solving skills are indispensable. In a world characterised by constant change and uncertainty, individuals and organisations that can effectively navigate challenges and find innovative solutions stand out. This program recognises the significance of problem-solving but goes a step further to explore the holistic development of cognitive and emotional skills required for innovation.

In this lesson, we will delve into the importance of problem-solving as a foundational skill and introduce the key themes that underpin the course. The central focus will revolve around three key areas: understanding problem-solving, developing problem-solving skills and how these skills contribute to fostering an innovative environment.

By the end of this lesson, our goal is for you to gain not only the skills but also the insights needed to effectively tackle problems and seek solutions.

Key Concepts

- Why learn problem-solving skills?
- What kind of thinking is required for problem-solving?
- What steps are involved in problem-solving?
- What if we don't develop problem-solving skills?





Introduction to Problem-Solving

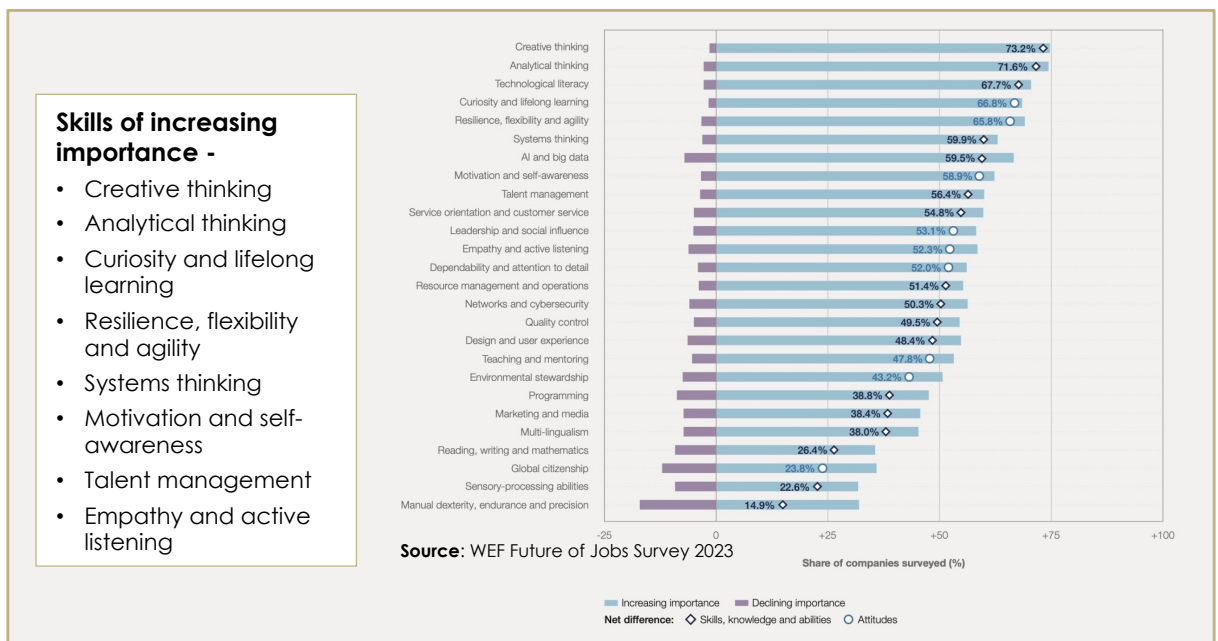
1:1 Why learn problem-solving skills?

What reasons do you have to develop your problem-solving skills?

1:2 Business case for problem-solving

Enhancing problem-solving skills in the workplace offers several tangible benefits. The ability to analyse situations, identify viable solutions and make informed decisions is essential for improved decision-making. In a business context, this translates into more effective and efficient operations.

According to a report by the [World Economic Forum](#) (WEF), problem-solving is identified as one of the critical skills for success in the contemporary workplace.





Introduction to Problem-Solving

1:3 Problem-solving and Innovation

What is the difference between **Problem-Solving** and **Innovation**?

Why does INNOVATION = VALUE CREATION?

1.4 Complex vs Complicated – why does this matter?

What is the difference between something that is **Complex** and something **Complicated**?

How does your approach to problem-solving change depending on the type of problem?



Introduction to Problem-Solving

1:5 Why is problem-solving crucial for success in the Exponential Age?

1

Embracing Change & Boosting Innovation
An exponential mindset involves being open to new ideas. Problem solving is key for developing new products and services.

2

Maintaining Cognitive Abilities
By solving problems throughout their life, people maintain their ability to think critically, make decisions and find innovative solutions.

3

Closing the Exponential Gap
Problem solving helps to bridge the gap between technological progress and our ability to keep up with and leverage it.

1:5 Why learn problem-solving skills now?

What are other reasons why problem solving is crucial in the Exponential Age?



Introduction to Problem-Solving

2:1 Types of Thinking

Thinking Frame

A thinking frame is a structured approach or framework that guides the way you approach a particular problem or task. It provides a set of steps or principles to help you systematically address and solve a problem. Different thinking frames can be applied to various situations, and they often involve a series of well-defined stages.

Examples of thinking frames include **Design Thinking**, **Fishbone Diagrams**, **Systems Thinking** and **Six Thinking Hats**.

Thinking Type

Thinking types refer to specific styles or modes of thinking that individuals use when approaching problems or tasks. These thinking types can be categorised based on their characteristics and tendencies.

Examples of thinking types include **Divergent Thinking**, **Convergent Thinking**, **Lateral Thinking**, **Holistic Thinking** and **Critical Thinking**.

2:1 The Thinking Continuum

META THINKING



- Reflective
- Deliberate
- Self-corrective
- Transcending

DISCERNING



- Wisdom
- Perspective
- Systemic
- Cognition

LEARNING



- Comprehensive
- Inferential

Source: Zarina Moorad

What is the difference between a Thinking Type and a Thinking Frame?

Which types of thinking have you experienced so far during this Problem-Solving course?

Which types of thinking come easily to you? Which ones require more effort?

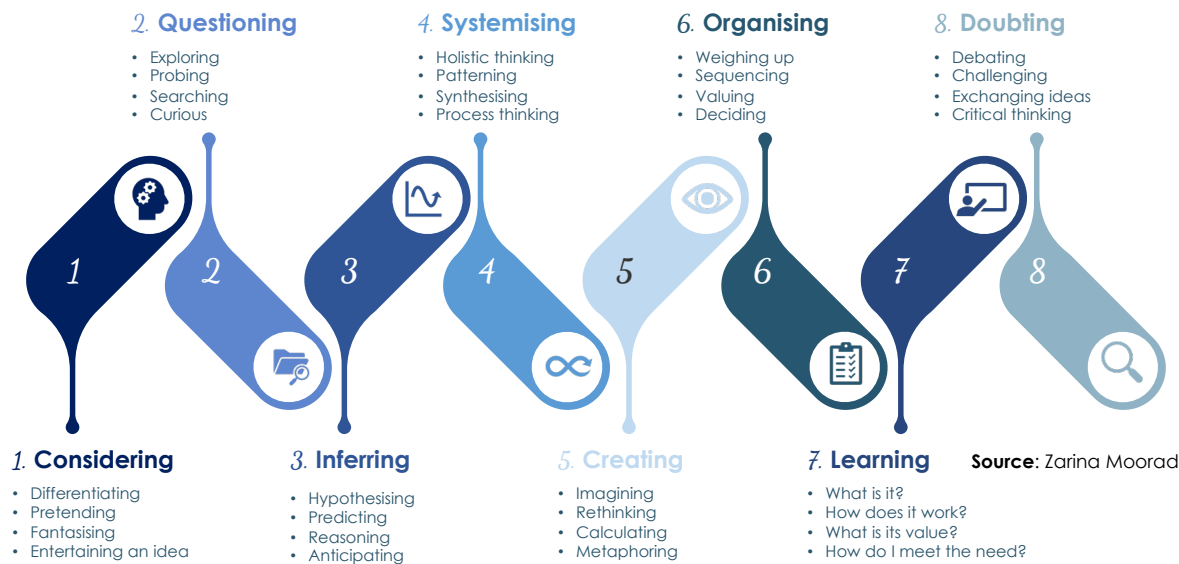


Introduction to Problem-Solving

2:2 Thinking as a Spectrum

It's important to distinguish active thinking from reactionary, automated, borrowed and superficial thinking. These may be driven by personal agendas or preconceived notions.

The journey of learning often involves unlearning what one previously thought to be true.



When have you engaged in these different types of thinking?

Which types of thinking energise you?

Which ones would be beneficial for you to develop? Why? What action steps can you take to develop this type of thinking?



Introduction to Problem-Solving

2:3 Thinking as a Conscious Act

- **Conscious thinking** is a deliberate, purposeful mental activity where individuals actively engage their cognitive faculties to analyse, solve problems and make decisions.
- **Unconscious thinking**, on the other hand, operates automatically, often without conscious awareness. It is driven by ingrained mental shortcuts and immediate, emotionally driven reactions. Unconscious thinking relies on routine responses and pre-programmed patterns, making it efficient for familiar situations but prone to biases and errors in complex or novel scenarios.

Source: Zarina Moorad



Design by PresentationGO.com

When have you noticed “conscious” and “unconscious” thinking in **others**?
What were the consequences?

When have you noticed “conscious” and “unconscious” thinking in **yourself**?
What were the consequences?

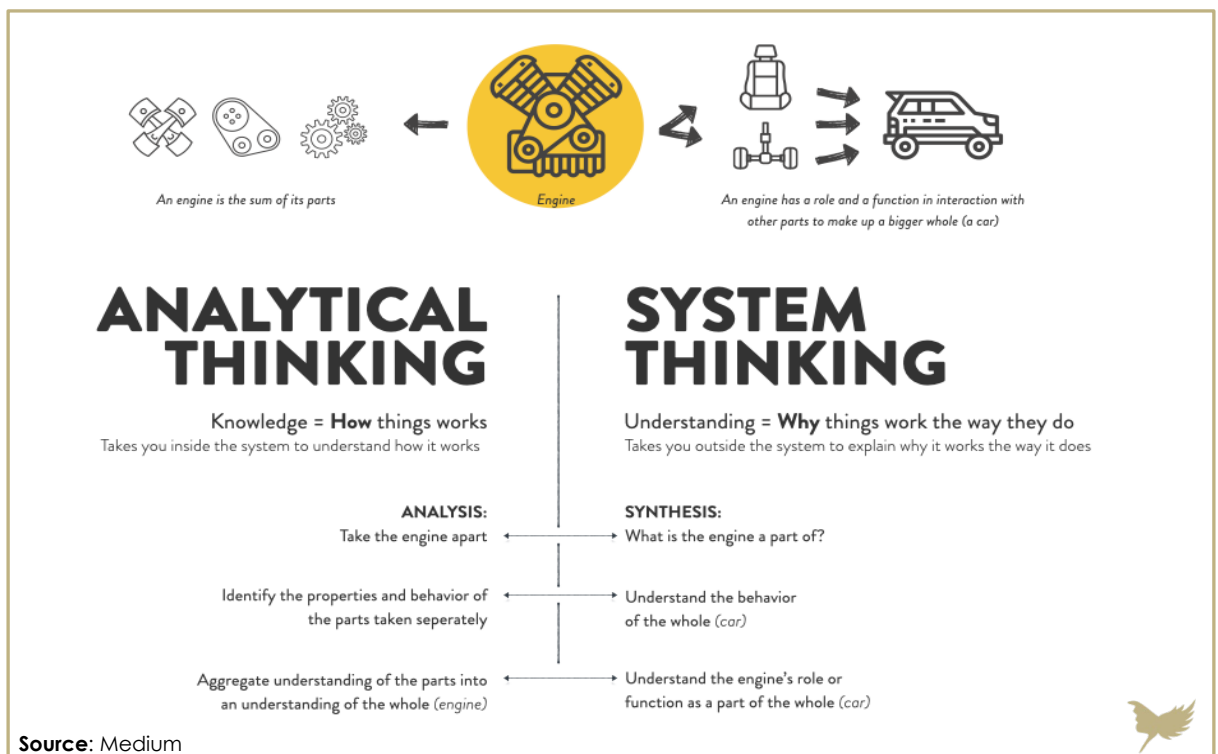


Introduction to Problem-Solving

2:4 Systems Thinking

Systems thinking is a powerful approach that views the world as a web of interconnected elements, where each component influences and is influenced by others.

Unlike traditional linear thinking, which dissects problems into isolated parts, systems thinking takes a holistic perspective, focusing on the relationships and interactions that shape complex systems. This method encourages us to consider the bigger picture, recognise patterns and understand the dynamic forces at play.



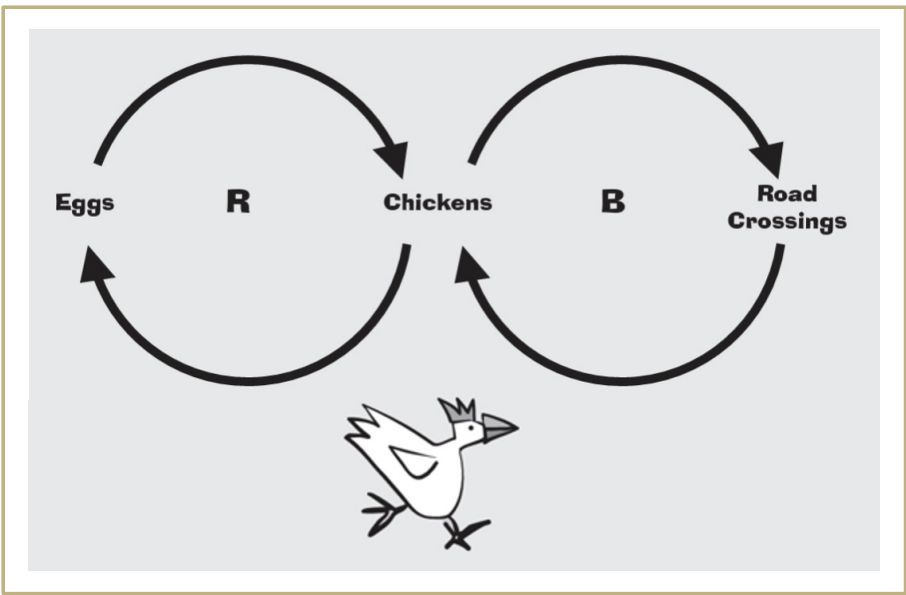
Analytical thinking is an analysis of the individual parts or components that make up the whole system. On the other hand, systems thinking looks at the system as a whole.



Introduction to Problem-Solving

2:4 Reinforcing and Balancing Causal Loops

Systemic Thinking is the analysing of parts and then the synthesising of those parts into a system or causal loop as the below diagram indicates.



What are reinforcing and balancing loops for the Chicken-Egg-Road example?

REINFORCING LOOPS

BALANCING LOOPS



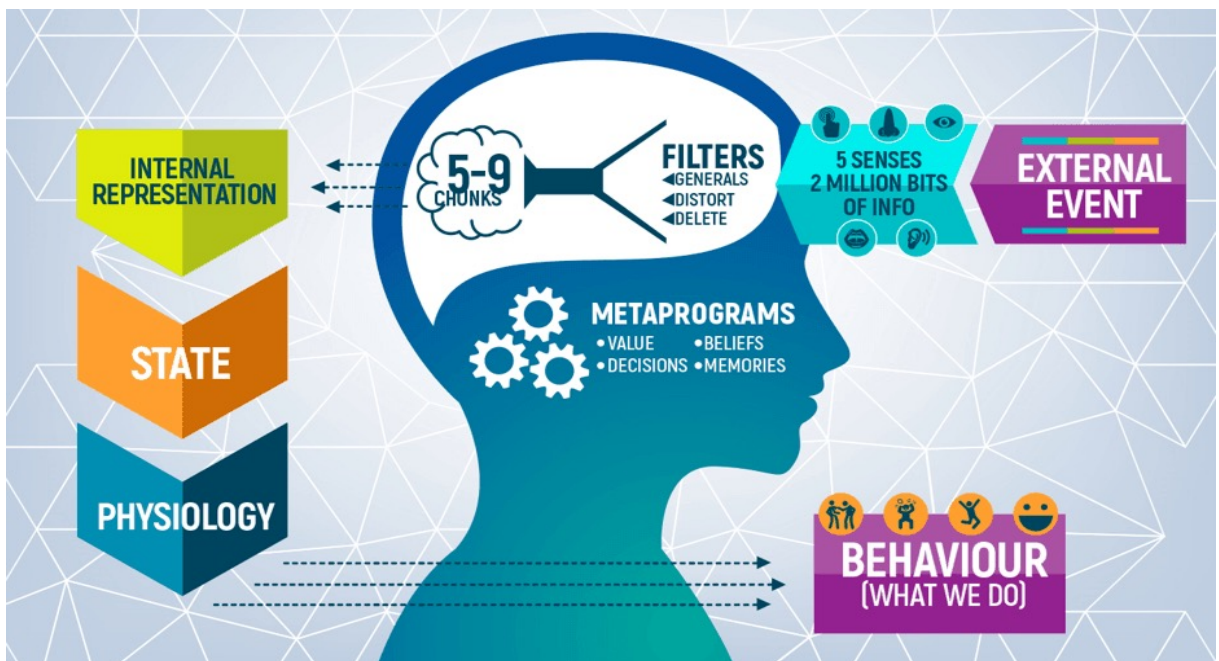
Introduction to Problem-Solving

2:5 Priming the Mind for Problem-Solving

You may be wondering why we have to think consciously.

If you look at the below diagram you will see that we receive the world in through our five senses. We filter what we experience through those five senses by **deleting**, **distorting** and **generalising** the information available.

What information is deleted, distorted and generalised depends on our own personal meta programs, values, beliefs, decisions and memories.



2:5 Reticular Activating System (RAS)

The part of our brain that filters our reality is called the reticular activating system (RAS). I call the RAS our brains Google search bar. Your RAS will bring to your attention whatever you choose to focus on.

For example, when I was purchasing my last vehicle, my brother suggested I get a Lexus. Before this, I did not even know we sold the brand in our country. I purchased one and then like magic I saw them all over the road. This is because the Lexus motor vehicle make, was not in my consciousness until I purchased one. The purchase brought it into the awareness of my reticular activating system and enabled me to see the vehicle make everywhere, whereas before I did not.



Introduction to Problem-Solving

2:5 Reticular Activating System (RAS)

Have you ever had the experience of learning or buying something new and then noticing it everywhere?

The map is not the territory.

2:5 Priming the Mind for Problem-Solving

What do you understand by the phrase “the map is not the territory?”

How is reality shaped by our personal perspective?

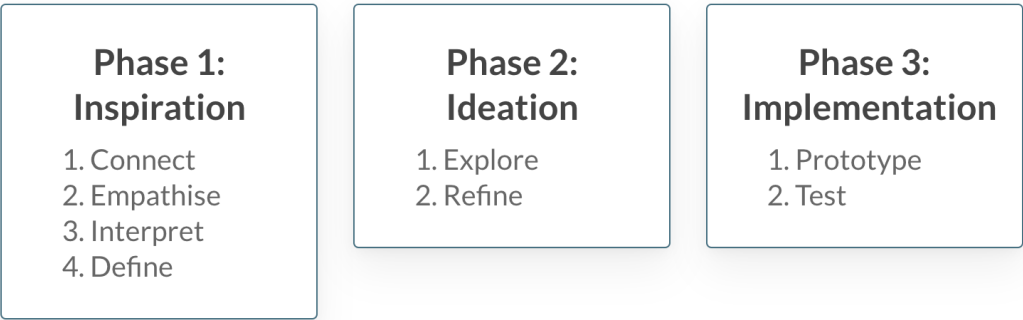
What are implications of this for problem-solving?



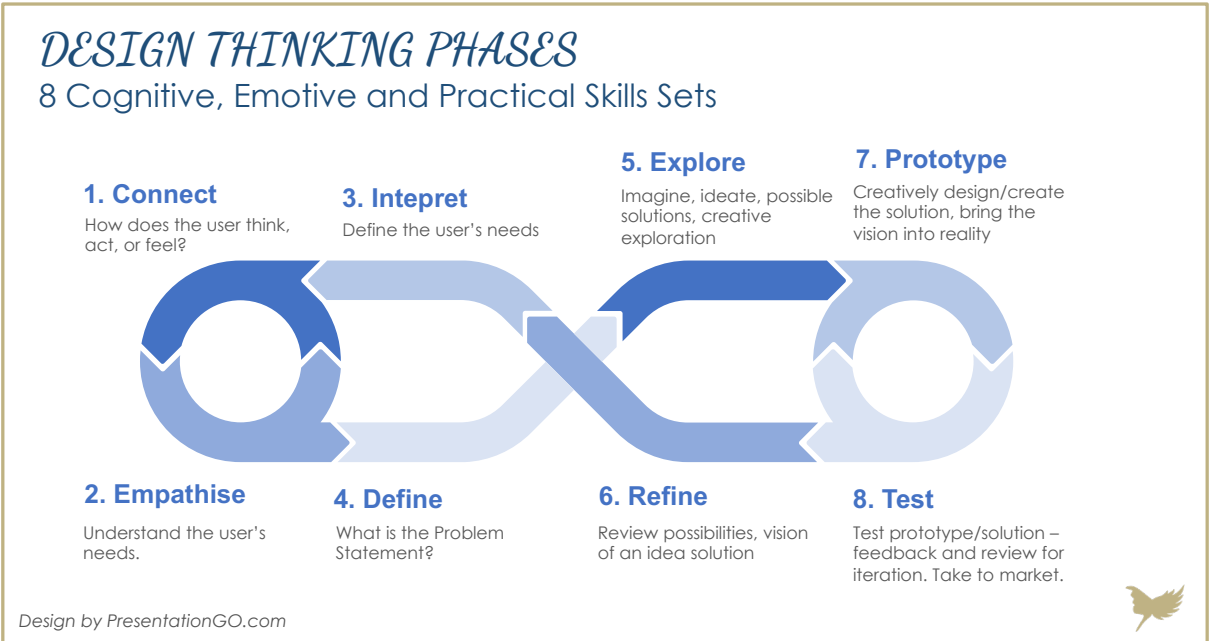
Introduction to Problem-Solving

3:1 Introduction to Design Thinking

Design Thinking is comprised of three phases, which are sub-divided into eight stages.



Thanks to its stakeholder-centric approach, which involves understanding stakeholders' needs, creatively addressing those needs, and creating the solutions, Design Thinking is widely acknowledged as a prominent method for fostering innovation. It is renowned for its human centric nature, its creative exploration and practical grounding.





Introduction to Problem-Solving

3:1 Introduction to Design Thinking

Review the different stages of the Design Thinking process.

Which stages are already part of your problem-solving process?

Which of these stages energises you? Which stages drain your energy?

3:2 Connecting

As we consider how to connect, let's look at what happens in our brains when empathy is activated. Empathy in humans is the capacity to share and genuinely experience the emotions of others. This allows us to connect with their feelings.

This process happens when establishing rapport, a crucial initial step in fostering empathy.

Research by Lamm et al. in 2011 suggests that the same neural regions that become active when we personally undergo pain are also engaged when we witness someone else in distress.

When we observe the emotional cues and expressions of others, it triggers the part of our brain responsible for adopting their perspective, known as "mirroring." The part of our brain that allows us to take on another's perspective is activated (Schulte-Rüther et al 2007).

How can I develop my Empathy?
Start with building Rapport.

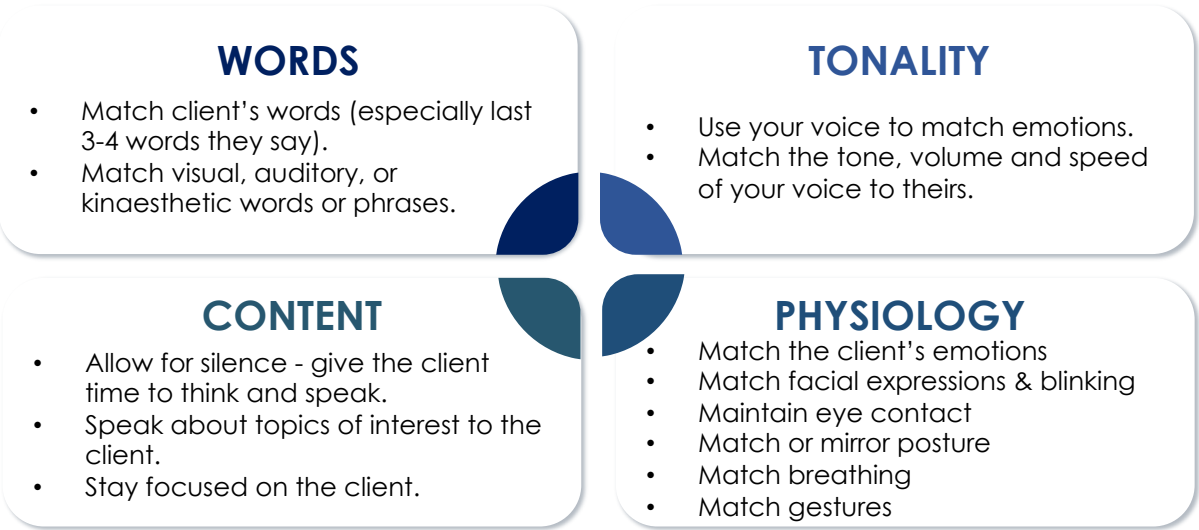


Introduction to Problem-Solving

3:2 How to build rapport

Rapport is established by matching and mirroring. This refers to a technique used in communication to establish a deeper connection and build trust between individuals.

- **Matching** involves subtly mirroring the non-verbal behaviour, such as body language, tone of voice, and gestures, of the person you are interacting with.
- **Mirroring**, on the other hand, involves consciously imitating their behaviour in a more direct and noticeable way. The goal of matching and mirroring is to create a sense of familiarity and similarity, signalling to the other person that you understand and relate to them.



Design by PresentationGO.com

What new ways will you use to build rapport?



Introduction to Problem-Solving

3:3 Empathising

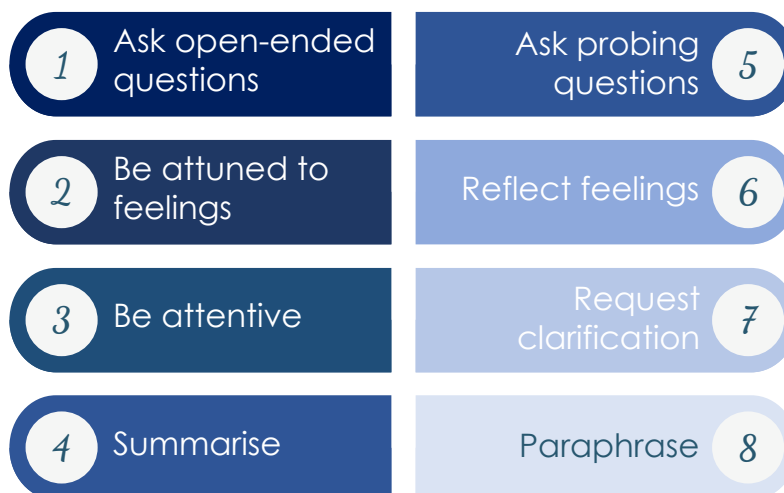
Once you have connected with a stakeholder through the use of rapport, you then want to truly see the world through their eyes, see what they see, hear what they hear and feel what they feel. The best way to do this is to ask the right questions, suspend your biases and perceptions and truly listen.

Connecting creates a powerful unconscious connection with your stakeholder, meaning they are now more comfortable with you to give you open truthful answers to your open questions.

Active Listening

Active listening is a communication skill that involves fully concentrating, understanding, responding, and remembering what the other person is saying. In other words, it requires you to be fully present with the person you are listening to. It goes beyond just hearing the words spoken and requires the listener to engage with the speaker, both verbally and non-verbally, to demonstrate genuine interest and understanding.

In active listening, the listener avoids interrupting and refrains from formulating responses while the speaker is talking. Instead, they use verbal cues such as nodding, paraphrasing, and asking clarifying questions to show that they are actively processing and comprehending the message.



Design by PresentationGO.com



Introduction to Problem-Solving

3:3 Empathy Mapping

Empathy mapping is a simple and effective technique to understand and empathise with your stakeholder.

Here are four steps to creating an Empathy Map:

1. DEFINE YOUR PERSONA

Identify the specific group or individual you want to understand better. This could be your customers, suppliers or employees.

2. GATHER INFORMATION

Collect data and insights about your persona through interviews, surveys or observations. Understand their needs, desires, pain points and motivations.

3. CREATE THE EMPATHY MAP

Complete a simple chart with four quadrants representing the following: "Says," "Thinks," "Feels," and "Does." Fill in each quadrant with the information you gathered in step 2, using sticky notes or bullet points.

4. ANALYSE AND GAIN INSIGHT

Look for patterns and connections in the empathy map. Use this newfound understanding to tailor your products, services, strategy or communication to better meet the needs and wants of the people you have in mind.

Empathy Mapping Quadrants

 SAYS This section captures what the user says during the interview. Quotes and direct speech are recorded. For example: "I want something reliable." "I need a better way to filter my emails."	 THINKS This quadrant documents the user's thoughts during the interview. What occupies their mind? Investigate reasons for non-sharing, such as uncertainty, politeness, or fear. For instance: "I don't understand why we're using that HR form."
 DOES The user's actions are recorded here. What physical actions do they take? How do they perform tasks? For instance: "Comparing prices while shopping." "Spending considerable time on emails."	 FEELS The "Feels" quadrant goes into the user's emotions. Include adjectives or other descriptive words. What worries or excites them? How do they emotionally engage with the experience? For example: "Confused: overwhelmed by options." "Isolated: distant from my team."



Introduction to Problem-Solving

3:3 Empathy Mapping

What are the benefits of Empathy Mapping?

What do you need to pay attention to when completing an Empathy Map?

How do you rate your Active Listening Skills (1= Need work, 10= Excellent)?

Why do you give yourself this rating? How can you improve your skills further?

3.4 Interpreting information

At this stage of Design Thinking, you are performing abstract or logical reasoning, also called inductive or systematic thinking. You analyse the information obtained and detect patterns or relationships in the data.

You look at the Empathy Map you have created and interpret the information contained in it.

Pains and Gains

What **pain points** is the stakeholder experiencing, that they might want to overcome?

What is the stakeholder trying to achieve? What overarching **goal** are they aiming for?

What type of thinking is required for “Interpreting Information”

Does this type of thinking come naturally to you?

What do you need to do to develop your skills in this area?



Introduction to Problem-Solving

3:5 Defining the Problem

This is the fourth stage of Design Thinking. Now you are ready to define the problem. To do so, we first apply Systems Thinking to understand any patterns or interconnected parts.

Systemic Thinking enables pattern recognition through analysing all the variables noted in a system and synthesising the variables by noting which are interconnected and which are independent.

In the previous section we saw reinforcing and balancing loops with chickens, eggs and road crossings.

Practice Systems Thinking

Consider this situation...

We want to offer remote working whilst still maintaining optimal cohesion among staff and departments.

Draw some causal loop diagrams that demonstrate underlying interconnections and relationships between factors.

A large, empty rectangular box with a thin gold border, intended for drawing causal loop diagrams.



Introduction to Problem-Solving

3:5 Inductive Reasoning

Another type of thinking used in this stage of the Design Thinking process is inductive reasoning. Inductive thinking seeks to observe something specific, recognise patterns and come to a general conclusion.



Source: Scribbr

For example:

- **Specific Observation:** Several tech start-ups in your industry, regardless of their size or specialisation, have embraced remote work policies and flexible scheduling.
- **Pattern Recognition:** Through market research and industry analysis, it becomes apparent that a growing number of tech start-ups are adopting remote work practices as a standard approach to work.
- **General Conclusion:** This pattern indicates that the adoption of remote work is becoming a standard practice in the tech start-up industry, highlighting a shift in how businesses in this sector approach their workforce and operations.

What type of thinking is required for this stage of the Design Thinking process?
Does this type of thinking come naturally to you?

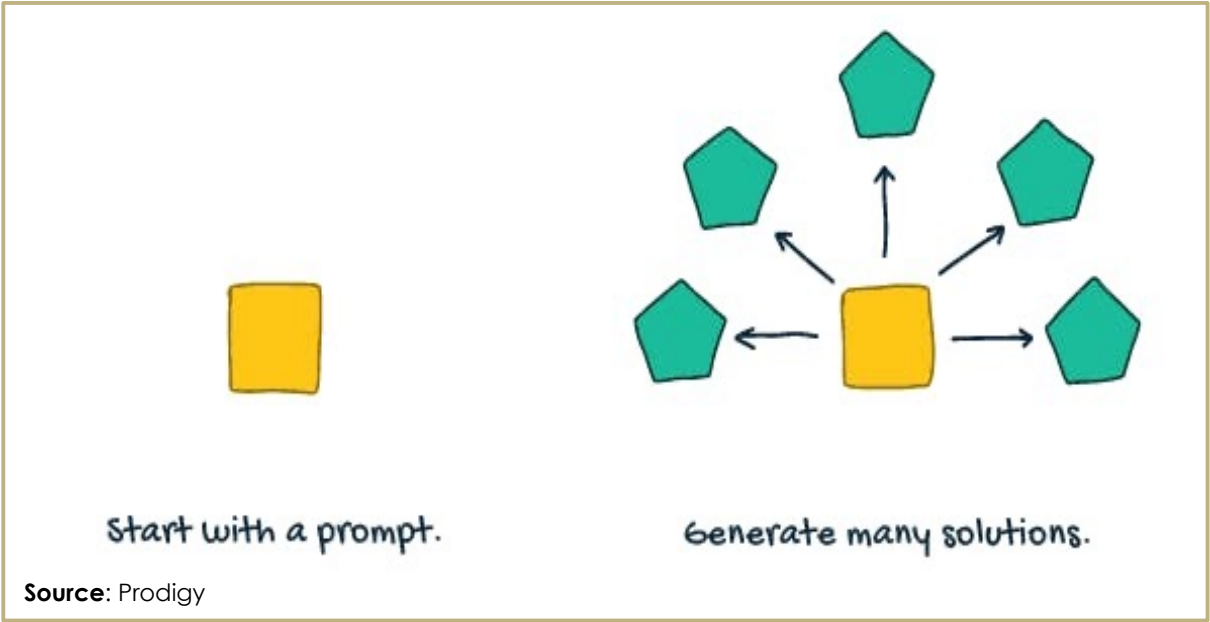


Introduction to Problem-Solving

3:6 Divergent Thinking

Divergent thinking calls for you to use your imagination and think outside of the box. This is not the time for anything reasonable and conservative.

This is an opportunity for you to completely free your mind and explore all possible solutions no matter how unreasonable they may initially seem. Give yourself the creative license to dream big.



What type of thinking is required for Divergent Thinking?

Does this type of thinking come naturally to you?

Who in your team is good at this type of thinking?

Would it be useful for you to develop this skill? Why or why not?

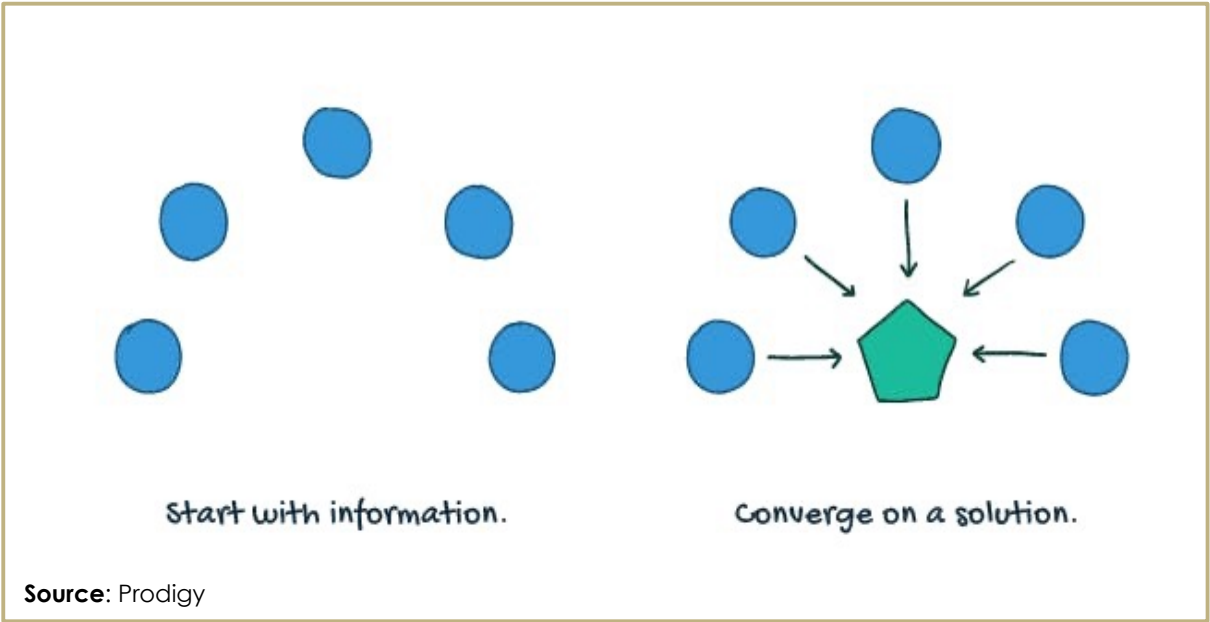


Introduction to Problem-Solving

3:7 Convergent Thinking

Next, we take all those crazy and out of the box ideas and tick off which ones are financially viable, technologically feasible and would make good business sense or create a sound business model.

Then have a look at that much shorter list and consider the positives and negatives of each and which have the most positives and least negatives. Select the option with the most positives and least negatives.



What type of thinking is required for Convergent Thinking?

Does this type of thinking come naturally to you?

Who in your team is good at this type of thinking?

Would it be useful for you to develop this skill? Why or why not?



Introduction to Problem-Solving

3:8 Prototyping

A prototype, by its nature, should not be perfect because its primary purpose is to test and validate ideas, concepts, processes, products, or services. Perfection often implies a final, completed state, whereas a prototype is a preliminary version created to uncover flaws, gather feedback and refine the concept.

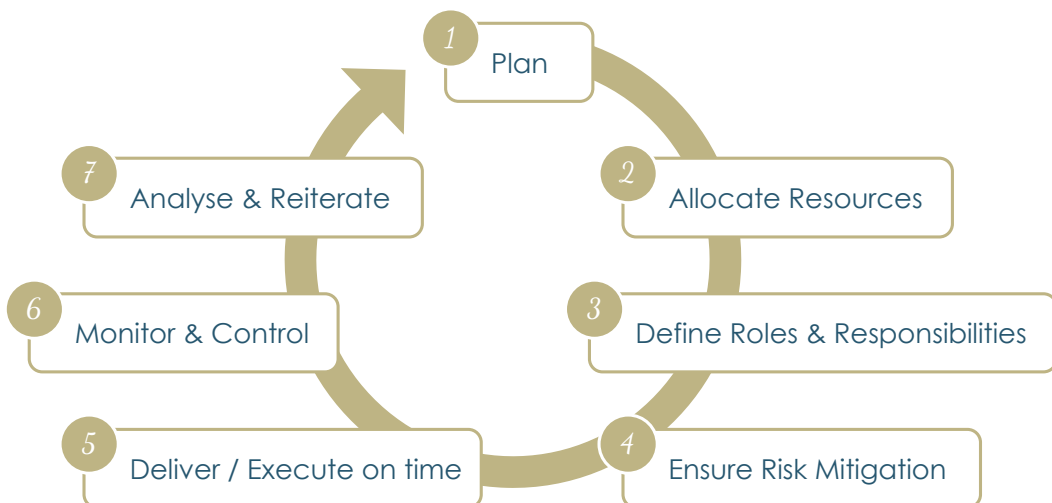
It's intentionally imperfect to encourage exploration, experimentation, and learning. Imperfections in a prototype allow for cost-effective adjustments and iterations, ensuring that the final product or service is well-informed and tailored to the needs and preferences of its users.

Prototyping is play... AIM FOR FUN NOT PERFECTION.

3:9 Testing

After all the planning and development, it's time to introduce your product or service to the market. Once your product or service is out in the real world, you need to assess whether it effectively fulfils the needs and expectations of your stakeholders, which can include customers, clients or any other relevant parties.

All these steps form part of Project Management.





Introduction to Problem-Solving

3:10 Self-Inclusion & Diversity

An inclusive culture starts with self-inclusion

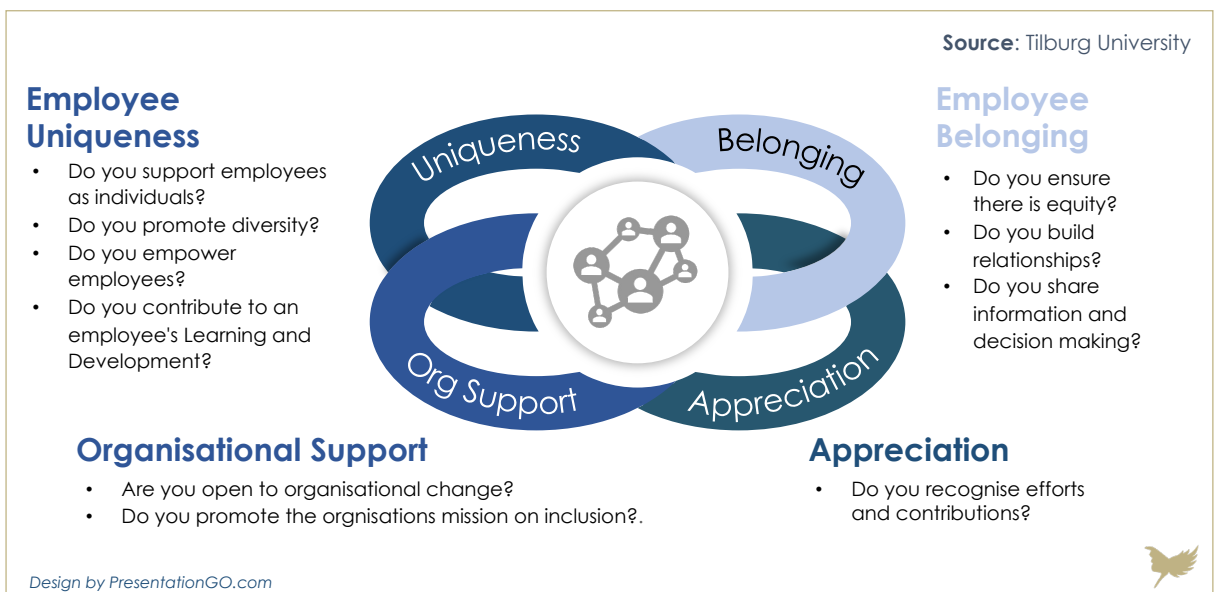
Considering your unique skills and those of others, what does this mean for diversity, creating inclusive cultures and self-inclusion?

Every human has different skills and a different lens of the world. The richer the diversity present in a team seeking to solve a problem, the deeper they understand a problem, the richer their solutions and the more readily the solution is able to go to market.

You cannot accept another until you accept yourself.

Are you an inclusive leader?

A good starting point start is to ask yourself these questions:



Diversity though requires inclusion. Inclusive cultures are incubators for innovation. A culture's levels of inclusion is linked to the self-inclusion present in those within the system. Self-inclusion is not a simple process: it takes a great deal of emotional intelligence.



Introduction to Problem-Solving

4:1 Impact of poor problem-solving skills

Poor problem-solving skills can have a significant negative impact on both individuals and the organisation as a whole. It can lead to missed opportunities, inefficiencies, increased stress and a decline in employee morale.

Ineffective problem solvers may struggle to address challenges, leading to delayed or suboptimal decisions, increased costs and decreased productivity. Moreover, a lack of problem-solving abilities can erode confidence in leadership and hinder the company's ability to adapt to changing circumstances or capitalise on emerging trends. In essence, poor problem-solving skills can impede progress, hinder innovation and ultimately jeopardise an organisation's competitiveness and success.

What would be the impact if you fail to develop your problem-solving skills?



Introduction to Problem-Solving

4:2 Characteristics of problem-solvers

Effective problem solvers exhibit a combination of characteristics. They demonstrate agility and adaptability, readily adjusting their strategies in response to evolving challenges. They understand the importance collaboration, crossing boundaries between disciplines and sectors to tap into diverse perspectives and expertise.



Which of these characteristics do you already possess?

Which do you want to develop further?



Introduction to Problem-Solving

4:3 How to continue developing your problem-solving skills

What are three insights have you gained about problem-solving during this lesson?

What skills do you now believe you need to master Problem Solving?

How long do you think it would take you to master these skills?

What are the next steps you are going to take?

What we do at Newmella

