BSBCRT404
Apply advanced critical thinking to work processes

Release 1

Learner guide

aspire learning resources

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Aspire Version 1.1

Aspire learning resources

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Contents

Before you begin

This learner guide is based on the unit of competency *BSBCRT404 Apply advanced critical thinking to work processes*, Release 1. Your trainer or training organisation must give you information about this unit of competency as part of your training program. You can access the unit of competency and assessment requirements at: www.training.gov.au.

How to work through this learner guide

This learner guide contains a number of features that will assist you in your learning. Your trainer will advise which parts of the learner guide you need to read, and which practice tasks and learning checkpoints you need to complete. The features of this learner guide are detailed in the following table.

Icon	Feature of the learner guide	How you can use each feature
	Learning content	Read each topic in this learner guide. If you come across content that is confusing, make a note and discuss it with your trainer. Your trainer is in the best position to offer assistance. It is very important that you take on some of the responsibility for the learning you will undertake.
	Examples	These highlight learning points and provide realistic examples of workplace situations.
	Practice tasks	Practice tasks give you the opportunity to put your skills and knowledge into action. Your trainer will tell you which practice tasks to complete.
	Video clips	Where QR codes appear, you can use a smartphone or other device to access video clips relating to the content. For information about how to download a QR reader app or accessing video on your device, please visit our website: www.aspirelr.com.au/help
	Summaries	Key learning points are provided at the end of each topic.
	Learning checkpoints	There is a learning checkpoint at the end of each topic. Your trainer will tell you which learning checkpoints to complete. These checkpoints give you an opportunity to check your progress and apply the skills and knowledge you have learnt.

Foundation skills

As you complete learning using this guide, you will be developing the foundation skills relevant for this unit. Foundation skills are the language, literacy and numeracy (LLN) skills and the employability skills required for participation in modern workplaces and contemporary life.

The following table outlines specific foundation skills noted for your learning in this learner guide.

Foundation skill area	Foundation skill description
Learning	• Reflects on own performance and seeks opportunities to improve own skills and knowledge
Reading	• Interprets, evaluates and extracts relevant information from a range of texts for work requirements
Writing	• Documents key research findings and ideas • Develops clear workplace documents appropriate to audience and context
Oral communication	• Articulates ideas and requirements clearly and persuasively using techniques appropriate to audience and environment • Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning • Uses a range of persuasive responses and makes comparisons which show an understanding of topics and concepts
Numeracy	• Interprets and critically analyses numerical data to determine work process requirements
Navigate the world of work	• Recognises and considers the implications of legal and regulatory responsibilities on own work • Adheres to implicit and explicit organisational procedures and policies, seeking advice from others if necessary
Interact with others	• Demonstrates sophisticated control over oral, visual and/or written formats, drawing on a range of communication practices to achieve goals • Actively identifies the requirements of important communication exchanges, selecting appropriate channel, format, tone and content to suit purpose and audience • Reflects on personal values, behaviours and assumptions and considers how these might be perceived by others • Looks for ways of establishing connections and building genuine understanding with a diverse range of people

Foundation skill area	Foundation skill description
Get the work done	• Takes responsibility for systematically planning, sequencing and prioritising tasks according to agreed timelines • Uses systematic processes to gather and analyse information required to make decisions • Recognises opportunities to develop and apply new ideas and select ideas for implementation • Considers the key themes and ideas to be explored and identifies ways to respond to and use diverse perspectives • Uses features and functions of digital tools and technologies to store and present information • Contributes to creating a climate where people feel comfortable to suggest, explore, adapt and adopt new ideas as a regular part of work life • Uses problem-solving skills to evaluate and challenge ideas and move towards solutions

Topic 1
Thinking critically in the workplace

A line from a famous poem titled* If *by Rudyard Kipling reads: 'If you can think - and not make thoughts your aim'.

As you read that line and as you read any sentence you cannot help forming thoughts in an effort to extract meaning from the words. Producing thoughts is a necessary and inescapable part of life. Kipling suggests that the aim of thinking is not to generate thoughts for their own sake, but to derive meaning from them.

In this topic you will learn about:

1A What is critical thinking?

1B Why critical thinking matters

1C Applying critical thinking at work

1A What is critical thinking?

Critical thinking is a particular type of thinking that seeks to uncover the reasons behind why we think the way we do.

Consider the differences between someone learning to drive a car for the first time and someone with many years of driving experience. If both set out from the same point to arrive at point B, the inexperienced driver will no doubt be able to recall significantly more details of the trip. The experienced driver may struggle to recall the same details and may have been thinking about things other than using their driving techniques to manoeuvre the car during the journey. Of the two people, who would be more aware of their shortcomings as a driver? Or, put another way, which person is in a better position to critically evaluate their driving skills?

There are many factors of critical thinking that impact it. If either of the drivers is stressed or nervous, this would affect their driving abilities and their ability to critically evaluate their own driving. A driver's ability and capacity for personal reflection will impact their driving skills because of the awareness this may bring to their driving skills or shortcomings.

The experienced driver may rely on repetition and familiarity with driving. Repetition may impair his ability to engage in critical thinking. The inexperienced driver may use creative thinking to evaluate his skills because he is not held back by routine thoughts.

Egocentric and sociocentric motives

The brain is hardwired to listen to our feelings and desires, and to act on them.

These can be considered irrational influences on thinking. Feelings and desires don't necessarily arise out of reason or lead to good decisions, but come about because we are wired to react for our own survival. Such thinking is largely unconscious, meaning we are not aware of it occurring.

Irrational thinking has two main streams:

1. Egocentric thinking, in which only your own rights and perspective are considered
2. Sociocentric thinking, in which thinking is influenced by your peer group

Egocentric thinking

The motive is to validate your own way of seeing things. For example:

- I feel hungry. I want to eat dessert, even though I have been advised by my doctor to lose weight and improve my diet.
- At work I feel anxious about meeting a project deadline. I want to complete this task before I leave work today even though I can complete it during work hours tomorrow.

Sociocentric thinking

The motive is to validate the group's way of thinking. For example:

- It's my friend's birthday and it would mean a lot to her if I went to the party tonight – I will go even though I would prefer not to as I need to be up early tomorrow.
- I will agree with the team's decision and will not argue against it, even if I think the decision is the wrong one – I have only just joined this team and want to make a good impression.

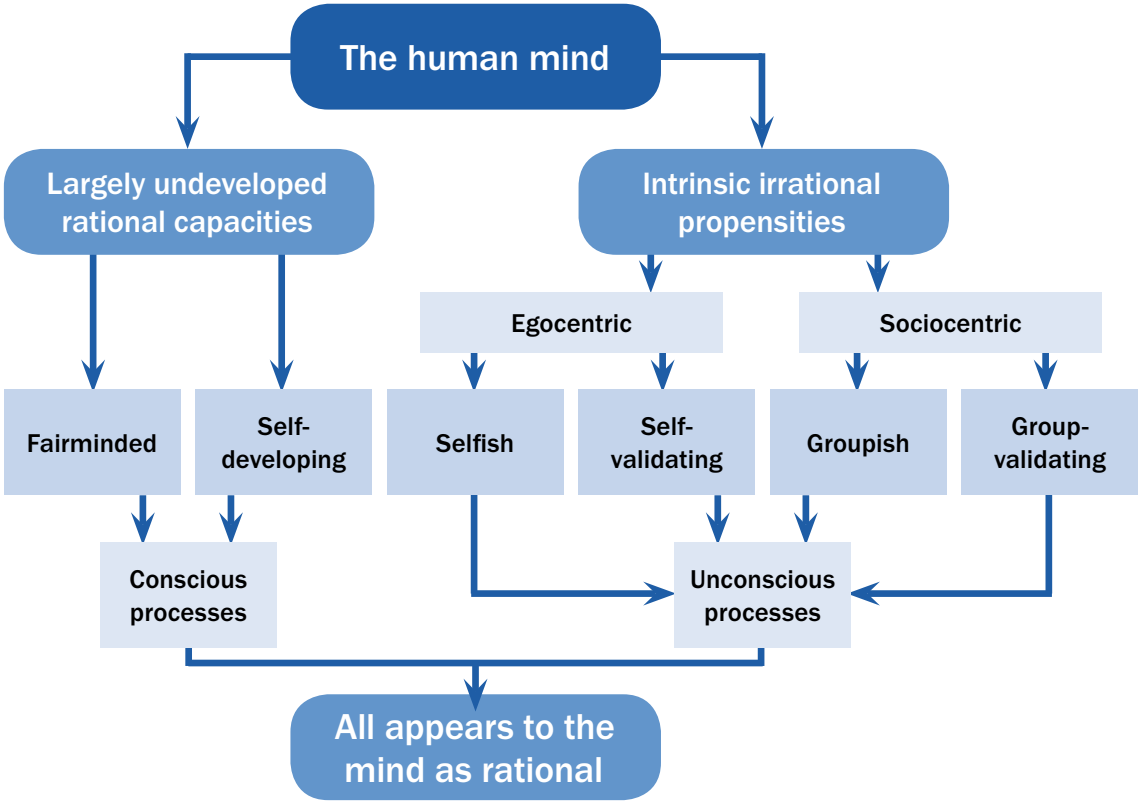
We are born with a self-centred outlook, and as we grow we develop a more sociocentric view of the world.

Each of these types of thinking is essentially unconscious. By contrast, critical thinking requires conscious effort and must be developed.

Rational and irrational thinking

The human brain uses both rational and irrational thinking, but considers all thinking to be rational.

The following diagram, developed by Elder and Paul, illustrates the different ways the human brain unconsciously relies on irrational egocentric and sociocentric thinking when making decisions. Rational thinking involves conscious decisions, but the mind justifies all decisions as being rational.



Source: Paul R and Elder L (2013), *30 days to better thinking and better living through critical thinking*, Pearson Education

Defining critical thinking

Critical thinking is a subset of our thought processes.

In a popular children's story, Chicken Little gets hit on the head by an acorn. Chicken Little looks up at the sky and down at the ground and cannot see anything that struck her head, so she decides that the sky is falling. She cries out, 'Help, help, the sky is falling. I have to tell the king.' Chicken Little then proceeds to alert and convince all the other barnyard birds that the sky is falling, and the group proceeds to go and tell the king. On the way to the king, they encounter a fox who, on hearing their news, convinces the birds that the king is in the back of the fox's den and invites the birds in one at a time to meet the king, only to seal their fate in a flurry of feathers.

This story illustrates some important principles of critical thinking:

- Chicken Little used cause and effect reasoning even though the reasoning was flawed. Chicken Little failed to critically evaluate the cause of what hit her on the head or the assumptions she made. She also failed to consider any evidence that might support or disprove her thinking.
- On hearing that the sky is falling, the other barnyard birds fail to question and evaluate any evidence on whether this is true, and adopt the thinking of Chicken Little.
- The fox applies critical thinking and exploits the situation. He realises that the sky is not falling and, sensing the ease with which the birds can be convinced, lays a trap for them by convincing the birds that the king is in his den.

Thinking, then, is the mental process of producing or forming thoughts. Thoughts can be produced without facts or evidence. Critical thinking is understanding why we think in a particular way or what shapes our thinking. Critical thinking requires us to question the way we think about something and to consider the facts and evidence that supports it.

Critical thinking versus other types of thinking

There are many other types of thinking, including abstract, creative and analytical thinking.

Some of these types of thinking are explained here to show you how critical thinking differs.

Abstract thinking

This level of deep thinking about things is removed from the current facts and from specific examples of the concepts being thought about. Abstract thinking is the ability to think about objects, principles and ideas that are not physically present. Often a visual representation of ideas is used to explain a concept.

Concrete thinking

This involves looking at things on the surface or at a periphery level and using this information to solve problems. Concrete thinking uses reason in terms of facts, events, objects and specific examples.

Divergent thinking

This type of thinking uses a linear or systematic approach to develop ideas in different directions. This thought process generates creative ideas by exploring many possible solutions, and always looks for more options.

Convergent thinking

As the name suggests, this type of thinking is about coming together. It is a thought process that considers a limited, predetermined number of options. The right answer or course of action is selected from this narrow range of choices.

Creative thinking

This type of thinking is often referred to as thinking outside the box. It uses a fresh perspective or suggests unorthodox solutions as a way of considering problems or situations. Creative thinking can be stimulated both by an unstructured process (such as brainstorming) and by a structured process (such as lateral thinking). It does not depend on past or current solutions and may use reason, logic, resourcefulness, imagination and innovation to find a solution.

Analytical thinking

This thinking is also referred to as problem-solving. It involves working systematically and logically to resolve problems, identify causes and anticipate unexpected results. Personal experience and knowledge are used to manage issues that arise and other resources as necessary.

Lateral thinking

This is problem-solving, but uses an indirect or more creative approach rather than the traditional step-by-step problem-solving process. It addresses the problem in a lateral way, which can result in fresh ideas that may change the frame of reference for the problem and solution.

Critical thinking techniques

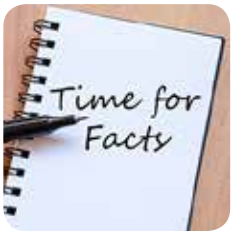
To apply critical thinking techniques, we must question assumptions and consider different points of view.

In his book, *Teaching for critical thinking* (2012), author Stephen Brookfield states that critical thinking happens when we uncover and check assumptions, explore alternative perspectives and take informed actions. In addition, he suggests that we use critical thinking when we analyse, clarify, question and test ideas.

Discover assumptions

- What assumptions have we made that influence how we think and act?

Check assumptions



- Are our assumptions valid?
- Are the assumptions supported by evidence?
- Under what conditions do our assumptions make sense?

See things from different perspectives

- Consider multiple points of view.

Take informed action

- Actions should be based on thought and analysis.
- Actions should lead to the desired results and be supported by evidence.

Practise critical thinking

There are several ways to introduce and practise critical thinking, but it begins with examining your own patterns of thinking and observing your own thinking processes.

The following outlines some of the benefits of practising and applying critical thinking.

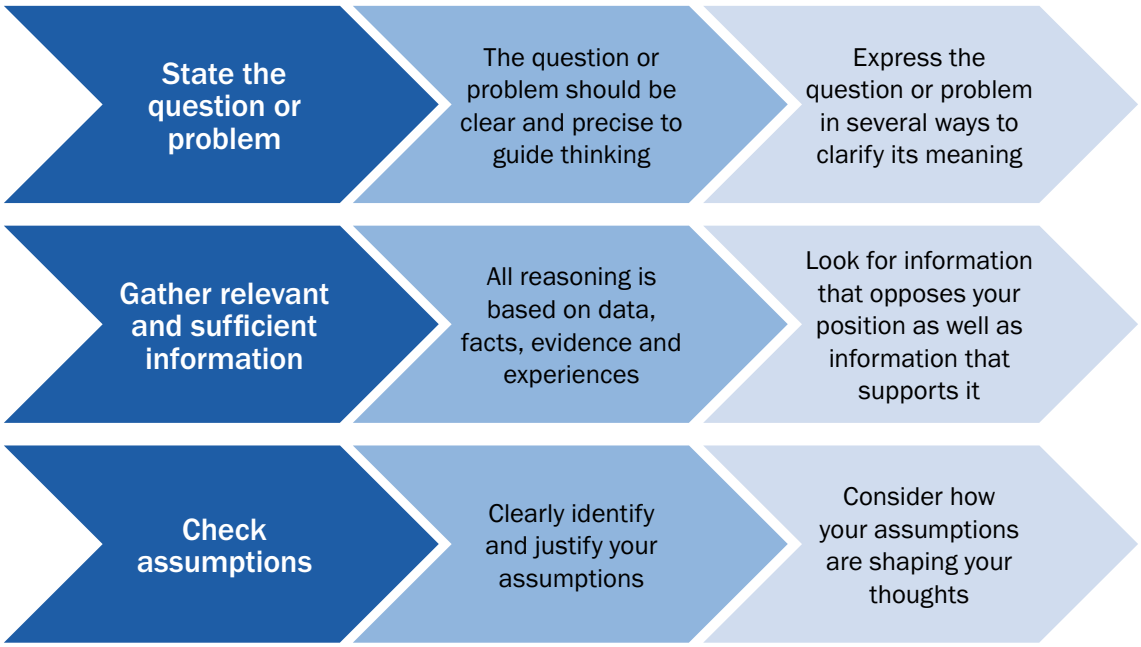
Practising critical thinking results in:

- gaining a better understanding of why you think the way you do
- analysing and assessing your own thinking and the way your desires and emotions motivate you and drive your thinking
- being more self-directed and self-disciplined in your thinking by identifying when you are driven by egocentric and sociocentric thinking
- applying intellectual standards to check the quality of reasoning about a problem, issue or situation
- developing effective problem-solving skills that can help you find a solution to difficult issues
- setting aside your ego and being open to the ideas of others
- identifying motives that validate your way of seeing things or the group's way of seeing an issue.

Critical thinking as a process

The concepts of critical thinking can be applied as a process to a given issue, problem or situation.

Critical thinking can be thought of as a process with seven key steps. The following process is adapted from Paul and Elder's Critical Thinking Model (2010).



Consider different perspectives	Identify your point of view and seek the views of others	Be fair-minded when evaluating points of view
Interpret information correctly	Infer only what the evidence implies	Identify assumptions underlying inferences
Develop well-reasoned solutions and conclusions	Conclusions flow logically from inferences	What is the best possible solution/ conclusion?
Test conclusions and solutions against relevant criteria and standards	Test against intellectual standards	Test against organisational criteria and best practice

Adapted from: Paul R and Elder L (2010), *The thinker's guide to analytic thinking*, The Foundation for Critical Thinking

Intellectual standards

Intellectual standards provide a basis for testing your thinking.

Intellectual standards enable you to check the quality of your thinking. They are essentially a series of questions that you should ask yourself at various points in the critical thinking process. There are many universal standards used across different disciplines. Here is a list of standards that are vital if critical thinking is to occur. Paul and Elder suggest the following questions should be asked to determine whether intellectual standards have been applied.

Clarity	• Could you elaborate further on that point? • Can you express that in another way? • Can you give me an example of what you mean?
Accuracy	• Should that be checked? • Is that really true? • How could you verify or test that it is true?
Precision	• Could you be more specific? • Could you give me more details? • Could you be more exact or precise?
Relevance	• How does that relate to the problem? • How does that connect to the question? • How does that help with the issue?
Depth	• How are you taking problems and issues into account? • What are some of the complexities of the issue? • What are some of the difficulties you need to deal with?
Breadth	• Do you need to look at this from another perspective? • Do you need to consider another point of view? • What would this look like from another point of view?
Logic	• Does all of this make sense? • Before you said this and now you are saying that. How can they both be true? • Does what you say follow from the evidence?
Significance	• Is this the most important problem to consider? • Is this the central idea to focus on? • Which of these factors is most important?
Fairness	• Do you have any vested interest in this issue? • Are you sympathetically representing the views of others? • Are you biased in your views?

Example

What is critical thinking?

Brian works in administration in the human resources department of a small company. His good friend, Michaela, is applying for a role in the company. Brian is part of the selection panel for this role and has offered to be a referee for Michaela. Michaela asks Brian if he has any tips for her when preparing for the interview. Brian has access to all the interview questions that the applicants will be asked and decides to send them to Michaela.

Consider the following:

1. Has Brian thought critically about his actions?
2. What influenced Brian to take the action he did?

The fact that Brian is a referee for Michaela is questionable. If part of the hiring process is to ensure objectivity, then Brian has a potential conflict of interest in being both a referee and part of the selection panel.

By sending Michaela a copy of the interview questions, Brian is giving her an unfair advantage over the other applicants. Brian's behaviour and thinking can be seen as sociocentric.

If you consider Brian's actions against the intellectual standards, it is the fairness standard that is not being met. If Brian was thinking critically, how would he answer the following two questions:

1. Do I have any stake or vested interest in this issue?
2. Am I sympathetically representing the views of others?

The answer to the first question is yes, and to the second question is no – Brian is not representing the views of his work colleagues or the other candidates.

Practice task 1

Question 1

Briefly explain the difference between critical thinking and other forms of thinking, such as creative thinking.

Question 2

Which of the following would be part of a critical thinking process? Select yes or no for each one.

a. Considering different perspectives	Yes	No
b. Going along with group consensus	Yes	No
c. Working out the goal or objective to guide thinking	Yes	No
d. Gathering relevant facts and information	Yes	No
e. Appointing an external mediator	Yes	No
f. Ensuring a mix of rational and irrational thinking	Yes	No

1B Why critical thinking matters

Critical thinking is essential to workplace performance.

Organisations have a duty and a vested interest to perform to the best of their ability to satisfy the needs and expectations of all stakeholders. Critical thinking is a tool that assists organisations to optimise their decisions and in turn satisfy their stakeholder needs.

Outcomes for stakeholders

Stakeholders in an organisation can be varied according to the size and complexity of the organisation or business.

Stakeholders may include:

- employees
- specific work groups
- directors
- owners/shareholders
- government representatives and agencies
- relevant industry bodies, including industrial unions
- management teams
- customers
- suppliers
- the local community.

Critical thinking will affect the outcomes for different stakeholder groups. The needs of stakeholders will vary, and each stakeholder group will want to be satisfied that the answers they seek have been well thought through and not clouded by irrational thinking. Here are some examples of stakeholder groups and the types of answers they may be seeking.

Stakeholder group	What is important to them	Answers they may be seeking
Shareholders	• Return on investment • Investment security • Longevity of the business	• What is the future strategy? • How will the company grow? • What are the risks to my investment? • What is the rate of return?
Employees	• Salary • Job security • Meaningful work	• How do I succeed at my job? • What are the prospects for advancement? • What are my work conditions?

Stakeholder group	What is important to them	Answers they may be seeking
Management team	• Performance and productivity • Sales • Stable workforce	• How do we measure performance? • What is our profit margin? • How do we maximise sales? • How do we engage, reward and retain our staff?
Customers	• Quality product or service • Price point • Ease of purchase	• What are the benefits of the product or service? • What guarantees are provided? • What are the purchasing options?
Suppliers	• Contractual terms • Ongoing supply • Opportunity to grow	• What are the organisation's growth plans? • What else can we supply? • Will the contract be renewed?

Example

Adopting critical thinking

A new employee has started at the company. During her induction she was shown:

- policies and procedures relevant to her role
- details of how and when her performance will be measured and matched to the job description and key performance indicators (KPIs)
- the organisational structure and reporting lines so that she knows who to approach if she encounters any difficulties or has any questions.

After two weeks, the new employee approaches you to discuss some suggestions for changes in the way things are done.

Your immediate reaction and thoughts might be:

- The employee is new and needs time to get to know our process before criticising it.
- The process was reviewed recently and we are not changing it now.
- The employee is bringing a fresh perspective and examining how we do things.
- I appreciate getting her feedback.
- There is a process for reviewing work practices that needs to be complied with as part of our quality assurance.
- The time is not right as there are other more important priorities.
- The process isn't broken, so why fix it? No one else has complained.
- We will log the idea in the continuous improvement register and get to it later.

Which of the above responses shows critical thinking at work and which of them is clouded by irrational thought?

Benefits of critical thinking

Both organisations and employees must invest time and effort in critical thinking to fully realise its benefits.

Benefits of critical thinking include:

- exploring different approaches to solving a problem
- exploring new ideas
- fostering teamwork
- uncovering falsehoods and flawed logic
- saving time and effort by focusing only on relevant information
- more effective communication
- enhanced decision-making abilities.

Risks of failing to apply critical thinking

There are certain risks involved in failing to apply critical thinking to business decisions.

These risks can negatively impact the organisation and its stakeholders.

The lack of critical thinking may result in:

- poor judgment and decision-making
- short-term solutions that fail to consider the long term
- loss of creativity and innovation from staff that may result in poor products, services or processes
- increase in costs of resources as a result of mistakes or assumptions
- lack of action and repeated mistakes that cause frustration
- failed business systems or procedures
- poor design of products, services or processes
- increased safety concerns and risks to employees
- unclear direction and loss of efficiency
- poorly thought out decisions.

Example

Failing to apply critical thinking

Moira is investigating whether her company should attend a conference as an exhibitor. She advises her boss that they shouldn't attend the conference this year as it will cost them $3,000 which they cannot afford. She points out that they attended last year at a cost of $1,250 and the delegate turnout was very poor, meaning they were not able to attribute any sales as a result of the conference. 'It will be a complete waste of money,' Moira tells her boss.

Moira has made the following assumptions:

1. The company cannot afford the $3,000 required to attend the conference.
2. The turnout will be terrible again this year based on last year's performance.
3. There was no report on the impact of last year's conference on sales, therefore the conference had no impact.

When investigating the matter, Moira failed to note or make the following information available to her boss:

- There is money in the marketing budget to pay for the conference.
- A competitor of the company attended the conference last year and attributed the event to boosting their sales by five per cent.
- The conference is moving to a new, larger venue with better links to public transport.
- The conference has secured renowned international key note speakers and these have been widely publicised in trade journals and social media.
- The event company trebled its advertising budget for the conference, and is now advising that there are limited seats remaining.

If Moira had considered all the factors and applied critical thinking, would this have changed her recommendations about attending the conference?

Groupthink versus critical thinking

'Groupthink' is a term derived from George Orwell's* 1984*. It is the name given to the desire for group consensus at the expense of critical thinking.

When groupthink occurs, the desire for group cohesion overrides the ability of people to challenge the group or offer an unpopular alternative view.

One of the most tragic cases of groupthink occurred on 28 January 1986 when the space shuttle *Challenger* blasted off from the Kennedy Space Centre, only to explode a little over a minute after launch, killing all seven crew members. The explosion was caused by a failed O-ring in the rocket booster fuel cells, which were supplied by subcontractor Morton Thiokol.

President Reagan ordered a commission of inquiry, which found that a flawed decision-making process was a major contributor to the incident.

The day before the launch, engineers from Morton Thiokol warned of the risk of failure of an O-ring seal due to lower than normal ground temperature at the launch site. If the O-ring seal was to fail, then there were potentially grave risks to the mission.

On the morning of the launch, NASA was advised by Morton Thiokol about the O-ring safety concern and advised not to launch. NASA asked Morton Thiokol to review their advice. The Morton Thiokol management team then met with their engineers, who expressed strongly that the launch be postponed because the freezing temperatures might compromise the integrity of the O-ring. The Morton Thiokol management team ignored the advice of the engineers and no one on the management team expressed a concern when they reached that decision. They gave NASA the all clear to launch. Morton Thiokol did not want to disappoint their major client and NASA was under pressure to go ahead with the launch. The concerns expressed by Morton Thiokol engineers to NASA did not make their way to the senior NASA decision-makers.

This video provides a dramatisation of the meeting that took place, from the documentary *Challenger: The untold story.*

Practice task 2

Question 1

List **five** risks of failing to apply critical thinking.

Question 2

Explain how you could apply critical thinking to avoid the following situations in a business:

- having the same range of products and services year after year
- implementing a new process that drives away customers.

1C Applying critical thinking at work

Critical thinking can be applied across any area of an organisation where decisions are made.

If you cultivate critical thinking as a habit, then it would be applied automatically in a workplace as a matter of course. In deciding where critical thinking can be applied, it is a good idea to ask whether the business concern deserves to be considered rationally.

Example

Applying critical thinking skills to routine tasks

Lynette is an employee who works in accounts payable for a medium-sized organisation.

Lynette's main job tasks and responsibilities are:

1. Assist with month-end closing of accounts
2. Correspond with vendors
3. Sort, code and match invoices
4. Process expense reports
5. Load invoices into the system
6. Reconcile accounts payable transactions
7. Produce monthly reports
8. Prepare and process electronic transfers and payments
9. Post transactions to journals and ledgers
10. Review and verify invoices and cheque requests

The particular skills Lynette requires are:

- attention to detail
- good judgment
- teamwork
- numeracy
- accuracy
- problem-solving
- time management.

Lynette can apply critical thinking to her work tasks:

- Judgment and problem-solving are linked – you exercise judgment when solving problems as it:
  - involves evidence
  - involves questioning assumptions
  - involves an issue or a problem to solve
  - requires information
  - requires research to check on information and verify accuracy.

- Time management is about making choices on what to do with your time as it:
  - involves prioritising tasks based on need
  - requires sufficient information to reach a decision
  - involves uncovering assumptions.
- Teamwork is about working together to achieve mutual goals as it:
  - involves clarifying the goals
  - considers different perspectives
  - involves uncovering assumptions.

Many of Lynette's work tasks may be routine, such as producing a monthly report, and may not require critical thinking. However, she can apply critical thinking by looking at a task from a different perspective. For example, to produce a monthly report, Lynette must click on the reporting function in the accounting software package. This requires no critical thinking. To apply critical thinking she could ask, 'Why is the report needed?' and 'What should the report contain?'

When critical thinking can be used

Critical thinking can be applied in the workplace whenever you ask 'Why?', 'What?' and 'How?'

The importance of critical thinking increases in line with the gravity of the decisions being made. Many business decisions are difficult because they are filled with risk and emotion. Critical thinking should not discard the risk and emotion, but should temper it by viewing the information more critically.

Think of the decisions made by leaders to commit their country to war or the decision to launch the space shuttle *Challenger* referred to in the previous section. In a workplace, decisions made by boards to merge with other companies, retrench staff or close companies down must be made using critical thinking processes.

Applying critical thinking to strategic decisions

Fundamental to most organisations is the notion of why they exist and what strategies they will pursue to achieve their goals.

Strategic plans involve broad strategies that the organisation will strive to achieve and the key initiatives they will pursue. The process of strategic planning calls for a critical analysis of the business environment in which the organisation exists, what products and services it produces, and what opportunities and threats exist.

Strategic decision-making usually involves one or more of the following:

- Political, economic, social, technological (PEST) analysis
- Strengths, weaknesses, opportunities and threats (SWOT) analysis
- Feasibility studies, or product and service analysis
- Competitor analysis
- Resource requirements to achieve the plan
- Process mapping
- Strategic or business plans
- Product or service innovation or creation

It is essential that the thinking on strategy uncovers the assumptions that lead to decisions, and the relevance and sufficiency of the information to support those decisions.

Questioning assumptions may involve reviewing:

- what people think
- how people act
- policy implications
- competitor behaviour
- stakeholder input and the weight attached to that input
- market behaviour
- impact of actions taken.

Applying critical thinking at an operational level

Critical thinking can be applied to a range of operational decisions.

To apply critical thinking, consider the following questions in relation to each aspect of the organisation.

Policies and procedures

- Why were they written?
- What purpose do they serve?
- Why do we do things this way?

Work processes

- What is the process?
- Why is it required?
- How is it implemented?
- Why do we do things this way?

Product or service

- Why do we offer this product or service?
- What need is it fulfilling in the market?
- How do we market it to best reach our target group?

Systems

- Why do we use this system?
- How does the system benefit us?
- How do we learn about new versions and upgrades?

Governance

- What guides our decision-making?
- How are decisions made?
- Why do we have to follow laws and regulations?

Locations

- Why are we located here?
- What are the advantages to staff/customers?
- How do offsite locations communicate with head office?

Workplace issues

- How do we resolve workplace issues?
- What are the causes of workplace issues?
- How can we minimise workplace issues?

Planning

- How will we achieve our goals?
- What actions must we take?
- What resources are required?

People

- What are our workforce needs?
- How do we develop our people?
- How do we find new staff with talent and experience?

Innovation

- Why is innovation important to us?
- How do we apply innovative practices?
- How do we monitor new technologies and ideas?

Example

Applying critical thinking at work

Anun is a team leader in a factory that produces plastic pipes and fittings. He is in charge of two extrusion lines and has been asked to review how stock is being organised in the dispatch yard. There have been complaints that stock is too hard to find and is organised in a way that makes it time-consuming to shift for loading onto delivery trucks.

Anun is one of three team leaders that supply stock to the dispatch yard. He organises a meeting with the other team leaders to discuss what they should do about the issue.

Anun leads the meeting and the three team leaders make a decision based on the following process:

1. State the question or problem – They agree that the issue is the load time for trucks awaiting pickup of their company's product. It is taking too long.
2. Gather information and check assumptions – They test several assumptions:
   - That the current layout in the dispatch yard has been optimised
   - That the truck loading area cannot be moved
   - That the method of loading trucks cannot change
   - That new and old stock must be arranged in a certain way
   - That the schedule for the loading of trucks cannot be altered
   - That the load time is too long
3. Consider different perspectives and interpret information – They review the following information in their meeting:
   - The current dispatch process
   - Dispatch data
   - Driver feedback
   - Previous reports and meeting minutes regarding the setup for the dispatch yard
   - The dispatch schedule
   - Feedback from stakeholders such as couriers and suppliers
4. Develop well-reasoned solutions and conclusions – They agree on a solution and make a recommendation to the factory manager. They provide evidence to substantiate the proposed change and the enhancements the change will bring, and submit a plan of how to put the change into action.

Practice task 3

Question 1

Think of a key process you use as part of your job role. Apply critical thinking to this process by answering the following questions:

a. What is a current issue or problem?

b. List **three** 'why' questions you could ask in relation to the issue.

c. List **three** 'what' questions you could ask in relation to the issue.

d. List **three** 'how' questions you could ask in relation to the issue.

Summary

- Thinking can be either rational or irrational. Critical thinking is rational thinking.
- Critical thinking requires effort and commitment; it is a conscious form of thinking.
- A key purpose of critical thinking is to uncover and check assumptions.
- The process of critical thinking should lead to well-reasoned decisions that are underpinned by evidence.
- Intellectual standards provide a basis for testing our thinking against.
- Failing to think critically runs the risk of making poor decisions.
- The argument for using critical thinking increases as the gravity and consequences of the decision increase.
- Critical thinking can be applied to any aspect of the workplace where decisions are made.

Learning checkpoint 1
Thinking critically in the workplace

This learning checkpoint allows you to review your skills and knowledge in understanding how thinking critically is applied in the workplace.

1. What are **four** things you do when you think critically?

2. Why is critical thinking described as rational thinking?

3. How does critical thinking benefit the following groups of stakeholders?
   a. Customers
   b. Shareholders

4. List and explain **two** components of a critical thinking process.

5. Identify **three** tools that may be used or things that need to be considered when applying critical thinking at a strategic level.

6. Identify **three** benefits of adopting a critical thinking mindset.

7. Identify **three** risks of failing to adopt a critical thinking mindset.

Topic 2
Critical thinking and decision-making

Decisions help to establish organisations and propel them forward; however, poor decisions can result in loss of productivity or failure to succeed.

Decisions – and the ability to make them – are at the core of all organisations. Applying critical thinking to decision-making means that organisations are more likely to make rational and defensible decisions based on all relevant information.

In this topic you will learn about:

2A Analysing key elements of workplace procedures, products and services

2B Using critical thinking to uncover limitations

2C Sourcing workplace information to guide decision-making

2D Applying critical thinking to a decision-making framework

2A Analysing key elements of workplace procedures, products and services

To critically evaluate the effectiveness of an organisation, you must first understand what drives it.

The purpose of the business will be reflected in its strategic goals and in the actions of its personnel. To assess the effectiveness of an organisation and how it executes its strategy, you need to know what to take note of and learn how to analyse it.

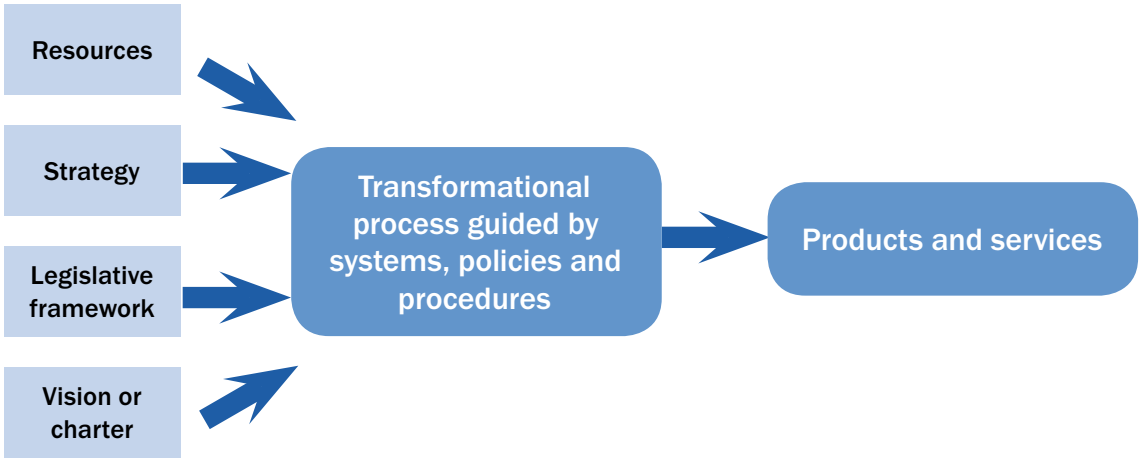
Purpose of organisations

No matter what type of business structure an organisation has, it will likely have a charter or vision that defines its purpose.

Public organisations such as government departments exist to manage a particular area of public administration. Private organisations may either be for profit or not for profit.

All organisations provide products and services to their customers and all will be guided in their actions by their vision, strategic goals, and required resources, including human resources. They will need to operate within a governance framework which may be determined by legislation. This in turn will be reflected in the operational policies and procedures.

In simple terms, organisational activity may be expressed as:



Links between an organisation's vision, strategy, products and services

There needs to be a clear and logical link between each organisation's vision, key strategy, and the product or service it provides. If an organisation's vision or strategy is unclear or vague, there is a greater risk of products and services failing to meet the standards or goals set by the organisation.

Critical thinking can be used to clarify and confirm that these links exist and highlight when these links are absent or weak. Decision-makers in the organisation need to be informed of this so they can determine a course of action.

Here are some examples of well-known companies with vision statements, and the products or services they produce.

Organisation	Reason it exists (vision)	Example of key strategy	Example of transformational process	Example of product or service
McDonalds	To be the best quick service restaurant experience	Serve 100% more fruit, vegetables, low-fat dairy or whole grains by 2020.	Cook or process raw ingredients.	Classic chicken salad
Commonwealth Bank of Australia	To excel at securing and enhancing the financial wellbeing of people, businesses and communities	Apply world-class technology to meet the evolving needs of customers.	Make secure, contactless payments with just a simple tap of a card or phone.	Commbank App
Centrelink	To deliver social security payments and services to Australians	Transform and simplify our information and communication environment to support secure 'always on' digital access to our services and to enable rapid, flexible responses to evolving government priorities.	Claim Centrelink payments online.	Centrelink online account

Key elements of products and services

Critical thinking can be used when a new product or service is being launched or when an existing product or service is being evaluated.

There are a lot of things to consider when designing or evaluating products and services. Critical thinking questions can help you determine whether the product or service will meet the needs of the customer.

To be successful, products or services must:

- be defined by the needs of the target customers
- fulfil one or more needs of customers
- provide features and benefits to customers
- differentiate themselves from the products or services offered by competitors
- have clear links to and support the organisation's strategic goals and business plan
- be supported by a business case that justifies the resources needed to develop the product or service
- be supported by a marketing plan that describes how the product or service will be marketed to customers
- have a process for measuring the effectiveness and quality
- have a set of controls that govern or affect how the product or service is delivered.

Customers need to know:

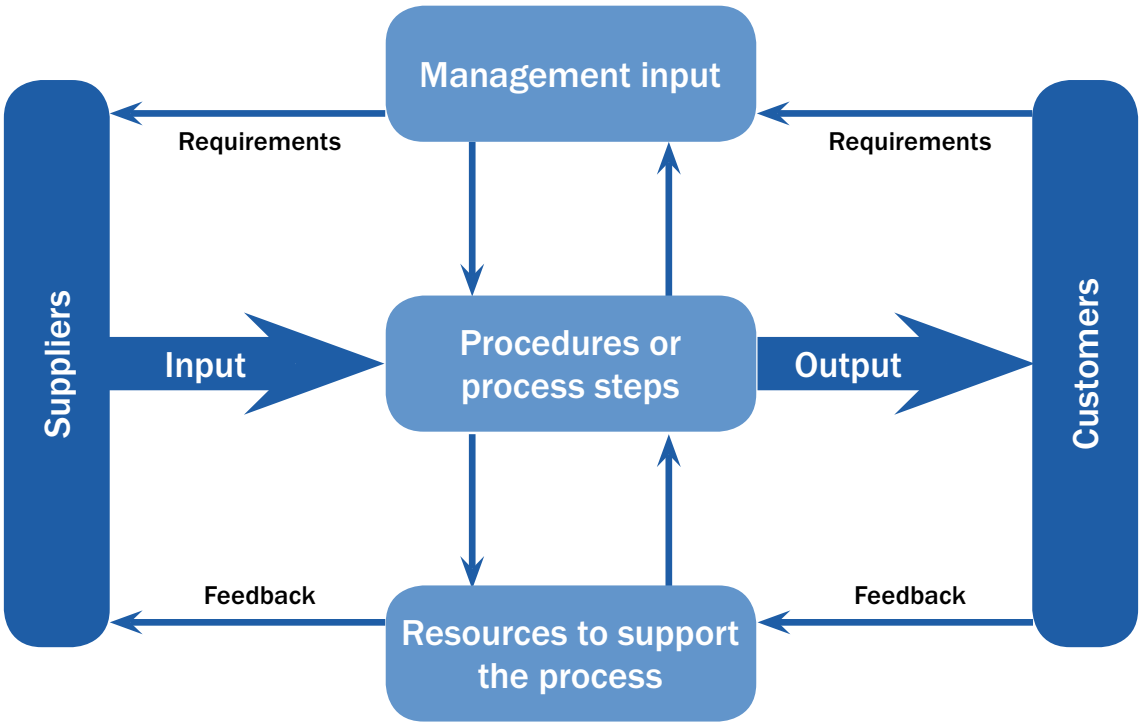
- how to acquire the product or service, including purchasing options
- the benefits of the product or service – how it saves time or costs, or provides quality
- the limitations of the product or service
- their rights as consumers.

What is a process?

In business a process describes a series of steps that convert inputs into outputs for customers, such as a product or service.

Customers may be internal or external to the organisation. Various resources will need to be used in a process, such as human resources, equipment, raw ingredients, time, money and energy.

A process model can be represented like this:



Customers hold the key in setting the requirements for a process's design.

Processes that are designed independently of customer requirements or fail to change in light of customer feedback are exposed when critical thinking is applied. Critical thinking asks 'Why?' For example:

- Why did we choose to design this process and not another one?
- Why did we design the process this way?

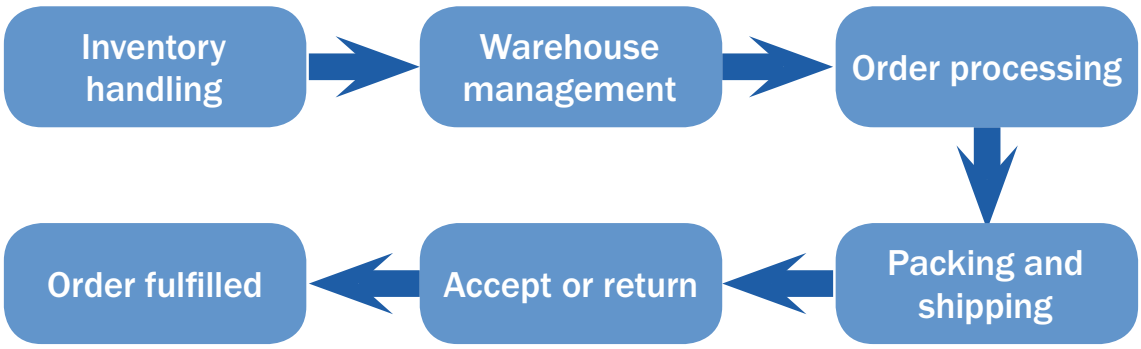
Processes and procedures

Processes are made up of various steps, which may be referred to as procedures.

Procedures contain detail on how individual tasks are done and may be broken down further into specific work instructions. A process will contain several procedures that guide staff at each stage.

For example, an online retailer may have an order fulfilment process that looks like this. Each of these steps may have a separate procedure associated with it.

Order fulfilment process



Features and limitations of procedures

Critical thinking may be used to question the procedures in place and raise other issues and questions that need to be answered.

These questions may include the following in relation to workplace procedures.

Features of workplace procedures:

- What is the purpose; why does the procedure exist?
- What is the scope of the procedure and what does it apply to?
- Are the definitions and key terms defined to ensure common understanding?
- Who is responsible for each part of the procedure?
- What resources are needed to execute the procedure?
- What are required as inputs to the procedure and what outputs does the procedure produce?
- What are the steps in executing the procedure?
- What systems are needed to support the process, product or service?
- Is there a version control system in place for quality control so that only the latest version of the procedure is in use?
- Are related documents such as policies listed?
- Is related legislation referred to in order to ensure the procedure complies with industry and legal standards?
- How is the effectiveness and quality measured?
- How is continuous improvement addressed?

Limitations of workplace procedures:

- Is there a limited framework for decision-making?
- Do restrictions need to be in place to avoid making rapid, risk-based decisions?
- Are there restrictions on autonomy and the ability to make responsive decisions?
- Are the procedures able to adapt to changing business conditions or rules?
- Is there a limited scope?
- Do personnel have the required knowledge and skills to enact the procedure?
- Does the procedure rely on precedent and past protocol?

Legislative framework

Organisations must comply with all legislation that applies to their operations.

Legislation must be monitored when decisions are being made in an organisation. Critical thinking should always include legislation as a consideration. The following questions should be asked to confirm whether relevant legislative requirements have been considered:

- Is it a factor?
- How should it be considered?
- Are decisions consistent with it?
- Are workplace practices consistent with it?
- How does it limit what we can do?
- What are the consequences of breaching it?

To answer these questions in relation to products, services and processes, you must first understand what legislation impacts which parts of the organisation. Here are some examples.

Legislative area	Examples of legislation	Where it impacts	What it impacts
Intellectual property	• *Designs Act 2003* (Cth) • *Patents Act 1990* (Cth) • *Trade Marks Act 1995* (Cth) • *Intellectual Property Laws Amendment Act 2015* (Cth)	• Patents • Trademarks • Product designs • Trade secrets	• Product development • Security of ideas, products and services
Taxation obligations	• *Goods and Services Tax Act 1999* (Cth) • *Australian Business Number Act 1999* (Cth) • *Fringe Benefits Tax Act 1986* (Cth) • *Income Tax Act 1986* (Cth)	• Record-keeping obligations • Information management • Income tax • Goods and services tax • Capital gains tax • Fringe benefits tax • Superannuation • Stamp duty	• Pricing • Payments to staff • Invoicing • Cashflow • Accounting

Legislative area	Examples of legislation	Where it impacts	What it impacts
Australian Consumer Law	• *Competition and Consumer Law Act 2010* (Cth)	• Product safety standards • Misleading or deceptive conduct • Anti-competitive conduct • Consumer protection	• Product design • Marketing • Mergers and acquisitions • Market power • Customer service • Customer rights • Refunds • Warranties and guarantees
Privacy	• *Privacy Act 1988* (Cth)	• Collection, use, security and disposal of personal information	• Collection and use of customer data • Marketing • Database security • Information-sharing with other entities
Work health and safety	• *Work Health and safety Act 2011 (Cth)* • *Occupational Health and Safety Act 2004 (Vic.)* • *Occupational Safety and Health Act 1984 (WA)*	• Work practices • Accidents or injuries • Workers' compensation	• Employer obligations • Employee obligations • Health and safety representatives • Worker rehabilitation • Licences or registration for certain business activities • Workplace bullying and harassment

Legislative area	Examples of legislation	Where it impacts	What it impacts
Employment	• *Superannuation Guarantee Act 1992* (Cth) • *Fair Work Act 2009* (Cth) • *Age Discrimination Act 2004* (Cth) • *Racial Discrimination Act 1975* (Cth) • *Sex Discrimination Act 1984* (Cth) • *Disability Discrimination Act 1992* (Cth)	• Discrimination • Equal employment opportunity • Superannuation • Awards	• Recruitment • Employment contracts • Apprentices and trainees • Overseas employees • Rate of pay and employee entitlements • Complaints and disputes • Dismissing employees
Online business	• *Spam Act 2003* (Cth) • *Competition and Consumer Law Act 2010* (Cth)	• SPAM obligations • Privacy obligations • Consumer protection • Online security	• Internet-based marketing • Customer service
Tenders and contracts	• *Competition and Consumer Law Act 2010* (Cth)	• Securing new business • Managing government and corporate opportunities	• Viability and security of business • Cashflow • Resourcing
Corporate responsibility	• *Corporations Act 2001* (Cth) • *Australian Securities and Investments Commission Act 2001* (Cth) • *Foreign Acquisitions and Takeovers Act 1957* (Cth) • *Insurance Act 1973* (Cth)	• Conduct and disclosure of companies	• Governance arrangements • Shareholder arrangements

Australian and/or international standards may also apply to different industry sectors. Depending on the industry, standards may relate to:

- safety
- construction
- performance
- testing
- labelling
- information.

Example

Analysing key elements of workplace procedures, products and services

ACME Lighting specialises in designing and manufacturing light fixtures and ceiling fans for households. Its vision is to be the leading provider of innovative and technologically advanced lighting and ceiling fans, including producing energy-efficient products.

Its business plan includes goals to increase its share of the ceiling fan market by producing more energy-efficient designs.

Recent data from customer surveys revealed energy costs as a key motivational factor when customers are making purchasing decisions about ceiling fans.

ACME Lighting's latest ceiling fan uses as little energy as 2 cents per hour and can reduce running costs by as much as 20 per cent. The use of new innovative materials means that fans are lighter and quieter than ever before, and the components are more sustainably made by plantation-grown timber and bamboo.

ACME Lighting's product development arm produced a detailed business case describing where the fan would be manufactured, associated manufacturing costs per unit, shipping costs, sustainability manufacturing ratings and prototype testing, including data on energy efficiency and noise ratings.

An analysis of ACME Lighting's decision to develop a new energy-efficient fan reveals that it is:

- aligned to their vision and business plan goals
- fulfilling a customer need
- backed by a detailed business case
- supported by data from prototype testing.

There is information and evidence provided that outlines the critical thinking behind the decision to develop the product.

Practice task 4

Question 1

Which of the following would be considered key elements of a product, service or process? Select all that apply.

- ☐ Process inputs and outputs
- ☐ Customer profiling
- ☐ The need that the product or service will fulfil for the customer
- ☐ The size of the team implementing the process
- ☐ The features and benefits of rival products and services
- ☐ Links to the organisation's business plan
- ☐ Business case that justifies the commitment of resources to develop the product or service
- ☐ The date the product or process was launched

Question 2

Why is it important to understand the impact of legislation on workplace procedures?

Question 3

Consider the order fulfilment process discussed earlier. List **three** examples of laws you may need to consider if you were designing or reviewing this process.

2B Using critical thinking to uncover limitations

Products, services and processes can only be optimised if the thinking that led to their creation is sound.

Critical thinking can be applied to proposed or existing products, services and processes to evaluate their organisational worth. In doing this we can uncover limitations in their purpose, design and scope, and find ways to improve them.

Limitations and the effect on business

Issues can occur at any point in the evolution of an organisation's products and services, and when developing processes.

Limitations might be imposed by the organisation's governing body or key decision-makers and cause issues for the organisation. Earlier we considered why organisations exist and why they have a purpose. If their purpose is narrowly defined, they may be vulnerable to becoming obsolete if their customer base no longer believes in their purpose or if they fail to innovate and change to meet these changing needs.

Lack of critical thinking or product failures can sometimes provide insight into a lack of critical thinking leading up to the product's development. Consider these two examples.

Example 1

Kodak dominated photography in the 1900s, producing photographic film and cameras, and capturing up to 90 per cent of the US market. Kodak employed over 140,000 people at its peak. However, Kodak failed to capitalise on the rise of digital photography even though it invented the first digital camera in 1975. Kodak was limited by its executive's view of the world and eventually filed for bankruptcy in 2012.

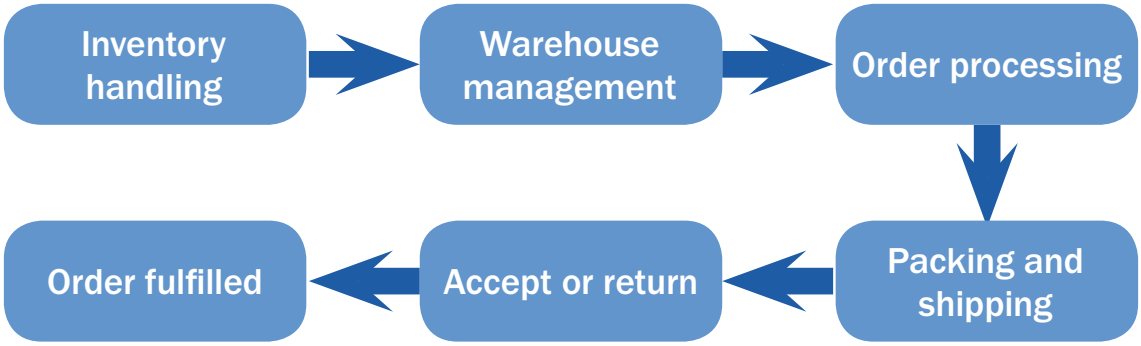
Example 2

In 1982, toothpaste manufacturer Colgate launched a line of frozen foods called Colgate Kitchen Entrees. The marketing idea was that consumers would eat their Colgate meal, then brush their teeth with Colgate toothpaste. The brand extension didn't work and consumers were left confused.

Applying critical thinking to processes

Before you can apply critical thinking to processes, you must first consider how procedures are performed and how they fit with the overall process.

Look again at the order fulfilment process from before.



Suppose this process forms part of the operations of an online retailer, BizOps, where customers select items in the online store, pay for them and then wait for their delivery. When the items are delivered the customer decides to either accept or reject them based on BizOps's refund policy. If they accept the items, the order is said to be fulfilled. Inventory handling is a procedure in the order fulfilment process.

The inventory-handling procedure includes the following steps:

1. Stock is received.
2. Stock is put into temporary storage and labelled.
3. Stock is withdrawn, issued and moved through the order fulfilment process.
4. Stock movement is tracked from the warehouse to the customer.

Applying critical thinking might include the following steps:

Step 1	Analyse and clarify the purpose of the process.
Step 2	Consider different points of view about the intent of the process.
Step 3	Understand the theories or concepts that are being used to develop the process, and question their use.
Step 4	Uncover and test assumptions about the product, service or process.

Investigating limitations in processes

By asking a series of questions and testing the assumptions that have been made, you can expose the limitations that may exist in the inventory-handing procedure.

Critical thinking can be applied at a micro or macro level. It can examine the process as a whole or can be used to drill down to the specific detail and question each step of a process or procedure.

The aim is always to have sufficient information to make justifiable decisions or conclusions.

Here is an example of some critical thinking questions that may be applied to some of the steps in the inventory-handling procedure mentioned earlier.

The stock	• Why does BizOps stock these particular items? • Who decides what is stocked, and on what basis did they make these decisions? • What customer feedback is used in making these decisions? • What market analysis was done? • Does the stock align with the BizOps brand? • Does the stock align with BizOps's strategic goals? • Can stock be maintained in good condition? Does it store well?
Receiving stock	• Why is stock sent to these locations? • Have alternative locations been considered? • What are the advantages and disadvantages of these locations? • At what time of the day is stock received? Does it conflict with other activities? • What methods are used to receive and unload stock? • How quickly is stock unloaded and does it meet performance standards? • What are the performance standards and how were they arrived at?
Temporary storage and labelling	• How is the decision made on where to store stock? • What criteria are used when labelling stock? • Does the labelling system make sense? • Is the labelling linked to the inventory database? If so, how? • How long can stock be stored for? What if it continues to take up space? • How is efficiency of storage measured?

Big picture questions

In addition to evaluating limitations in the steps of a procedure or process, there are often more global limitations that a critical analysis should address.

Big picture questions include:

- To what extent does the procedure allow personnel to make decisions, either autonomously or through reporting lines?
- What is the turnaround time on rapid decisions?
- To what extent does risk influence the ability of staff to make decisions?
- How flexible is the procedure or process in adapting to changes in business conditions or rules?
- What is the scope of the procedure or process, and who does it apply to?
- What skills and knowledge are required by personnel to enact the procedure or process?
- What other procedures or processes, if any, is it dependent on?

If you apply critical thinking to the first question mentioned above, you may find the following results:

- Personnel can make the following decisions autonomously:
  - What label to apply to stock
  - How the stock is to be stored
  - Where the stock is to be stored according to the warehouse plan
  - How the stock is to be tracked
- Decisions that may require supervisor or higher management approval may be:
  - The time of day stock can be received
  - Changes to the warehouse plan
  - Changes to the labelling criteria
  - The amount of stock to be kept onsite
  - Training
- Decisions that may only be made at an executive level may include:
  - Warehouse location
  - Shipping contractors
  - Performance indicators and measures
  - Performance expectations

Example

Uncover the limitations of workplace procedures, products and services using critical thinking

Plants4+Us is a wholesale nursery that ships plants around Australia from three locations in Victoria, NSW and Queensland. It recently reviewed its packing and shipping procedure following a review of customer feedback over the last 12 months. Customer feedback included the following summary comments:

- Plants4+Us prices are the best in Australia when combined with shipping rates.
- If there was delay by up to two days the quality of the product would be reduced.
- Delivery to major centres, such as capital cities, in cooler conditions was mostly without issue.
- Delivery to regional areas was often problematic and products would often arrive dehydrated or damaged.
- Delivery in warmer months was problematic for all destinations, with customers complaining of distressed plants such as wilting leaves and dehydration.

Plants4+Us secured a contract with a national courier company at low rates, allowing it to be very competitive on pricing. Plants4+Us was willing to implement a 10 per cent refund or replace policy on its product as the volume of sales will compensate for this loss.

A nursery supervisor was asked to review the original decision to pack and ship plants according to the current procedure. She discovers the following:

- The way plants were being shipped hadn't been reassessed since the company started eight years ago.
- The shipping contract required standard delivery and did not offer an express service.
- Nurseries were able to send plants with their root soil intact rather than bare-rooted stock; although there is additional weight, the cost would not be too much higher.

In light of these findings, the supervisor proposes the following:

- Giving autonomy to nurseries to use express delivery for all regional areas all year round and for major centres in summer months.
- Changing the performance measure to not only be exclusively cost-based, but also to include savings in refunds and replacements.
- Making it mandatory for plants to be sent with root soil to all regional areas all year round and to major centres in the warmer months.

Plants4+Us is reluctant at first to adopt this approach as it is fearful of rising costs. It agrees to trial the idea in one of its locations for six months.

Practice task 5

Question 1

Which of the following are factors in limiting the application of workplace procedures? Select all that apply.

- [ ] Social media feedback
- [ ] The flexibility of the procedure
- [ ] The format in which the procedure can be accessed by staff
- [ ] Making the procedure available for the organisation's customer base
- [ ] The skills and knowledge of personnel
- [ ] The quality of the product or service
- [ ] What other procedures (if any) it is dependent on

Question 2

The steps in a complaints handling procedure are as follows:

1. Listen to the complaint and be understanding towards the complainant.
2. Record the complaint.
3. Discuss options for fixing the problem.
4. Implement a solution.
5. Follow up with the complainant.

What are **three** questions you could consider to explore limitations in the final step of the process?

2C Sourcing workplace information to guide decision-making

Critical thinking depends on gathering relevant and sufficient information.

You are unable to reason without information. The information you use to reason can be based on your experience or the experience of others, or may be based on data and facts. You should exercise caution in deciding which information to use.

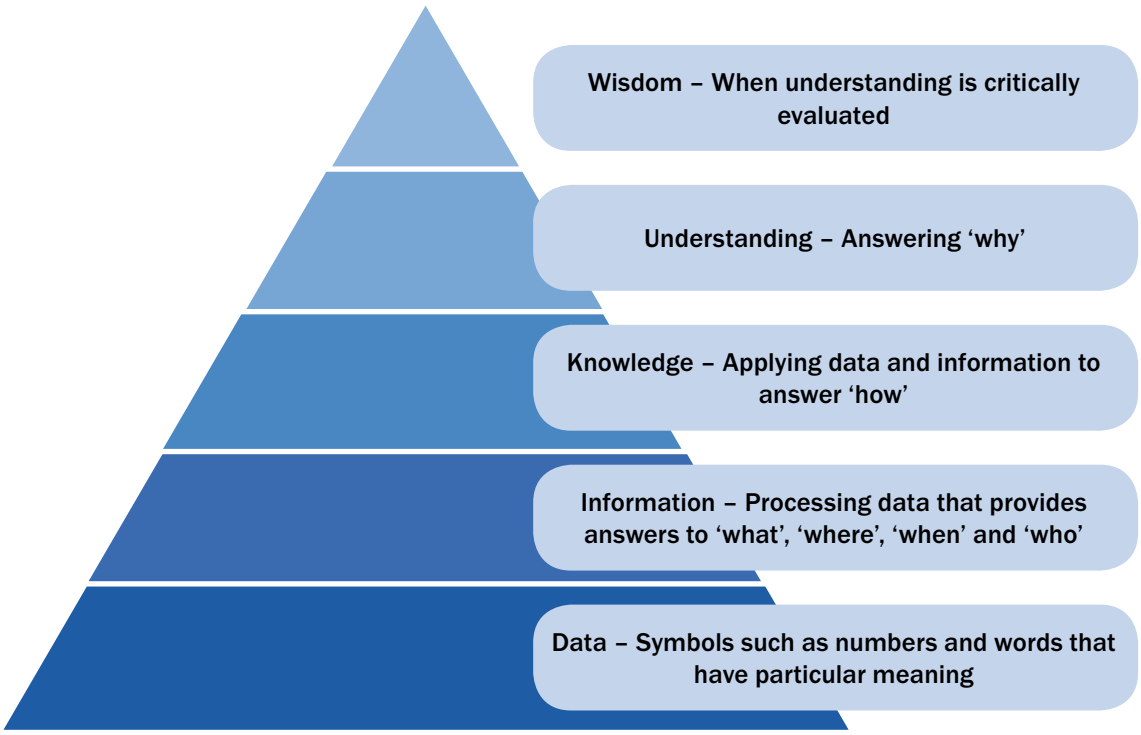
For example, how objective can you be when using your own experience as a guide? You are in danger of irrational egocentric thinking if you are not self-critical of your own experience. As Elder and Paul wrote in *The thinker's guide to intellectual standards* (2012): 'Experience may be the best teacher, but biased experience supports bias, distorted experience supports distortion, self-deluded experience supports self-delusion'.

Equally, how willing are we to absorb the group consensus without critically evaluating it? Recall the dangers of 'groupthink' and the space shuttle *Challenger* from Topic 1.

Relevancy and sufficiency of information

The goal in critical thinking is wisdom. The starting point is data and information.

The DIKW Pyramid developed by Russell Ackoff in 1989 makes a distinction between data, information, knowledge, understanding and wisdom.



Source: Ackoff, R (1989), 'From data to wisdom', *Journal of applied systems analysis*, vol. 16, p.3–9.

How do you determine if the data and information is relevant to the problem or question you are trying to solve?

There are three questions in the intellectual standards that you should ask at various points in the critical thinking process, as outlined here.

1. How relevant is the information?

- How does it relate to the problem?
- How does it help to solve the problem?

2. How sufficient is the information in regards to breadth?

- Do you need to look at this from another perspective?
- Do you need to consider another point of view?
- Do you need to look at this in other ways?

3. How sufficient is the information in regards to depth?

- What factors make this a difficult problem?
- What are some of the complexities of this problem?
- What are some of the difficulties you need to deal with?

Gathering information

Relevant information should be gathered from a variety of sources.

The task of gathering information may reveal a significant gap in relation to where the information was sourced from. For example, if online retailer BizOps was keen to expand and set up new retail operations in central Australia, but didn't have any data or other verifiable information that supported this, why would they proceed?

When gathering information, it is important to differentiate between facts and opinions, and to consider the role of bias.

A fact is something that can be proven to be correct, i.e. there is evidence to support it.

An opinion is something that someone believes, and cannot be proven true or false.

When applying critical thinking, you should welcome the views of others and seek out subject matter experts for their knowledge and experience. There is sometimes a tendency to accept the opinions of those in authority or those with expert status without question – what you actually need are their fact-based views and evidence.

It is irrational to only gather information that supports a particular view. The intellectual standard of fairness means you must be impartial. Ask yourself the following questions to determine whether you may be biased:

- Do I have any stake in this issue?
- Am I sympathetically representing the views of others?

Information sources

Critical thinkers use different information sources to cover a range of perspectives on the issue or problem being analysed.

It is important to understand and adhere to organisational policies and procedures for dealing with information and data. There may be rules about obtaining secure information and sharing this with others, particularly when sharing commercially sensitive information with people outside of the organisation.

Internal sources of information

These include:

- policies
- procedure manuals
- work instructions
- intranet libraries
- experienced workers
- supervisors and managers
- subject matter experts
- workplace inductions
- productivity data and reports
- machine or computer readouts
- marketing material
- internal coaches and mentors.

External sources or information

These include:

- journals and books
- online blogs and social media
- websites
- legislation
- industry standards
- industry reports
- conferences
- trade publications
- equipment manufacturers
- external coaches and mentors.

Verifying information

Critical thinkers rely on rational thought processes where the information used is based on facts and not on opinions.

Verification allows facts to be established and agreed on. Information can be verified if the source can be identified and found to be accurate. The intellectual standards of accuracy and precision assist in verifying information. The more precisely you can define the problem or issue, the greater the chance that the information you gather will be relevant and the easier it will be to collect as you can narrow down your search parameters.

Precision questions include:

- Could you be more specific?
- Can you give me more details?
- Can you be more exact?

Accuracy questions such as the following can be used to test opinions:

- How can we check on that?
- How can we find out if that is true?
- How can we verify or test that?

For example, online publisher Wikipedia requires its users to reference information using verifiable citations so that others can check that the information has come from a reliable source. Wikipedia requires that the source material has been published and that the source publication has a structure in place for checking or analysing facts, legal issues, evidence and arguments.

Interpreting numerical information

An important consideration when gathering numerical data is whether it is reliable.

A phrase attributed to former British Prime Minister Benjamin Disraeli states: 'There are three kinds of lies – lies, damn lies and statistics'.

Statistics, and what they infer, can be used to support a weak argument. They can also stand on their own if they provide sufficient information on how they were gathered and how the results have come about. The message for critical thinkers is that whatever data you encounter and in whatever form it is presented, it must pass the intellectual standards discussed earlier. That is, it must meet the following criteria:

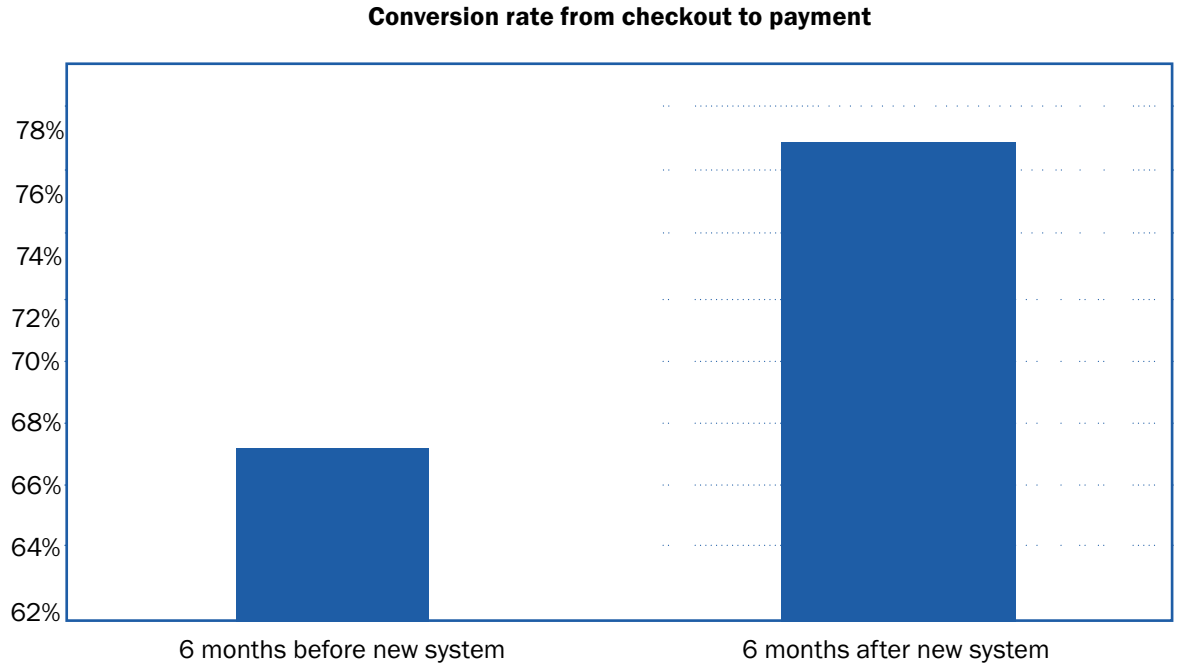
- Accuracy – Are the inferences correct?

- Relevancy – Does it relate to the problem or question?
- Logic – Does the evidence support the argument?

Here is an example.

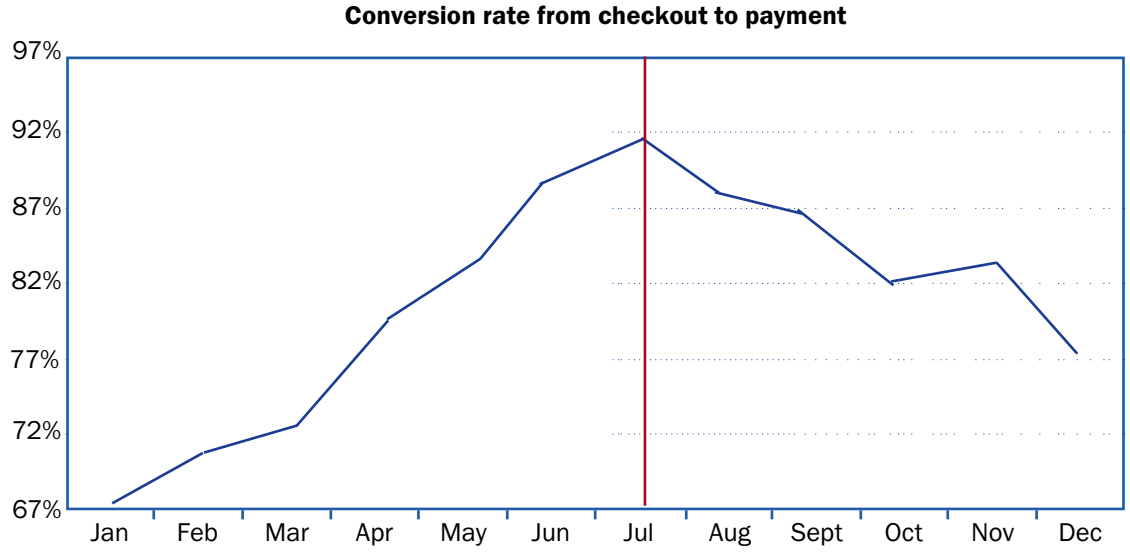
BizOps, an online retailer, introduced new technology to try to reduce the number of abandoned shopping carts on its website. It wanted to improve the conversion rate of the number of completed transactions, i.e. from checkout to payment.

After trialling the new technology for six months, the following chart was presented by the business improvement team to the executive management of BizOps.



The chart above shows an improvement of 10 per cent over a 12-month period. The business improvement team concludes that the introduction of the technology was successful.

However, the chart below represents the same source data, showing the conversion rate for each of the six months leading up to the introduction of the new technology and the six months after. The vertical line shows the point at which the technology was introduced.



Looking at the chart above, consider whether the conclusion of the business improvement team is correct.

The average conversion rate in the six months either side of the point when the technology was introduced did indeed show an improvement; however, conversion rates actually became worse after the technology was introduced.

A critical thinker would not say outright that the introduction of the technology caused the conversion rate to fall. Instead, they would investigate the cause of the fall in the conversion rate and the evidence to support it. In other words, it is not enough to assume that A led to B – there must be evidence to support this. It is inconclusive based on the trend data that the technology has made a difference.

Example

Sourcing workplace information to guide decision-making

Online retailer BizOps wants to upgrade its online payment system. The senior management team commissions a report by an external consultant to critically evaluate the available options.

The consultant considers the following information sources:

- numerical data showing current usage levels of the existing online payment system and the potential weaknesses if BizOps's usage rate were to expand in line with projections in their business plan
- customer feedback on their user experience around the payment system functionality
- staff feedback on the usability of the current system, looking at pros and cons
- the extent to which the features of the current system had been used by BizOps
- data security of the current system
- comparison of the current payment system with a market leader and a breakdown of features and benefits
- estimate of the cost involved in transitioning from the current payment system to the consultant's recommended replacement, NowClick&Pay.

The consultant presents his report and recommendations.

Although the senior management team is happy with the analysis applied to internal information sources, it is not happy with the analysis applied to the available options to replace the payment system.

The consultant failed to sufficiently and objectively review the available options and had only considered one option. He also failed to provide evidence to convince the senior management team that he had met their brief.

It was later revealed that the consultant had been a former employee of NowClick&Pay, and was being paid a significant commission for any sales. It was also revealed that this was the system that the consultant was most familiar with and that he hadn't applied the same level of scrutiny when considering other options.

Practice task 6

Question 1

You have been asked to evaluate the effectiveness of your organisation's complaints handling procedure. List **five** pieces of information that would help in your evaluation.

Question 2

Select **two** pieces of information identified above and explain how to verify each of these.

2D Applying critical thinking to a decision-making framework

Decisions are vital for the success of a business and critical thinking applied to decision-making ensures that the best decisions are made.

Applying critical thinking means that decisions are optimised in terms of obtaining input from a broad range of stakeholders, using information and reasoning, and identifying a solution that can be defended and justified.

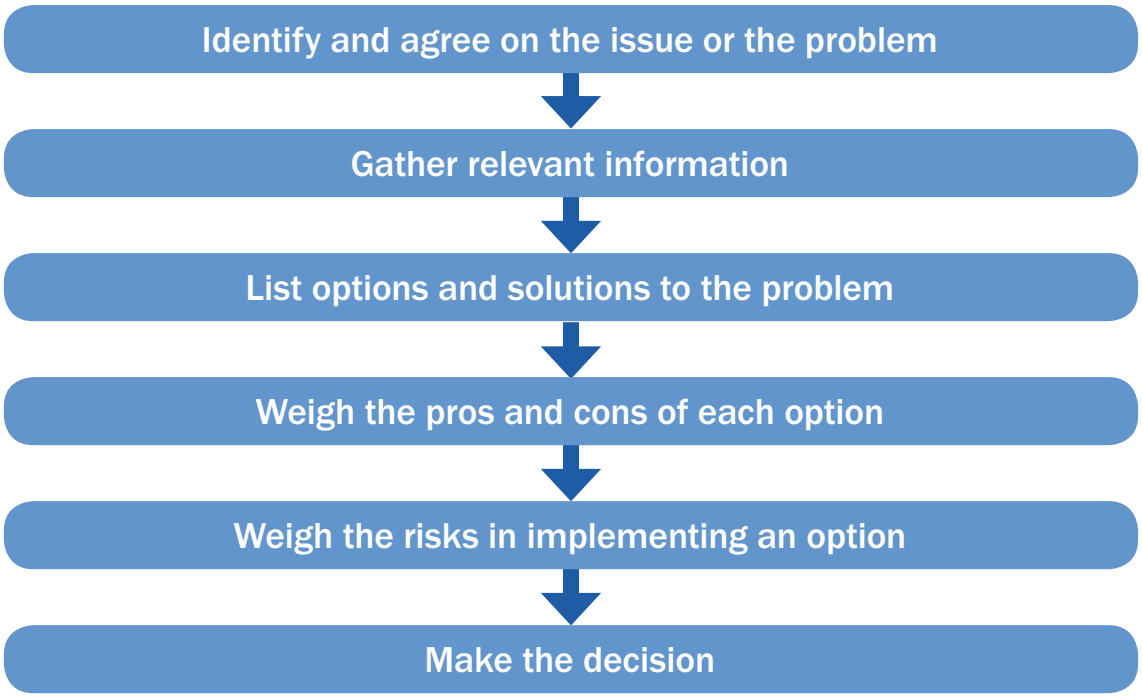
Critical thinkers need to use a range of communication skills to:

- uncover facts as opposed to opinions and assumptions
- present information verbally, visually and in writing
- use a range of persuasive responses that show an understanding of what is being discussed
- be able to articulate and justify a defensible decision.

A decision-making framework

There are many models of decision-making, some of which have been designed for specific purposes.

They have the following features in common.



Using critical thinking to make decisions

Critical thinking is involved in each step of the decision-making model.

The table below shows how alternative critical thinking techniques can be applied to the decision-making process to ensure that the process is robust. The following intellectual standards have been included to show how they can be used in the decision-making process.

Steps in decision-making	Critical thinking techniques	Intellectual standards that apply
Identify and agree on the issue or problem	• Analyse the issue • Clarify the issue • Question the information	• **Clarity** – The quality of the decision is improved if all are clear on the issue/ problem. • **Precision** – The more precisely you can describe the issue/problem, the more efficiently a solution can be determined.
Gather relevant information	• Analyse the information • Understand the theories or concepts that are used	• **Relevance** – Is the information relevant to the issue/problem? • **Accuracy** – Are you able to verify all information included in the process? • **Precision** – Does the information contain enough facts and details to make it useful? • **Significance** – What is the most significant or important information to aid in decision-making?
List options and solutions for the decision	• Clarify the possible solutions	• **Clarity** – Options and solution must be clear to all. • **Relevance** – Options and solutions must be relevant to the issue or problem. • **Fairness** – Has everyone declared any bias or conflict of interest in relation to the proposed solutions?
Weigh the pros and cons of each option	• Consider different perspectives • Test assumptions • Analyse the options • Question the options	• **Depth** – Which solutions address the complexities of the issue/problem? • **Breadth** – Which solutions address the scope of the issue/problem? • **Logic** – Do the proposed solutions make sense and will they address the core elements of the issue/problem? • **Fairness** – Has everyone declared any bias or conflict of interest in the proposed solutions?

Steps in decision-making	Critical thinking techniques	Intellectual standards that apply
Weigh the risks in making the decision	• Consider different perspectives • Test assumptions • Analyse the decision • Question the decision	• **Clarity** – Are the risks clearly defined? • **Accuracy** – Are the risks accurate? • **Relevance** – Are the risks relevant? • **Depth and breadth** – Have the risks factored in the breadth and depth of the issue/problem?
Make the decision	• Clarify the decision	• **Clarity** – The decision must be clear. • **Logic** – The decision must flow logically from the issue/problem to a viable solution.

Communication skills

Critical thinkers need well-developed communication skills.

Critical thinking can be confronting for some people as it requires you to challenge your own thought processes and those of your colleagues. You need to think about how you communicate with others to ensure that people feel part of the process and not alienated or criticised.

Critical understanding and decision-making takes place through a process of dialogue. In decision-making, two or more people exchange information and their thinking to reach a consensus. Critical thinkers maintain active listening throughout the verbal exchanges that occur.

Active listening is about making a conscious effort to understand the meaning of others free from distractions. It also involves checking with the person you are speaking to that you have interpreted their meaning accurately.

When critical thinkers listen, they not only hear what is being said, but also consider whether the content of the message will help to move the group towards a decision. Critical thinkers will ask questions to help clarify their thinking.

Consider the following verbal exchange between Mike and Vanessa.

So, Vanessa, what do you think we should do about resolving this complaint with XYZ Company?

What was the nature of the complaint?

They received their order late and this is the third time this has happened this month.

What exactly was late?

Their delivery was a day late.

How do we know this?

George told me.

What exactly did he tell you?

He said it was a day late because he received a complaint from them saying so.

Did anyone check that this was correct?

Don't you trust George?

It isn't a matter of trust. It is whether there is any evidence to support their claim that the order was delivered late. Once we are clear on the facts, then we can look into why it happened and find a solution to stop it from happening again.

In the exchange above, Vanessa is using critical thinking to understand what happened. She hasn't begun to understand why it happened. Note the clarifying questions Vanessa asks and how she also clarified her reasons for wanting more evidence. This exchange also highlights the irrational reasoning that was used by Mike ('Don't you trust George?'), which was countered by Vanessa.

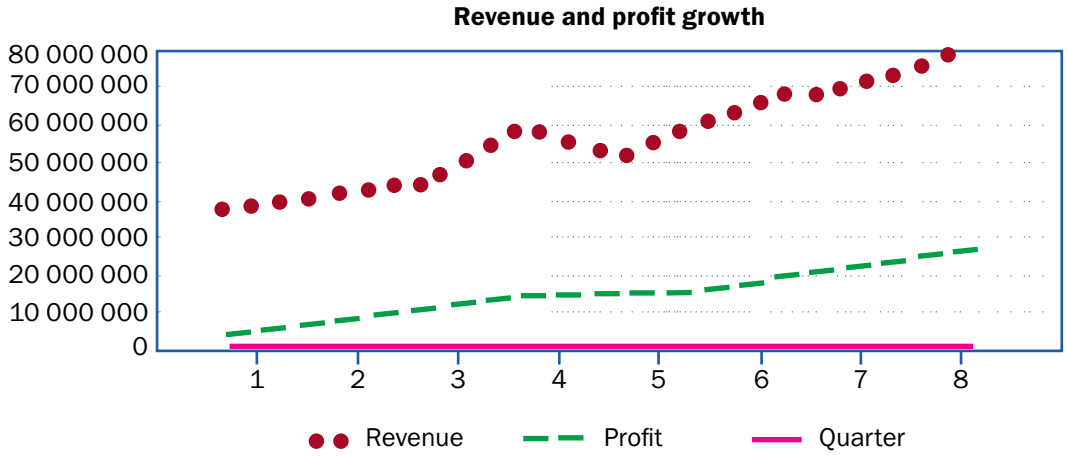
Visual communication skills

Visual communication is often used to convey numerical or data-driven information – to quantify and draw inferences based on what the data represents.

When interacting with others and communicating information, you need to select the best method for communicating. Most people have a preference for how they choose to receive information. This may be in spoken, written or visual form.

The information needs to be pitched to the audience and use the right format, tone and content for the group to ensure it will be understood by a diverse range of people.

For example, you can read the following statement: 'This year sales increased by 50 per cent while profit jumped by 72 per cent compared to last year'. However, it can be much more meaningful to prepare a chart showing growth of revenue and profit over time, like the one below.



Asking critical thinking questions

A verbal exchange involves an exchange of ideas, which means that the views and opinions of others need to be obtained and responded to.

Elder and Paul distinguish three types of questions that occupy the critical thinking landscape, as outlined here.

Judgment

- Answers will vary.
- Involves seeking the best answer within a range of possibilities.
- Requires evidence and reasoning.
- Answers are evaluated using intellectual standards.

Preference

- May lead to a subjective opinion.
- There are as many answers to a question as there are different human preferences.
- No evidence or reasoning is required.

Process

- Involves fact-based questions.
- Includes questions with an established procedure or method to find the answer.
- Requires evidence and reasoning.

Applying critical thinking questions

Now that you know the three types of critical thinking questions, you need to understand how to apply them.

Consider the following three questions about a marketing campaign:

1. How do we decide which marketing medium mix to use?
2. What colour scheme should we use to produce the branding for the campaign?
3. How do we launch the marketing campaign?

The first question is a judgment question and there will be a variety of answers depending on what evidence can support them and what reasoning has taken place. A question of judgment can be answered by asking a number of questions.

The second question is a matter of opinion or preference. Answers will vary based on current trends and personal preferences.

The third question is a process question. There will be a set order to follow and a procedure to work out when each step needs to be conducted.

For example:

Judgment question: How do we decide which marketing mix to use for this product?

There are complexities around the questions and multiple inputs that need to be considered. The consideration includes:

- budget
- timing
- competitor marketing
- target audience
- prior experience.

Preference question: What colour scheme should we use to produce the branding for the campaign?

This will depend on a number of factors, including:

- What options are available to use in the marketing mix?
- What does the customer want from the product?
- Where will customers look for this product?
- What are the current trends?
- What colours are competitors using to promote their products?

Process question: How do we launch the marketing campaign?

This can be answered by referring to the procedure. For example, the following steps need to be completed:

1. Determine the target audience.
2. Decide on a marketing mix.
3. Determine the colour scheme.
4. Design marketing material.
5. Test the effect of the marketing materials on a focus group.
6. Use feedback to make final changes.
7. Launch the campaign.

Evaluating your reasoning

Part of applying critical thinking to any decision-making process is to consistently evaluate your reasoning.

Here are some questions that you can consider to help you evaluate whether your reasoning will stand up to scrutiny, and whether you can justify your lines of reasoning in an argument.

Purpose	• What is the purpose of the decision? • Is it clearly stated or clearly implied? • Is it justifiable? • What are you trying to accomplish? • Can you state your purpose clearly?
Question	• What question are you raising or trying to answer? • Is the question well stated? • Is it clear and unbiased? • Does the question clearly address the complexity of the issue? • Are the question and purpose directly relevant to each other? • Are there other ways to think about the question?

Information	• Is the evidence and information relevant to the issue? • Is the information accurate? • Are the complexities of the issue covered? • What information are you using to reach your conclusion? • What evidence did you use to support your claim? • What other information might you need?
Concept	• Are the key concepts clarified? • Are the concepts used justifiably? • What is your main idea? • Can you explain your idea clearly?
Assumptions	• Has any information been assumed or taken for granted? • What assumptions have led you to your conclusion? • Has any bias been shown?
Inferences	• Is your line of reasoning explained well? • How did you reach your conclusion? • Is there another way to interpret the information?
Point of view	• Have you considered alternative points of view or lines of reasoning? • Are objections framed from other relevant points of view? • From what point of view are you looking at the issue?
Implications	• Have you considered the implications and consequences of your position? • If someone accepted your position, what would be the implications?

Reaching defensible decisions

A defensible decision means that you can defend the thinking and reasoning that led to it.

A final decision and the process used to make that decision must be able to stand on its own merits. You can defend the thought processes that have transpired by using persuasive techniques, such as showing how problem-solving and critical thinking skills were used to reach conclusions and identify solutions. You should be able to show how you used a critical thinking approach to arrive at your decision.

To justify your decision, you should be able to show that you have:

- used an appropriate range of stakeholders, and considered their views and perspectives
- sourced relevant and sufficient information
- analysed the information and ensured that it was free of bias
- uncovered assumptions
- used a range of intellectual standards and held decision-makers to account
- based arguments and reasoning on evidence
- considered a range of options for a solution and judged them on their merits
- declared potential conflicts of interest or bias
- worked within the parameters of policies and procedures to make decisions and obtain approval for them.

An important final step in the decision-making process is documenting the outcome and the steps involved in arriving at the conclusion. This provides an evidence trail for whoever wishes to question or understand what information you considered and what reasoning you applied to arrive at your decision.

Justifying decisions

You need to be able to demonstrate the reasons for your decision by putting forward a logical argument that led to it.

Here is a list of several different styles of arguments that can be used to help justify a particular decision or conclusion.

Anecdotal evidence	This is an attempt to persuade by agreeing on a conclusion based on the experiences of one or more individuals. Anecdotal evidence is often inaccurate, but may provide evidence if several people have observed or experienced the same thing. It is different from scientific evidence or proof based on findings from systematic observation or measurement.
Appeal to authority	This argument provides evidence by referencing an expert's opinion on a particular subject. You must be wary if the opinion is not unanimous among experts or if the person's field of expertise is not relevant to the issue being discussed.
Circular reasoning	This type of reasoning assumes that a belief is correct because it is supported by other beliefs, which may or may not be correct. An example of circular reasoning is: I assume A is correct because it is supported by B; I assume B is correct because it is supported by C; I assume C is correct because it is supported by A.

Slippery slope	This is an argument that requires us to believe that incremental causal changes will likely happen if we make certain decisions. These arguments can lead us to believe that some decisions will result in changes for the worse without sufficient evidence that the changes are likely to actually happen.
One-sidedness	This type of argument presents reasons to believe something while ignoring or marginalising the reasons against believing it. It is also known as selective evidence, in which information or facts are cherry picked and quoted out of context.
Justification	This method uses evidence or reasons to convince others to believe something. Observation, self-evidence, intuition and appeals to authority are examples of justification.

Writing a proposal

Applying critical thinking to a decision-making process may lead you to an optimal solution, but you have to be able to convince others to implement it.

You may have to present your information to others to obtain their approval to proceed with the proposal. It is likely there will be policies and procedures that need to be followed to seek and obtain approval. Organisational policies and procedures provide guidelines for your proposal.

Different organisations have preferred formats for receiving information to make a decision. For example, a proposal may require you to set out the 'thinking journey' you and your colleagues have gone on to arrive at your solution. In showing how you arrived at your solution, you are putting forward an argument to convince others to grant you and your team permission to implement it.

A proposal may consist of the following steps:

Step 1 — Give details of those involved in making the decision.

Step 2 — Clarify the issue on which the decision was based.

Step 3 Clarify the purpose of resolving the issue.

Step 4 Explain critical thinking approaches used.

Step 5 Clarify the source and sufficiency of information used.

Step 6 Critically analyse numerical data related to the issue.

Step 7 Question assumptions about the issue.

Step 8 Consider alternative perspectives.

Step 9 Outline the decision-making framework used.

Step 10 Outline the proposed solution and give a justification for this decision.

Step 11 Outline the actions required to implement the solution and address the issue, including the required resources, costs, time frame, responsibilities, and any relevant policies and procedures.

Example

Applying critical thinking to a decision-making framework

AtoZ Distributors run a fleet of small tonnage trucks for delivering a variety of fresh produce to its clients. Half of the fleet is due to be replaced this year according to company policy. Jodie has been tasked with researching a replacement vehicle, deciding which make and model to purchase, and presenting a proposal to the fleet manager and the finance team.

Jodie's research includes:

- interviews with drivers to determine the features required in the ideal truck
- discussions with truck manufacturers and distributors to determine initial costs, running costs, servicing costs and delivery time frames
- discussions with fleet management companies to explore leasing options
- discussions with suppliers to determine their current and future needs regarding storage requirements and projected volumes of cargo.

After gathering this information, Jodie calls a meeting with a cross-section of drivers and the fleet management team. Their objective is to decide on which make and model of truck to select.

Jodie works hard to keep the discussion objective. Many of the drivers are used to particular makes and models of truck, and struggle to appreciate different perspectives. The fleet manager wants the cheapest option as he has his budget to consider. Jodie lists all the preferences from all parties and the group explores the validity of each one.

Jodie gains agreement from the group on the criteria they will use to make a decision. All reasoning must be backed by facts and data, and other relevant information. Jodie has gathered information from a variety of independent sources.

At the conclusion of the meeting Jodie writes up a proposal she will present to the fleet manager and the finance team. Jodie's proposal includes a summary of the evidence considered, such as independent performance data on a range of makes and models, and a comparison of costs over time when leasing compared to purchasing the vehicles.

She makes the following proposals:

- Leasing all vehicles.
- Using a range of trucks to suit different client needs based on existing and future needs. The range includes:
  - smaller trucks for urban delivery to smaller business outlets, including cafes and restaurants
  - larger trucks for distribution to wholesalers and large hospitality clients, such as international hotels.

Practice task 7

Question 1

Number each of the following decision-making steps correctly from 1 to 6:

- ☐ Make the decision.
- ☐ List options and solutions to the problem.
- ☐ Weigh the pros and cons of each option.
- ☐ Identify (and agree on) the issue or the problem.
- ☐ Weigh the risks in making the decision (or not making the decision).
- ☐ Gather relevant information.

Question 2

Why is active listening an important skill for critical thinkers to use?

Question 3

Read the following and comment on whether you consider the decision made by the marketing manager to be defensible:

The product design and marketing teams were deciding on the best date to launch a new product. They were using historical data, customer demographics, competitor comparisons, previous product launch campaigns and their success rates to help make their decision.

They arrived at a decision and put it to the marketing manager, who changed the date by two months, saying that the marketing team had too much on and couldn't devote time or resources until then.

Question 4

Provide examples of how critical thinking techniques can be used in the decision-making process.

Question 5

Why should a variety of critical thinking techniques be used in a workplace decision-making process?

Summary

- Key elements of an organisation's products, services and processes should reflect the organisation's vision and strategic goals.
- Legislation will act as both an enabler and an inhibitor of an organisation's business model, and must always be considered in critical thinking.
- Limitations of workplace products, services and processes can occur at a macro or a micro level. Limitations can be exposed through careful and detailed analysis and by asking the right questions.
- Information is only useful in critical thinking if it is relevant to the issue/problem being addressed.
- Information needs to be verifiable if it is to be accepted and seriously considered.
- Numerical information used to support an argument needs to be objectively analysed.
- Critical thinking applied to decisions maximises the chance of the decision being the best possible one.
- A range of communication skills is essential to a critical thinker.
- Solutions and decisions often need to be approved and are best presented as a proposal in accordance with an organisation's policies and procedures.
- Decisions made using critical thinking principles will be defensible positions as they have used evidence and sound reasoning.

Learning checkpoint 2
Critical thinking and decision-making

This learning checkpoint allows you to review your skills and knowledge in applying critical thinking to decision-making.

1. List **three** key elements for products and services to be successful.

2. List **three** things customers need to know about a product or service.

3. List **three** key elements of workplace procedures.

4. Name **three** areas of an organisation that are impacted by legislation. For each area, give **two** examples of specific legislation that may apply.

5. Give **three** examples of possible limitations of a workplace procedure or process.

6. Why is it necessary to be able to verify information used in a critical thinking process?

7. Why should a variety of critical thinking techniques be used in a workplace decision-making process?

8. What is the benefit of using a proposal based on organisational policies and procedures to explain and justify a solution to stakeholders?

9. Why is it important for solutions or conclusions reached to be defensible or justifiable?

10. Give **two** examples of how alternative critical thinking processes can be used in the decision-making process.

Topic 3
Evaluating the effectiveness of critical thinking

An important component of critical thinking is being able to evaluate the decisions that were reached.

Thoughts lead to action. There is an expectation that effective thinking leads to effective action. But what if it doesn't? Does this mean the thinking is at fault? Were there other factors outside the thought process that impacted the outcome?

Reactive organisations are more likely to work normally until they are forced to react to something that causes them to re-evaluate their decisions, and to re-evaluate the thinking that led to those decisions. Proactive organisations make it a habit of evaluating their thinking as a matter of regular practice as they understand this will lead to fewer surprises and they will have increased resilience to adapt to things when they go wrong.

In this topic you will learn about:

3A Reviewing the effectiveness of decisions

3B Self-reflection and self-development

3C Planning for future process evaluations

3A Reviewing the effectiveness of decisions

Organisations must have confidence in their decision-making abilities because decisions determine an organisation's fate.

Decisions are made to achieve a specific outcome. Organisations are more likely to review their decision-making process if their expectations are not met than if they are. Even if organisations are consistently making good decisions, they need to understand why this is. Is it simply luck or are there other factors at play?

If the organisation understands why, it can:

- model best practice
- review its expectations – are these set too low or too high?
- review their measures of effectiveness – are they measuring the right thing?

There are many examples of poor decisions that have been made across many levels and types of businesses, such as in government policy, corporate takeovers, or product and service failures. Questions about why decisions failed are often initiated by those directly affected by or with a vested interest in finding out, such as a manager. Often questions come from applying pressure on the individuals or the organisation that made the decision.

Critical thinking cannot guarantee effective decisions in the future, but it can help to ensure that the best decision is made on the information available at the time.

Example

Policy failure

In 2009 the Australian government announced a home insulation package as part of its $42 billion stimulus package to protect the economy from the fallout of the global financial crisis. Four people died during the implementation period while installing reflective foil sheeting in the roofs of homes. A change in government resulted in a Royal Commission into the deaths.

The Royal Commission reached the following conclusions:

- The scheme was not properly designed and implemented.
- The scheme enabled large numbers of inexperienced workers to take on potentially dangerous work.
- The decision to use reflective foil was flawed and contributed directly to the deaths.
- Electrical safety issues were raised, but nothing was done to prevent further tragedies.
- The two aims of the project – to insulate 2.2 million homes and to stimulate the economy – were in conflict with each other.
- Planning of the insulation process was sacrificed to speed up the implementation.
- Neither the minister administering the program nor the parliamentary secretary were advised of the risk of injury to installers.

The report found that the conflict between planning and speed 'caused a number of decisions to be made ... which unnecessarily exposed workers, particularly inexperienced ones, to an unacceptably high risk of injury or death'.

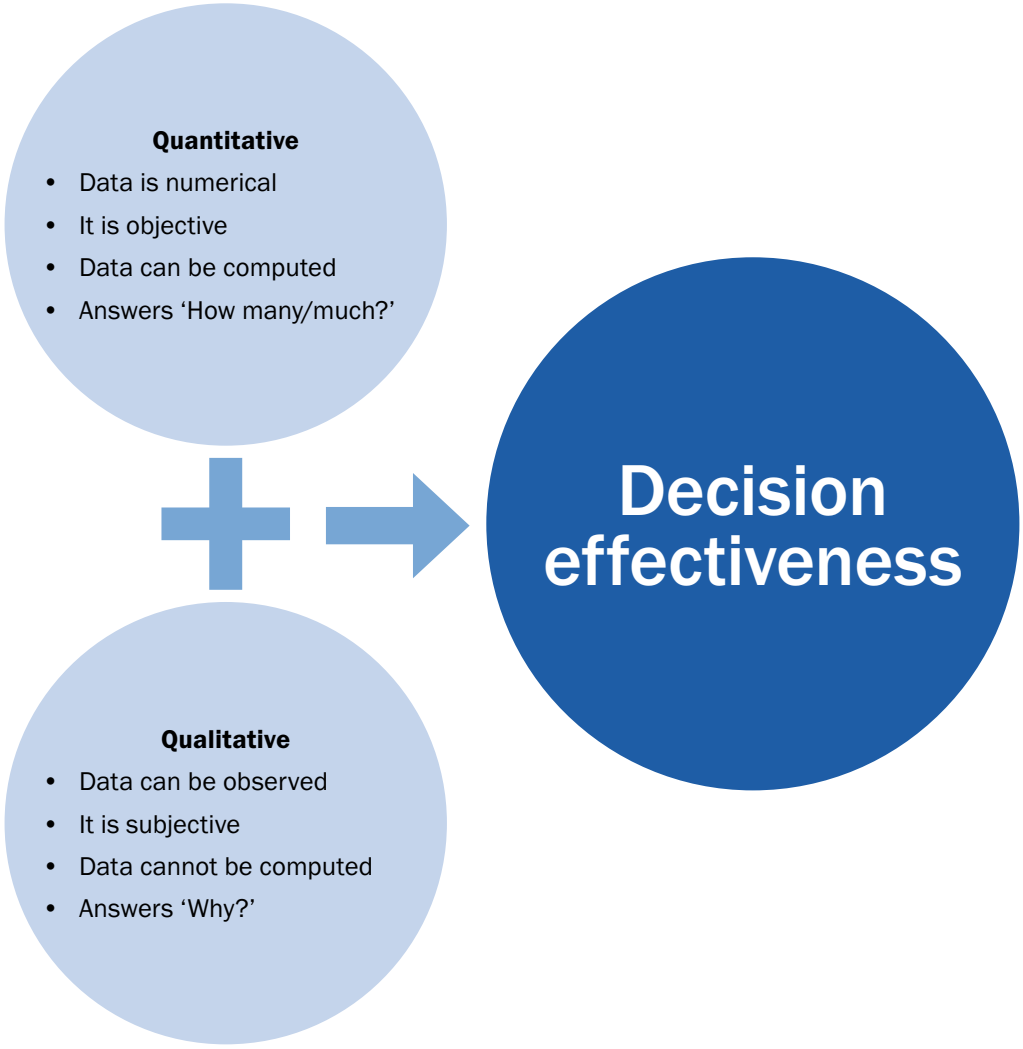
There were a number of major decisions made regarding the scheme. The problem was not with the decision to stimulate the economy, but with decisions made in designing and implementing the scheme. Prior to the announcement of the scheme, Australia had about 200 registered installation businesses, which skyrocketed to 8,359 after the scheme's announcement.

A key issue in the decision-making process was the lack of attention to risk. Another key issue was a lack of transparent communication. This resulted in key decision-makers being ill-informed about the information they needed to make the initial decision. They were not advised of safety issues with the implementation, which should have been cause for discussion and should have resulted in a review of the implementation decision.

Measure the effectiveness of decisions

Effectiveness is a measure of the degree to which a decision produces results.

Effectiveness has both qualitative and quantitative elements.



Quantitative measures

Quantitative measures consider numerical data to reach objective facts.

When considering quantitative measures, make sure the following questions have been considered:

- What needs to be measured?
- How can we measure it?
- Is the data reliable?
- Is the data accurate and precise?

Data presentation and interpretation is important. In the previous topic we looked at two charts showing the conversion rate from checkout to payment of BizOps online sales, both telling very different stories in regard to how the data was presented.

When using data to evaluate the effectiveness of decision-making, you need to apply critical thinking by asking the following questions:

- What does the data relate to?
- What influences the range and fluctuations in the data?
- Does the data justify the inference you are drawing from it?
- Can we view the data from a different perspective?
- How else could the data be interpreted?
- Is this data dependent on other data or processes?
- Is the inference or conclusion you are making dependent on other factors?

Qualitative measures

Qualitative measures are subjective and answer 'why' questions.

Two factors that can measure decision-making are benchmarking and the balanced scorecard.

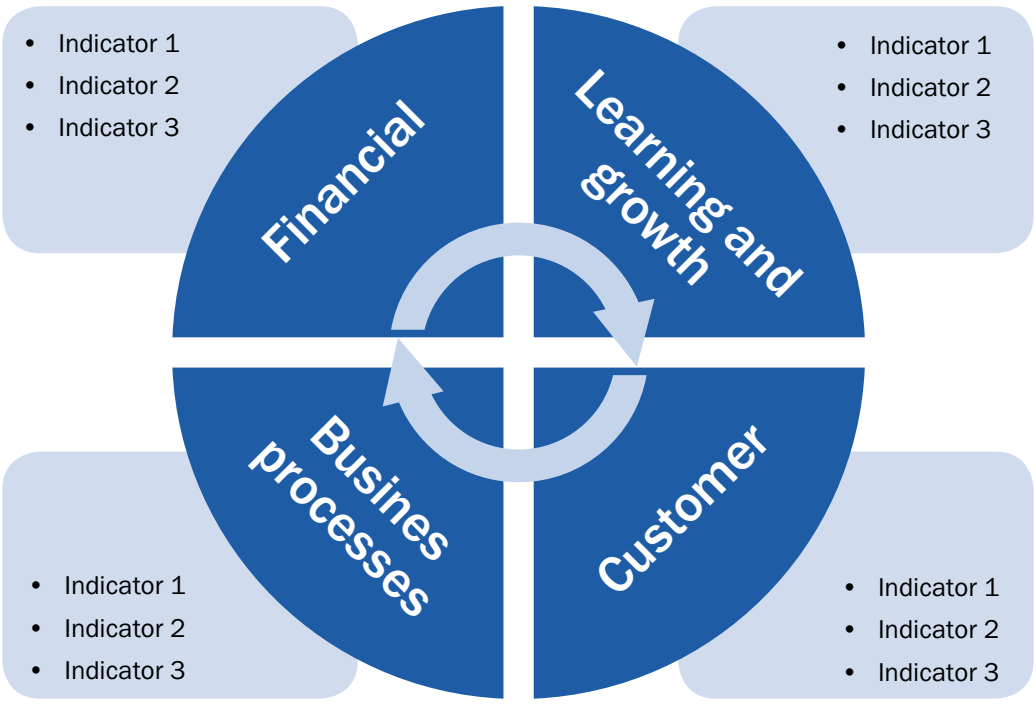
Benchmarking was described by Nura and Osman and is a means of comparing performance against an industry or other form of standard, or against market leaders. Examples include:

- Introducing a new customer service process and benchmarking the results against industry best practice.
- A city benchmarking its quality of life measurements against other cities in the world.
- A manufacturer of lightbulbs benchmarking bulb efficiency and lifespan against competitor products.
- A construction company benchmarking its project variance on time, cost and quality with project benchmarks in the same industry sector.

The balanced scorecard was developed by Kaplan and Norton. This tool is used to manage the performance of an organisation against its strategy, but it can also be used to evaluate the performance of decisions. The 'balance' refers to the fact that financial as well as non-financial measures are used.

Typically there are four items that are monitored:

1. Financial – Monitors cashflow, sales, revenue and return on equity.
2. Customer – What is important to customers and stakeholders?
3. Business processes – What must the organisation excel at and do the processes support it?
4. Learning and growth – Monitors growth and innovation.



The balanced scorecard for evaluating the effectiveness of decisions can provide both qualitative and quantitative measures.

Recall the BizOps decision in a previous example to introduce new technology to improve the checkout to payment conversions rate. A balanced scorecard evaluation of this decision could include monitoring the following:

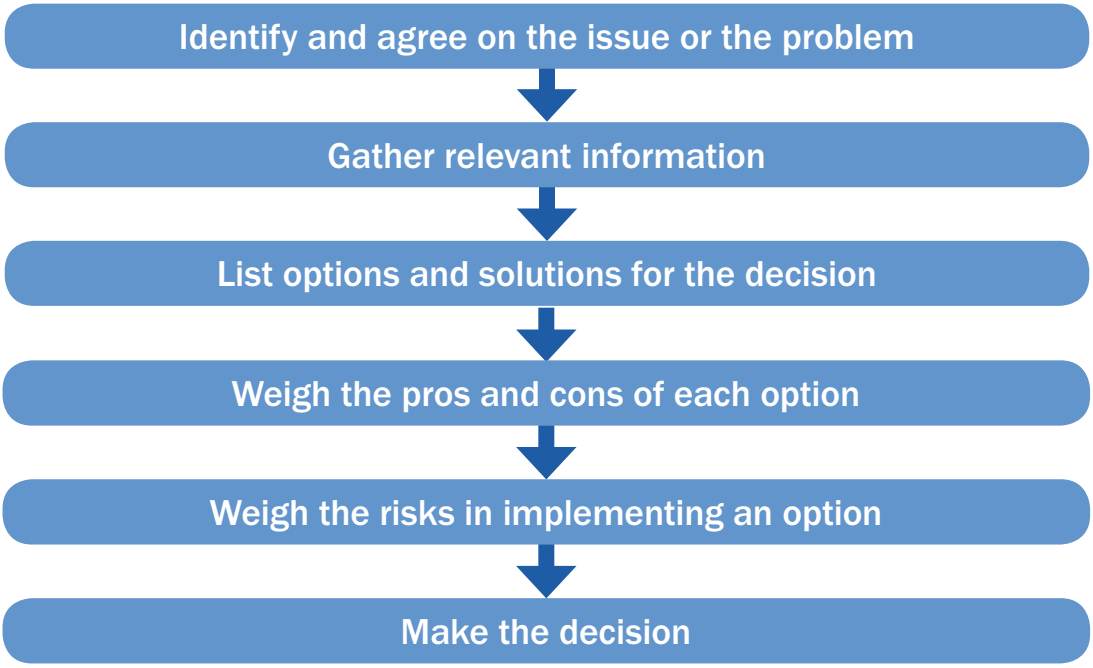
- the actual conversion rate
- customer satisfaction with the new technology
- feedback from customers and personnel on potential improvements
- review of the online purchasing process.

Reviewing the decision-making process

Another factor in evaluating the performance of a decision is reviewing the decision-making process itself.

This involves reviewing the extent to which a decision-making process was used and the extent to which critical thinking principles were applied.

Recall the decision-making framework from the previous topic:



There are two key questions to consider:

1. What are you going to review?
2. How are you going to review it?

'What' focuses on critical thinking principles and the degree to which:

- people feel comfortable to contribute
- the right communication channels and formats were used
- ideas were challenged when moving towards a solution
- diverse perspectives were considered
- opportunities to develop and apply new ideas were recognised
- assumptions were challenged
- personal values and behaviours were perceived by others
- understanding was built between people.

'How' depends on what and whom you have available, and considers the following questions:

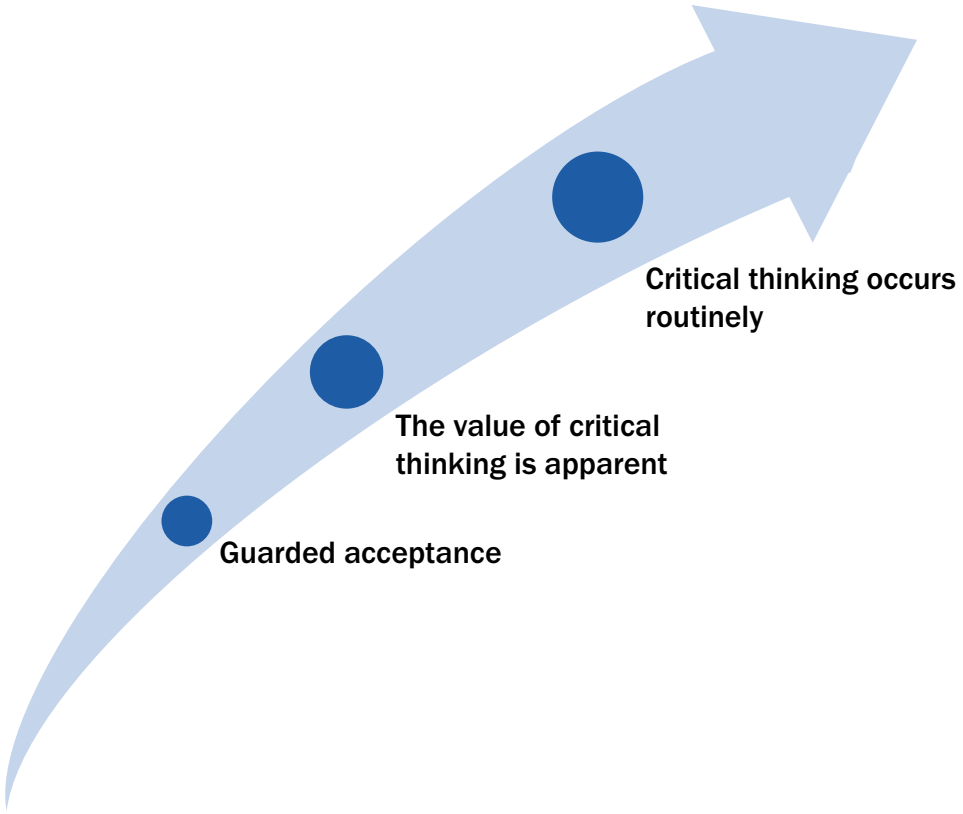
- Are there detailed meeting minutes that outline how the decision was made?
- Is there a project or implementation plan?
- Is there a video or audio recording of the meeting?
- Are any of the decision-makers available to interview or survey?
- Are there relevant reports you can access?

Seek feedback from management

Managers are routinely required to make decisions and should be modelling a critical thinking mindset.

Managers can provide valuable feedback on the effectiveness of individual decisions and the process by which they were made. They can also provide feedback on the critical thinking culture of the organisation. Always follow the governance rules, such as consulting with the senior decision-maker in the company.

Organisations may go through a maturation phase in which the use of critical thinking moves from guarded acceptance to business as usual. This is outlined in the following diagram.



Managers can also provide you with feedback on your decision-making ability and how you have applied critical thinking.

Management feedback should be used as part of any review of a decision's effectiveness. Some of the feedback from a manger may relate to your skills in:

- questioning
- reasoning
- adhering to processes, policies and procedures
- including stakeholders with a diversity of views
- communication skills
- demonstrating empathy and understanding of others.

Example

Reviewing the effectiveness of decisions

XYZ Company has always had a shut-down period between Christmas and New Year; staff are required to take the intervening days as annual leave. This year the company decides to close only on the public holidays and to have a skeleton staff in place on the other days to attend to customer sales and enquiries.

Alan's team has been chosen to be part of the skeleton staff, and four of his six staff members will be required to work over the holiday period. Alan arranges a team meeting to explain the situation. He tells his staff that they can offer to volunteer for the work and that if there are not enough volunteers, he will make the final decision about who will be required to work.

By the end of the second day, no staff members have come forward to volunteer, so Alan selects four staff members to work over the Christmas period. He can sense some resentment from them about being asked to work over the break.

During the Christmas/New Year break two of the four people scheduled to work are off on sick leave. After everyone has returned to work, Alan calls a meeting to discuss the decisions he had made about who was required to work over the Christmas/New Year period. He allows everyone to speak freely with feedback about the selection process and the requirement to work over the holidays.

He receives this feedback:

- Staff resented the business's decision to remain open as they had assumed it would be closed as it is every other year. As a consequence, some had made holiday plans, including booking travel and accommodation, that needed to be cancelled.
- Staff did not feel that a proper decision-making process had been used because:
  - they were not consulted
  - the decision seemed rushed
  - communication was poor
  - individual circumstances were not taken into account
  - staff felt they had no say in the outcome.

Alan realises that he should have used a different approach and asked the staff to lead the decision-making process. Even though he was being rational in his approach, Alam had failed to recognise the assumptions made by staff and the significance of his decision. What appeared to be a simple issue was more complex than he had anticipated. Alan realises that he did not apply a fair and transparent process in making the final decision.

Practice task 8

Question 1

When reviewing the effectiveness of decision-making, should you consider the decision itself, the decision-making process, critical thinking or all three? Why?

Question 2

Give **two** benefits of seeking meaningful feedback from management in relation to decision-making.

3B Self-reflection and self-development

No one is born a critical thinker; these skills are developed over time.

Critical thinking skills can be learned by anyone. As with most skills, two of the greatest teachers are experience and feedback.

Self-reflection

Self-reflection is the practice of thinking about beliefs and actions for the purpose of learning.

Self-reflection is taking the time to think about your goals, your behaviour and, importantly for critical thinkers, what has guided your thinking. Research indicates that people who self-reflect are more productive.

The three main benefits of self-reflection are:

1. Increasing your emotional intelligence:
   - Self-reflection helps to build self-awareness and self-regulation.
   - Self-awareness is the ability to recognise and understand your emotions and their effect on your decision-making process.
   - Self-regulation is the ability to control or regulate your emotions.
2. Reflecting on the integrity of your decisions:
   - Reflecting on your part in decision-making gives you greater clarity on what your values are and how they impact the decisions you are involved in.
3. Increasing confidence:
   - Confidence helps with communication, assertiveness, persuasiveness and influencing others.

Areas for self-reflection

There are a number of areas you should consider when self-reflecting on the decision-making process.

Bias	• How did your personal values enhance or detract from your thinking? • Did you feel the need to declare any bias to others?
Logic and reasoning	• What can you learn from how others use logic and reasoning? • What logic and reasoning did you apply and was it useful? • How can you improve your capacity to reason?

Empathy	• To what extent did you empathise with the feelings of others? • To what extent did others empathise with you? • To what extent are others aware of your feelings? • To what extent did emotions and feelings obstruct the critical thinking process? • How can you improve your level of empathy?
Managing or leading the decision-making process	• What role did you play in the decision-making process? • How did you or someone else lead the process? • Did everyone have the chance to contribute? • Were all aspects of the issue/problem explored? • How could inclusiveness be improved? • How would you do things differently next time?
Assertiveness	• Were your views heard? Did you need to assert yourself? • Did you contribute confidently? • Did anything hold you back? If so, why? • Were other people able to express themselves?
Information-gathering	• Was the information you gathered relevant? • Did you understand the information presented? • Was the information sufficient? • Did you have difficulty in gathering the information? If so, why? • What would you do differently next time?
Defining goals and purpose	• Were you clear on the purpose or goal? • Were others clear on the purpose or goal? • What could have made the goal clearer? • Was the goal achieved? • Were there obstacles to achieving the goal? If so, how were they overcome?
Posing different types of questions	• What questions did you ask? • What questions did others ask that you can learn from? • What questions were not asked, but should have been? • Were the intellectual standards adhered to through questioning?
Understanding how to uncover assumptions	• What assumptions did you make and were they uncovered and challenged? • Were there assumptions that were not uncovered, but should have been? • What part did you play in uncovering assumptions? • What would you do differently next time?

Dealing with emotions	• Were you able to self-regulate your emotions? • Were you able to deal with others' emotions? • What would you do differently in handling emotions next time?
Changing frames of reference	• Were you able to consider other people's perspectives? • What difficulties did you have in doing so? • Was adequate thought given to different perspectives? • Was a diversity of views considered?

Self-reflection tools

There are a number of tools that can assist you in self-reflection.

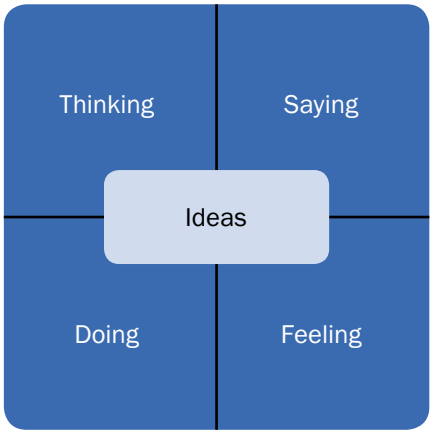
Here are some examples.

Empathy map

The empathy map was originally conceived by Dave Gray. The map helps you to identify your thoughts, feelings and attitudes towards an issue or problem.

The empathy map requires you to think about an issue or decision from four perspectives:

1. Thinking – What were you thinking when you made the decision?
2. Saying – What did you say during the process?
3. Feeling – What emotions were you feeling?
4. Doing – What actions did you take and what behaviours did you display?



You must then look at whether connections across the four quadrants are consistent with each other by considering the following:

- Did your words match your actions?
- Did your feelings match your words?
- Did your thoughts match your actions and words?

The ideas box allows you to record all the insights you gather from this self-reflection activity.

Self-reflection journal

Many people find it helpful to write down their thoughts. The benefits of keeping a journal are:

- It becomes a record of your self-development.
- It helps you to remember important information.
- It provides a focus for analysis and helps you to gain insights
- It can help to clear your head and focus your thoughts.
- It can help you to solve complex issues.

Johari Window

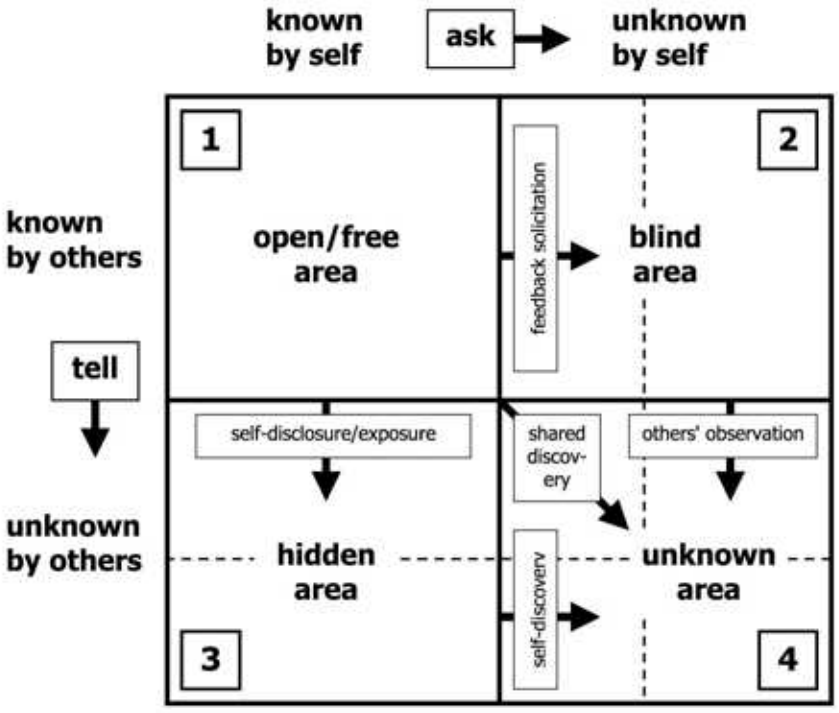
The Johari Window was created by Joseph Luft and Harry Ingham and describes the extent to which someone discloses aspects of themselves to others.

It consists of the following:

- Open/free area – contains things (behaviours, attitudes, feelings, emotions, skills, etc.) that are known to the individual and others.
- Hidden area – contains things that are known to the individual, but not to others.
- Blind area – contains things that others are aware of about an individual, but the individual is unaware of.
- Unknown area – contains things that are not currently known to the individual or others.

The Johari Window is useful for self-reflection and understanding how open you are to others and how willing you are to take on feedback during the decision-making process. It also allows you to reflect on the openness of your colleagues during decision-making and whether knowing more about them would help in the process.

In order to gather different perspectives of a solution/problem, you need the cooperation and openness of others.



Source: Luft, J. and Ingham, H. (1955), 'The Johari window, a graphic model of interpersonal awareness', *Proceedings of the western training laboratory in group development,* University of California

Asking why

Another self-reflection technique is simply asking 'Why?' For example:

- Why did I feel this way?
- Why did I take that action?
- Why did I say what I did?
- Why do my ideas and beliefs differ from others?

Self-development

Self-development means taking steps to improve skills, address knowledge gaps, or change habits and behaviours.

Self-development is acting on feedback obtained through self-reflection, and from colleagues and people you report to. The goal is to improve your critical thinking skills and the quality of your decision-making. Sometimes it takes courage to ask for feedback if others are not forthcoming. The danger of not getting feedback is that you rely on your self-view, which goes against one of the hallmarks of critical thinking – considering different perspectives.

You may obtain feedback on any aspect of the critical thinking process:

- Questioning skills
- Reasoning
- Adherence to policies and procedures
- Adherence to processes
- Inclusion of stakeholders and a diversity of views
- Communication skills
- Demonstration of understanding and empathy

Self-development plans

Once you have analysed feedback you need to take action to address it.

This may require you to prioritise what you are going to work on. A discussion with your manger or a coach/mentor may help to clarify this. Your priorities can then be expanded to include the actions you will take.

For example, Anastasia received feedback and decided that she needs to work on her questioning skills. Anastasia and her manager set aside two half-hour sessions per week for her to practise her questioning technique. Her manager develops a number of scenarios in which Anastasia could ask questions related to the intellectual standards. Her manager gives her feedback and suggestions at the end of each session and Anastasia continues to self-reflect. Anastasia's manager encourages her to lead Q&A sessions at staff meetings and at the monthly decision-making forums.

Self-development plans

Self-development won't happen of itself – it needs to be planned and driven by the individual.

The SMART goals test is a good way to keep track of self-development activities and make sure the goals you are working towards are likely to be attainable. The SMART goals are outlined in the following table.

Specific	• Clearly define what you want to achieve
Measurable	• How will you know when you have achieved your goal? • What measures will you use?
Attainable	• Do you have the time and energy to devote to it? • Is the goal achievable or is it too challenging?
Relevant	• Is the goal relevant to the feedback you received? • Will the goal improve your critical thinking?
Time-framed	• Set yourself a deadline to complete the goal • Stick to your schedule

Example

Self-reflection and self-development

Miguel asks for feedback from his manager on where he can improve his critical thinking. He recently led a decision-making session and asks his manager to rate his performance in specific areas and to provide him with feedback on what he was doing well and where he could improve. He gives his manager the following template to complete.

Area	What is done well	What could be further developed
Checking accuracy		
Uncovering assumptions		
Interpreting information correctly		

Miguel's manager gives the following feedback.

Area	What is done well	What could be further developed
Checking accuracy	You are very good at focussing on the detail and asking questions to clarify meaning.	You should check the accuracy of more of the information. You have a tendency to focus on what you think is important.
Uncovering assumptions	You work well with the group when questioning others about their assumptions. You make sure you engage everyone in the group and they seem to enjoy the challenge.	You need to spend more time looking at the assumptions that drive your own thinking and making those plain for the group. Perhaps some coaching in this area would be good to help you deconstruct your thinking and what is shaping it.
Interpreting information correctly	This is a strength of yours. Your attention to detail means you naturally want to ensure that everyone is interpreting the information in the same way. Your questioning is very good.	You need to include more detail in the solution that you propose. If the solution is too vague then it is open to interpretation and we could end up with a result we don't want.

Miguel arranges with his manager for several coaching sessions on uncovering his assumptions. He also receives specific feedback on checking accuracy after making changes to his questioning regime and running a further decision-making session.

Practice task 9

Question 1

Angie gets nervous in group situations where she is asked to contribute to her team's decisions. She doesn't feel confident expressing her views as she doesn't believe they are worthwhile. If you were Angie's teammate and were aware of how Angie felt, what would you say and do? What self-development activities could you encourage Angie to be part of?

Question 2

Why is it important to ask for feedback from your peers or your manger?

3C Planning for future process evaluations

Continuous improvement involves incorporating lessons learned into future process evaluations.

There are many benefits of organisations adopting a critical thinking mindset, both when making decisions, and when developing or evaluating products, services and processes.

Business best practice involves adopting routines that are likely to provide a better outcome; this includes conducting frequent evaluations of workplace processes.

A common approach to quality control of operational processes is the Plan, Do, Check, Act (PDCA) cycle.

Businesses will have routine cycles of activity that include the following steps:

1. Plan: Planning future activities
2. Do: Implementing activities
3. Check: Measuring the performance of activities to see if they have achieved the desired results
4. Act: Making changes based on this evaluation

Critical thinking can play a part in all four areas, but is mostly relevant in the 'Plan' and 'Act' phases because this is where the majority of decisions are made.

'Plan' decisions may consider:

- productivity targets
- processes to achieve these targets
- resources – both personnel and physical resources
- quality measures
- assigning responsibilities and authority.

'Act' decisions may include considering the following questions:

- What does the 'Check' phase tell us?
- What should we do differently?
- What is the result of the process evaluation?

Plan a process evaluation

Planning a process evaluation will make the exercise more efficient.

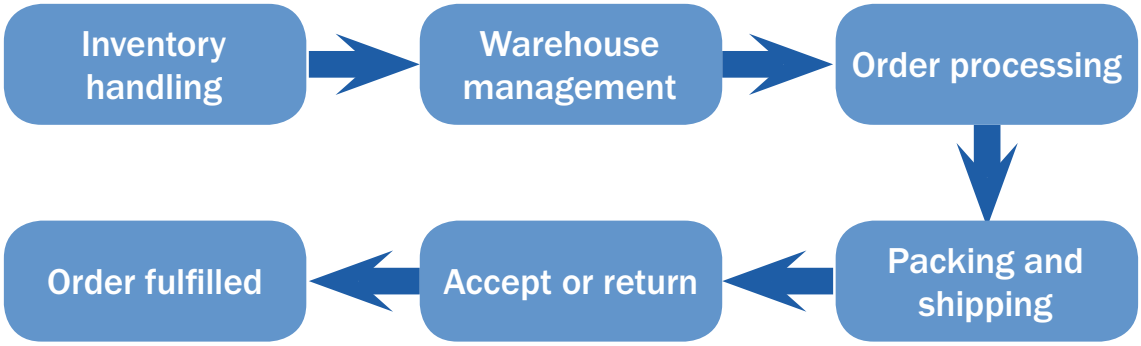
Planning for process evaluation may include the following steps:

1. Decide on the evaluation process.
2. Decide what information should be sourced.
3. Consider which stakeholders are to be involved.
4. Decide who is responsible for what in the process.
5. Identify the critical thinking practices to be adopted.
6. Decide on a list of criteria for evaluating the effectiveness of the evaluation process.

Scope of the evaluation

When determining the scope of the evaluation, an important consideration is how broad the evaluation should be and how deep it should go.

Consider the order fulfilment process from the previous topic.



Because of time constraints, it may be unmanageable to evaluate the entire process in detail. So how do you know what to focus on?

Customer feedback and feedback from key metrics may indicate that you should evaluate just part of the process. An alternative may be to split the evaluation between teams, then combine the results at the end.

For example, if customer feedback was mainly negative about the company's return policy, you could focus on that. But what if feedback was on damage to goods being shipped? Where would it be best to focus your attention? The choices may be warehouse management or packing and shipping.

Who should be involved?

You need to consider which stakeholders should be part of the evaluation process.

A good place to start is to ask who is impacted by the process or the part of the process you are evaluating. This could be:

- those directly involved in implementing the process
- those monitoring the performance of the process
- those supplying resources for the process
- people directly upstream or downstream from the process
- people who evaluate the process as part of an overall strategy.

Criteria for evaluating the process

How will you decide if your process evaluation was a success?

This can be a subjective topic, but should include a way of measuring the degree to which critical thinking was applied.

Consider the following questions:

- Was the purpose of the evaluation clear and was it achieved?
- Was the information used in the evaluation relevant and sufficient, and were alternative views sought?
- Were assumptions uncovered and tested?
- Were all inferences supported by evidence?
- Did solutions or conclusions flow logically from inferences?
- Were intellectual standards applied?

Process evaluation may still be successful, even if the conclusion is to make no or only minor changes to the process. The success lies in how well critical thinking was applied and not in the magnitude of any proposed changes.

Example

Planning for future process evaluations

Jerome manages a team in an organisation that provides security personnel for events. He is planning an evaluation of the company's patron response process for dealing with intoxicated or drug-affected patrons, or those exhibiting unruly behaviour. Security roles can be challenging in trying to keep both patrons and clients happy, and ensuring that any action taken is lawful.

Jerome has invited the following stakeholders to be part of the process evaluation:

- several clients
- several patrons
- a member of the local police liaison unit
- a member of the local council that deals with liquor licensing laws
- a cross-section of security team members and team leaders
- Jerome's manager.

Jerome has sourced the following information:

- government reports and statistics on lawlessness related to events
- client reports from event owners
- internal reports and statistics from his own company
- reports from the event industry peak body
- copies of legislation and regulations in relation to event administration and liquor licensing.

Jerome has developed an agenda and background briefing paper for the evaluation meeting, which includes:

- its purpose
- expected outcomes
- roles.

At the start of the meeting Jerome intends to establish ground rules for discussion, including explaining the intellectual standards that will be applied.

Practice task 10

Question 1

How does the planning of process evaluations assist in making the activity more efficient?

Question 2

What criteria could you use to measure the success of a process evaluation?

Summary

- Reviewing decision effectiveness helps to improve the quality of decisions.
- Determining the effectiveness of decisions can rely on both qualitative and quantitative measures.
- An effective review of the decision-making process must include a review of how critical thinking was used.
- Management feedback should be used as part of any review of decision effectiveness.
- Critical thinking skills can be learned by anyone. As with most skills, two of the greatest teachers are experience and feedback.
- Self-reflection means taking the time to think about your goals, your behaviour and what guided your thinking.
- Self-reflection tools can help you to structure your thinking.
- Self-development involves acting on feedback obtained through self-reflection, as well as from colleagues and people you report to.
- To practise continuous improvement, you should always incorporate lessons learned into future process evaluations.
- Plan for future process evaluations as a matter of routine.

Learning checkpoint 3 Evaluating the effectiveness of critical thinking

This learning checkpoint allows you to review your skills and knowledge in evaluating your thinking and decision-making.

1. Why do you need to apply critical thinking when reviewing information used to evaluate decisions?

2. Why is critical self-reflection an important part of reviewing the effectiveness of decision-making?

3. List **three** items of criteria that you can include when planning for process evaluations to measure the success of the process.