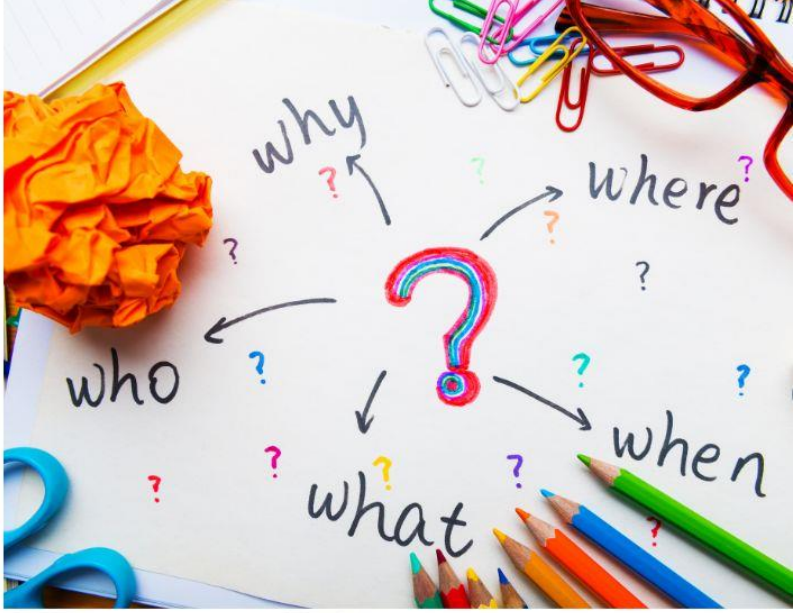

INDUSTRY PRECOURSE BASICS: YOUR GATEWAY TO THE POOL AND SPA PROFESSION

WEEK 4: FROM PROBLEMS TO SOLUTIONS — BUILDING CRITICAL THINKING SKILLS

LEARNER GUIDE

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INTRODUCTION

Problem-solving and critical thinking are essential skills for personal and professional growth, enabling individuals to navigate complex challenges, evaluate situations objectively, and implement effective solutions. These skills are deeply tied to self-awareness, reflection, and goal-setting, allowing individuals to address current dilemmas while preparing for future opportunities.

This unit emphasizes how personal experiences, values, and mindsets shape our problem-solving abilities and critical thinking processes. It encourages participants to explore the ways in which they perceive the world, interpret information, and make decisions based on their unique perspectives. By challenging assumptions and adopting reflective practices, participants will learn to approach problems proactively and creatively, transforming obstacles into opportunities.

Problem-solving and critical thinking are vital competencies that empower individuals to navigate complex challenges, make sound decisions, and drive innovation. These skills are interconnected with self-awareness, reflection, and effective goal-setting, forming the foundation for adaptive and proactive behaviours in dynamic environments. By honing these abilities, participants can overcome barriers, seize opportunities, and enhance their personal and professional lives.

This unit delves into the processes, tools, and mindsets that underpin effective problem-solving and critical thinking. Participants will explore frameworks such as the Triple Oh! approach and Edward de Bono's Six Thinking Hats, alongside activities that foster reflective practices. The content is structured to build awareness of how individual values, biases, and assumptions shape decision-making. Emphasis is placed on applying these skills to practical workplace scenarios, including advanced challenges in the pool and spa industry, ensuring real-world relevance and transferability.

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TOPICS COVERED

- Understanding Problem-Solving and Critical Thinking
- Steps of the Problem-Solving Process
- Key Components of Critical Thinking
- Edward De Bono's Six Thinking Hats
- Common Barriers to Effective Problem-Solving and Critical Thinking
- Problem-Solving and Critical Thinking in the Workplace
- Tools and Techniques for Problem-Solving

KEY ACTIVITIES

- **Scenario-Based Learning:**
  Participants will work through industry-specific challenges, such as diagnosing water chemistry imbalances or resolving customer dissatisfaction, using problem-solving frameworks.

- **Reflection Exercises:**
  Guided journaling to examine past problem-solving approaches and identify patterns of behaviour.

- **Group Brainstorming:**
  Collaborative sessions applying the Six Thinking Hats to generate innovative solutions.

- **Practical Applications:**
  SWOT analysis of a workplace problem.

  Developing a structured action plan for a specific challenge.

- **Role-Playing Simulations:**
  Engaging in team-based problem-solving scenarios to practice communication, collaboration, and critical thinking.

- **Assessment Tasks**

- **Knowledge Questions:**
  Test comprehension of concepts, frameworks, and techniques.

- **Practical Exercises:**
  Application of problem-solving tools to real-world challenges, including the completion of templates and reports.

- **Scenario-Based Problem-Solving:**
  Analyze and resolve detailed workplace scenarios using structured methodologies.

- **Reflective Learning Journey Journal:**
  Participants document their learning journey, challenges faced, and strategies for improvement.

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PROBLEM SOLVING: WHAT IS IT?

Problem-solving is a foundational skill that underpins success in every facet of life. By systematically addressing challenges, leveraging past experiences, and employing critical and creative thinking, individuals can transform difficulties into opportunities. Whether resolving small-scale issues or navigating complex systems, effective problem-solving fosters confidence, innovation, and growth.

A problem is any situation in which the solution or course of action is not self-evident or readily apparent.

It is the use of basic thinking processes to resolve a known difficulty. The mind uses previously acquired understanding and skills to satisfy the demands of a new situation.

The outcomes of a problem-solving process may be:

- A decision
- A solution
- An opinion
- A plan of action

KEY FEATURES OF PROBLEM SOLVING

1. Objective Identification

Every problem-solving process begins with recognizing a desired outcome or goal that is currently unmet. This provides clarity and focus, setting the stage for all subsequent efforts.

2. Presence of Obstacles

Problems typically involve barriers that prevent immediate resolution. These obstacles can be physical (e.g., lack of resources), cognitive (e.g., biases or misunderstandings), or situational (e.g., time constraints or external pressures).

3. Lack of Obvious Solutions

Problems are characterized by uncertainty or ambiguity, requiring individuals to think critically and creatively to determine the best path forward.

4. Dynamic Thinking Process

Problem-solving involves engaging multiple cognitive functions, such as memory, reasoning, and decision-making. It also leverages emotional intelligence, collaboration, and adaptability.

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THE ROLE OF THINKING IN PROBLEM SOLVING

Problem-solving relies on both basic and advanced thinking processes, which include:

Recognition and Recall: Using prior knowledge and past experiences to identify patterns or similarities in a new challenge.

Analysis: Breaking down the problem into smaller, more manageable components to understand its nature and scope.

Synthesis: Combining information and ideas to develop innovative approaches or alternatives.

Evaluation: Assessing potential solutions against criteria such as feasibility, effectiveness, and alignment with goals.

Decision-Making: Selecting the most appropriate course of action based on available data and analysis.

PROBLEM SOLVING IN ACTION

Identifying the Problem

- Define the issue clearly and precisely.
- Determine the scope and impact of the problem.
- Distinguish between symptoms (visible outcomes) and root causes (underlying issues).

Understanding Context and Constraints

- Gather relevant information to understand the environment in which the problem exists.
- Identify limitations such as time, resources, and stakeholder expectations.

Generating Possible Solutions

- Use techniques like brainstorming, SWOT analysis, or Edward de Bono's Six Thinking Hats to explore creative and logical alternatives.
- Encourage diverse perspectives to uncover hidden opportunities.

Evaluating and Choosing Solutions

- Analyze the pros and cons of each alternative.
- Consider long-term implications, risks, and alignment with broader objectives.
- Prioritize solutions that are both effective and sustainable.

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Implementing the Chosen Solution

- Develop an action plan with clear roles, responsibilities, and timelines.
- Ensure communication and coordination among stakeholders.
- Monitor progress and adjust as needed.

Reflecting and Learning

- Evaluate the outcomes to determine the success of the solution.
- Identify lessons learned to improve future problem-solving efforts.

CHARACTERISTICS OF EFFECTIVE PROBLEM SOLVERS

Critical Thinkers

They analyze situations objectively, separating facts from assumptions or biases.

Creative Innovators

Effective problem solvers think outside the box, generating novel solutions that address challenges from fresh perspectives.

Resilient and Adaptable

They remain focused and flexible, even when initial solutions fail or unforeseen complications arise.

Collaborative Communicators

Problem solvers seek input and feedback from diverse sources, valuing the insights and expertise of others.

Reflective Practitioners

They continuously evaluate their methods and outcomes, using insights to enhance future performance.

WHY IS PROBLEM SOLVING IMPORTANT?

Enables Progress

Problem-solving drives innovation and growth by addressing obstacles that hinder personal or organizational goals.

Fosters Decision-Making

Structured problem-solving processes lead to informed, confident, and effective decisions.

Builds Resilience

By overcoming challenges, individuals and teams develop skills and mindsets that prepare them for future uncertainties.

Enhances Productivity

Problem-solving minimizes disruptions and inefficiencies, enabling smoother operations and higher output.

Promotes Collaboration

Tackling problems together strengthens relationships, improves communication, and fosters a culture of trust and teamwork.

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REAL-WORLD APPLICATIONS OF PROBLEM SOLVING

Problem-solving is not limited to theoretical scenarios; it is applied daily across various domains:

Workplace:
Resolving conflicts, optimizing workflows, and improving customer satisfaction.

Personal Life:
Managing finances, navigating relationships, or planning for significant life changes.

Education:
Addressing academic challenges or exploring new learning strategies.

Community and Society:
Tackling issues such as resource distribution, environmental conservation, or public health.

WHAT IS CRITICAL THINKING?

Critical thinking is the disciplined process of actively and skillfully conceptualizing, analyzing, synthesizing, and evaluating information to guide beliefs and actions. It is a systematic way of processing information that involves questioning assumptions, exploring alternatives, and making well-informed decisions based on logic and evidence. Critical thinking enables individuals to solve problems effectively, make sound judgments, and approach complex situations with clarity and precision.

Critical thinking is an invaluable skill for navigating today's complex world. By questioning assumptions, seeking evidence, and reasoning logically, critical thinkers can make sound decisions and solve problems effectively.

Developing and honing these skills ensures both personal and professional growth, enhancing one's ability to succeed in diverse and dynamic environments.

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KEY ELEMENTS OF CRITICAL THINKING

Observation
Gathering information through attentive observation and recognizing relevant details.

Example: Identifying key factors contributing to a workplace challenge.

Analysis
Breaking down information into smaller components to understand its structure and meaning.

Example: Analyzing the root causes of a recurring issue rather than addressing symptoms.

Interpretation
Assigning meaning to information and drawing logical inferences.

Example: Interpreting customer feedback to identify unmet needs.

Inference
Making reasoned conclusions based on evidence and patterns.

Example: Predicting future trends based on current data.

Evaluation
Assessing the credibility and relevance of information or arguments.

Example: Determining whether a source of information is reliable and unbiased.

Explanation
Articulating findings clearly and logically, with supporting evidence.
Example: Explaining the rationale behind a decision to a team.

Self-Regulation
Reflecting on and questioning one's own thought processes and biases.

Example: Recognizing personal assumptions that might influence decision-making.

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CHARACTERISTICS OF A CRITICAL THINKER

Curiosity
A desire to seek knowledge and understand different perspectives.

Open-Mindedness
Willingness to consider diverse viewpoints and change beliefs when justified.

Skepticism
Questioning assumptions and evaluating claims critically rather than accepting them at face value.

Analytical Skills
Ability to deconstruct complex problems and identify core components.

Logical Reasoning
Drawing conclusions based on evidence and valid reasoning rather than emotions or opinions.

Self-Awareness
Understanding personal biases, values, and limitations.

THE IMPORTANCE OF CRITICAL THINKING

Improved Decision-Making
Critical thinking helps individuals assess options objectively and choose the best course of action.

Enhanced Problem-Solving
Encourages innovative and effective solutions by considering multiple angles and approaches.

Better Communication
Facilitates clear and persuasive expression of ideas, supported by logical arguments and evidence.

Adaptability in Complex Situations
Prepares individuals to navigate uncertainty and rapidly changing environments.

Ethical Reasoning
Promotes fairness and integrity by evaluating actions based on ethical principles and societal impacts.

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BARRIERS TO CRITICAL THINKING

Cognitive Biases
Prejudices or mental shortcuts that distort objective analysis, such as confirmation bias or stereotyping.

Emotional Influences
Allowing emotions to override logical reasoning, such as fear or anger.

Over-Reliance on Authority
Accepting opinions without questioning their validity or credibility.

Lack of Knowledge or Skills
Insufficient information or analytical tools to evaluate a situation effectively.

Groupthink
Conforming to the majority opinion without critically analyzing its merits.

DEVELOPING CRITICAL THINKING SKILLS

Ask Questions
Challenge assumptions, explore alternatives, and seek clarity.
Example: "What evidence supports this claim?" or "Are there other perspectives to consider?"

Gather Information
Collect diverse, credible sources of information before forming opinions.

Evaluate Evidence
Analyze data for relevance, accuracy, and sufficiency to support conclusions.

Reflect on Biases
Regularly assess how personal experiences and beliefs might influence judgment.

Engage in Dialogue
Discuss ideas with others to gain different viewpoints and refine reasoning.

Practice Problem-Solving
Apply critical thinking techniques to real-world scenarios to build confidence and proficiency.

Use Frameworks and Tools
Leverage structured methods like SWOT analysis, root cause analysis, or decision matrices.

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APPLICATIONS OF CRITICAL THINKING

In the Workplace
Critical thinking helps employees analyze challenges, optimize processes, and innovate solutions.

In Education
Encourages students to engage deeply with material, fostering lifelong learning and intellectual growth.

In Daily Life
Enables better personal decisions, such as financial planning, health choices, or conflict resolution.

In Leadership
Empowers leaders to make informed decisions, inspire teams, and navigate uncertainty effectively.

A PROBLEM-SOLVING PROCESS

The Triple Oh! Approach

1. Consider the situation or problem

Identify the objective
Identify the obstacle
Discuss the options

2. Make a decision and act on it

3. Evaluate results

Step 1: Consider the situation and work out what really is the problem.

Once the problem has been identified, it must be broken down and clarified.

- Identify the objective:

What is the goal or aim of the person in the situation?

- Identify the obstacle:

What is blocking the person from achieving that goal?

- Consider the options:

There is usually more than one way to achieve the desired objective.

Even if some of the suggested ways aren't practical, they are worth articulating, as thinking about them may spark other ideas. Considering options means suspending judgement and being open to possibilities.

Step 2: Make a decision and act on it.

Making a decision is an extremely complex thinking activity in its own right. The brain undertakes a series of cognitive operations very quickly.

It will:

- analyze all of the alternatives
- rank all of the alternatives
- judge the highest ranked alternatives
- choose the “best” alternative

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The brain takes into account all available resources, the level of risk in each option, possible consequences, checks each option against your personal values, then makes a choice from the top options.

Once an option is chosen, it is tested in action.

If the "Triple Oh!" stage has been properly considered, it will be possible to make a constructive decision.

Step 3: Evaluate results.

Looking objectively at the outcomes from the action completes the three-step "Triple Oh! Approach" to solving a problem.

Did the actions overcome the obstacles?

Was the objective achievable?
If not, why not?

Could it have been done in a better way?

Are there still improvements to be made?

Would you change anything if you could start it again?

Reflecting on outcomes is another cognitive thought process which happens at lightning speed.

When you are evaluating the results, you are actually:

- Recalling the action
- Interpreting the action
- Analyzing the outcomes
- Considering the evidence
- Matching against criteria for selection
- Making a judgement

Evaluating results allows individuals and organizations to measure progress, identify areas for improvement, and make informed decisions.

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CHOOSING A PROBLEM-SOLVING STRATEGY

One of the most important skills for a member of a work team is to be able to solve work-related problems.

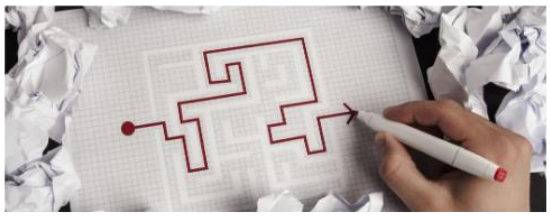
Some of the ways suggested here of dealing with problems are well-recognized and much used and should help you to become a better problem solver and decision maker.

Doing A SWOT Analysis

One of the best ways to get an overview of the relevant issues is to do a SWOT analysis with a group of people interested in the place. This process looks at the Strengths, Weaknesses, Opportunities and Threats for the place, based on what is known about all the issues.

You can draw up this simple grid on a board or on paper, then write under the four headings:

Strengths	**Areas for Practise (Weaknesses)**
Opportunities	**Threats**



You will need to think of the current strengths and weaknesses as well as future opportunities and threats.

SWOT analysis is a very effective tool to use once you have a reasonable amount of information about the issues. The results of this analysis will be used in the future steps.

Remember, problems or weaknesses can sometimes be turned into opportunities!

The Step-By-Step Formula to Group Problem Solving

This traditional formula uses a step-by-step, analytical format to keep the group on track. It works well provided that:

- There is plenty of reliable information available on the problem being discussed
- Group members are happy to use a logical, analytical approach
- Stress levels remain low at all times

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Step 1: Define the problem and the present situation

This requires a number of questions to be asked about the current state of affairs.

- Who and what are being affected by the problem?
- How are they being affected?
- How reliable is the data on the problem?
- Is what is being considered the whole problem or is it only part of a group of connected problems?
- What is the central cause of the problem?
- What are only the symptoms?

Step 2: Define the end goal

What do you want to achieve in making this decision?

A useful question at this stage is:

"How will we know when the problem has been solved?"

The answer needs to be specific and quantifiable or able to be measured. There also needs to be group consensus at this point on "where they want to be".

Step 3: Define limits or restrictions on solutions

The constraints the group needs to keep in mind include:

- Limits on expenditure – budget restrictions
- Limits on the group's legal power
- Time limits – how soon the solution is needed
- Limit of personal commitment – people may talk loudly about the need to act; the question is how much practical effort each speaker is willing to contribute

Step 4: List information that is missing and make valid assumptions

This list of information allows you to formulate assumptions based on reasoned and logical arguments.

Step 5: Brainstorm a range of alternatives

This is a creative process where all the team contribute ideas freely.
It is important not to evaluate these various courses of action yet and encourage all possible suggestions.

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Step 6: Analyze each alternative and select the best solution

Systematically analyze and evaluate each alternative for action. Then select the best solution that satisfies the end goal that was identified in step 2 and incorporates the constraints the group identified in step 3.

Step 7: Who? How? When? Where?

Decisions made at a group meeting do not in themselves fix the problem. What has been achieved is agreement on a common approach.

There also needs to be decisions on

- Who will be responsible for implementing the option
- Who will be responsible for the preparation of a timetable and a budget
- What practical steps are needed to transform the decision into a reality

BRAINSTORMING GUIDELINES

You are probably familiar with the technique of brainstorming where a group of people meet and come up with as many different ideas about how to solve a problem as possible. One person notes the ideas on a whiteboard or flipchart where everyone can see them.

The second part of the brainstorming session is to go through the ideas and select those with the most potential.

- Be clear about the issue you are brainstorming – don't be too vague and don't be too precise either.
- Set a rough time limit – 30 minutes should be fine, 60 minutes is the maximum.
- Remember not to censor what you say. Do not try to be practical.
- There are no limits. A practical idea could well emerge from something that looked utterly ridiculous at first.
- Be as imaginative and way out as you want.
- No criticism is allowed.
- Make it clear that this is not a competition for coming up with the best idea. True talent tends to flourish in collaborative, not competitive environments.

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- Try to have a wide range of people with different perspectives at the brainstorming session.
- Number the ideas so that you can sort them out easily afterwards.
- Make the situation informal so that people can relax.
- Start with a 'warm-up' to allow people to relax. Word association games can help.
- Have fun!

If you are having trouble coming up with ideas, here are some strategies for looking at things from different perspectives:

- What would different people (e.g., client / end user) think about this?
- What if you did the opposite of what you think of?
- If this were an animal / bird / flower / food / colour, what would it be?
- How would a negative person see this? How would a positive person see this?

SELECTING YOUR IDEAS

One way to select good ideas is to make up an evaluation grid, where you assess your ideas against several criteria. A sample is provided below.

Using the criteria that have been given, mark them off or write brief notes under each heading.

You can use any criteria that may be relevant to your situation.

The last column asks you to decide whether to continue to explore the idea following the initial evaluation. If you are not sure and you feel an idea may have potential, you should leave it in. There is a more thorough evaluation stage to come.

Ideas	Resources	Constraints	Time	Cost	Creative	Technical Expertise	Explore further? Yes/No
	✓	Technology	Time needed	Possible high cost	✓	Would need technical guidance	Yes

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EDWARD DE BONO AND THE SIX THINKING HATS

Who is Edward de Bono?

Edward de Bono (1933–2021) was a Maltese physician, psychologist, and philosopher renowned for his pioneering work in creative thinking and innovation. He introduced the concept of "lateral thinking," which challenges conventional problem-solving methods and encourages exploring new perspectives.

De Bono's Six Thinking Hats is a widely used framework for structured thinking and decision-making. The method helps groups and individuals think more effectively by adopting different "hats," each representing a unique mode of thinking.

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THE SIX THINKING HATS

White Hat (Facts and Information)

Focuses on objective data, facts, and figures.

Questions:

- What information do we have about the pool project?
- What are the land dimensions and location specifics?
- What are the local regulations or codes for pool construction?

Red Hat (Emotions and Feelings)

Explores emotions, intuitions, and gut feelings.

Questions:

- How do we feel about the proposed pool location?
- Are there any concerns or excitement about the project?
- What do the community or stakeholders feel about this decision?

Black Hat (Cautious and Critical)

Considers potential risks, challenges, and drawbacks.

Questions:

- What could go wrong with this pool project?
- Are there any environmental or safety risks?
- What might be the financial challenges?

Yellow Hat (Optimism and Benefits)

Identifies advantages, opportunities, and potential benefits.

Questions:

- What are the benefits of building the pool in this location?
- How will this project enhance the community or property value?
- Are there long-term gains from using saltwater or chlorine?

Green Hat (Creativity and Innovation)

Encourages creative solutions and new ideas.

Questions:

- Are there innovative designs or features we could incorporate?
- Can we explore sustainable or energy-efficient pool systems?
- What unique amenities can make this pool stand out?

Blue Hat (Process and Control)

Manages the thinking process and ensures focus on goals.

Questions:

- What is our plan for discussing and deciding on this project?
- How will we prioritize ideas and finalize decisions?
- Who will be responsible for implementing the plan?

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NEXT STEPS

Now that you have finished reading this Learner Guide, follow these steps to continue your learning:

Complete Your Action Plan

Refer to your journal and document your key takeaways.

Outline how you will apply this knowledge in practice.

Prepare for the Knowledge Exam

Review the exam section to understand the format and expectations.

Ensure you have covered all key concepts before attempting the exam.

Complete the Practical Exam Tasks

Refer to the practical exam section for task instructions.

Follow the guidelines to demonstrate your skills effectively.

If you have any questions, refer back to the manual or seek assistance from your trainer.

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