Student workbook

ICT Analysis

TAFE NSW would like to pay our respect and acknowledge Aboriginal and Torres Strait Islander Peoples as the Traditional Custodians of the Land, Rivers and Sea. We acknowledge and pay our respect to Elders, past, present and emerging of all Nations.

Contents

Getting started

What will I learn by completing this workbook?

This workbook covers the units of competency:

- BSBCRT404 - Apply advanced critical thinking to work processes
- ICTICT426 - Identify and evaluate emerging technologies and practices
- ICTSAS432 - Identify and resolve client ICT problems.

Successfully completing this unit will give you the skills and knowledge to:

- use advanced critical thinking skills in a workplace context
- investigate, identify and evaluate emerging technologies and practices in the information and communications technology (ICT) industry, assess their impact on an organisation and develop strategies to prepare for implementing them
- identify, record, prioritise and resolve client ICT support activities, escalating where required.
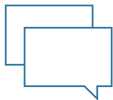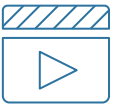
Each topic includes opportunities to check your progress and understanding as well as activities that will prepare you to complete the formal assessments.

The activities throughout this resource will assist you in your learning. These activities do not form a part of your final assessment however they will contribute to your understanding of the topic area.

There are five topics to complete within this workbook. They are:

1. Working in ICT
2. Communicating in the workplace
3. Investigating workplace solutions
4. Making workplace decisions
5. Working in ICT support

Icon legends

Icon	Description
	Practice activity Learning activities help you to gain a clear understanding of the content in this resource. It is important for you to complete these activities, as they will enhance your learning. The activities will prepare you for assessments.
	Collaboration You will have opportunities to collaborate with others during your study. This could involve group activities such as mini-projects or discussions that will enable you to explore and expand your understanding of the content.
	Self-check An activity that allows you to check your learning progress. The self-check activity gives you the opportunity to identify areas of learning where you could improve. If you identify these, you could review the relevant content or activities.
	Resources (required and suggested) Additional resources throughout this workbook, such as chapters from textbooks, online articles, videos, diagrams, and infographics. These are supplementary resources, which will enhance your learning experience and may help you complete the unit.
	Assessment task At different stages throughout the workbook, after you have completed the readings and activities, you may be prompted to complete one or more of your assessment tasks.
	Video Videos will give you a deeper insight into the content covered in this workbook. If you are working from a printed version, you will need to look these up using the URL (link to the video online) provided.

Icon	Description
	Library Guide Find relevant, reliable information for your subject. Books, videos, journals, research databases, Australian Standards, and more.

Topic 1: Working in ICT

Overview

Understanding the organisational systems in the workplace is the starting point to working effectively. Every organisation should have policies, procedures, processes and guidelines to follow. In addition, an organisation and its staff members are bound by legal responsibilities.

In this topic you will learn about:

- how to source and understand organisational information
- the legal environment of an organisation and your responsibilities
- planning tasks.

Organisational requirements

Policies, procedures and guidelines help to establish a legal operating environment for a business. They set standards, streamline processes and ensure safety and compliance. When the processes are streamlined, then the way the organisation operates is also streamlined.

> **Policies** are the rules by which an organisation operates.
> **Procedures** are statements of how the policy will be implemented.
> **Processes** are a list of steps in a particular order to achieve a specific purpose, such as implementing a procedure.
> **Guidelines** are recommendations to be followed when specific standards don't apply.

Read the article Security Policies, Standards, Procedures and Guidelines to understand the difference.

Policies and procedures

Organisations will develop policies and procedures to govern the way the organisation operates.

Policies act as a guiding reference point for the organisation in its day-to-day operations and are expressed in broad terms. In contrast, procedures are narrow in focus and aim to describe how, when and who of processes. They explain how to perform tasks and duties.

Procedures are related to policies. They tell staff how to do something in a way that is acceptable to the organisation and the context in which it operates. Processes follow on from procedures and provide more detail.

For example, WHS procedures explain the safe and healthy way to perform work tasks, such as how to operate a piece of machinery or equipment. These tasks may include:

- changing the toner in a photocopier
- avoiding electrocution hazards
- lifting or moving heavy objects
- reporting faulty equipment
- performing workplace inspections.

Providing procedures helps everyone to work to company policy. Providing policies and procedures are part of an employer's responsibility in providing a safe workplace and it's the employees' responsibility to follow these policies and procedures.

Policies and procedures are commonly published on the organisation intranet, or in a printed form, so that they are easily accessible by employees.

Following policies and procedures makes sure that:

- everyone does their job in a standardised way
- everyone knows what they're expected to do
- another staff member can pick up where someone else left off if they're sick or on leave
- things flow smoothly, so productivity is usually higher.

Throughout this resource you will be investigating the purpose, functions, features and attributes of different items. It's good to understand what these words mean. Listed below are definitions of each of these words.

A **purpose** is why something, such as a product or service, is used; for example, an aircraft is used as a form of transport.

A **function** is a task that something, such as a product or service, can achieve; for example, an aircraft can take off and land.

A **feature** is an aspect of something, such as a product or service, that can help it achieve its function; for example, an aircraft has wheels that help it take off and land.

An **attribute** is a quality or characteristic that identifies something, such as a product or a type of client. For example, a type of aircraft will have specifications for dimensions, weight, passenger capacity and speed that will be different to another type of aircraft.

Collaboration

Activity 1: Purpose of policies and procedures

In the Dove Recruitment video Why you need Workplace Policies & Procedures (YouTube, 01:56 min) the presenter outlines the importance of policies and procedures in an organisation.
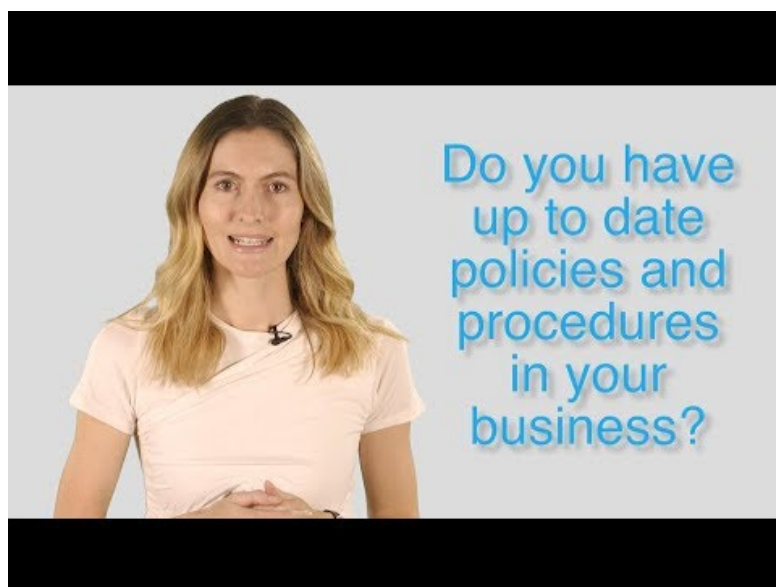
1. Determine the missing words below:

Sentence	Answer
[Policies/Procedures/Processes] act as a guiding reference point for the organisation in its day-to-day operations and are expressed in broad terms.	
[Policies/Procedures/Processes] are narrow in focus and aim to describe how, when and who of [policies/procedures/processes].	
[Policies/Procedures/Processes] tell staff how to do something in a way that is acceptable to the organisation and the context in which it operates.	
[Policies/Processes] follow on from procedures and provide more detail.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Determine if the following statements are true or false.

Statement	Indicate 'True' or 'False'
Providing procedures helps a select group of employees to work to company policy.	
It is the employer's responsibility to follow policies and procedures.	
Providing policies and procedures are part of an employer's responsibility in providing a safe workplace.	
Policies and procedures are commonly published on the organisation intranet, or in a printed or digital form, so that they are easily accessible by employees.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

3. Why is adherence to organisation policies and procedures important?

Option	Indicate with 'X'
They help everyone do their job in a standardised way.	

They explain what everyone is expected to do	
Because standardisation comes before creativity at work.	
They enable staff members to pick up where someone else left off if they're sick or on leave	
Productivity is usually higher.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Features and limitations of procedures and processes

Procedures and processes present a standard, consistent way of performing tasks that conform to policies. They allow the organisation to operate within a legal framework. This standardisation allows elements of the business to be compared and measured through performance indicators, most commonly Key Performance Indicators. They assist in strategic business planning and reassure investors that the organisation is well-managed.

Procedures and processes are less-formal documents in their structure and are much more specific than policies. Whereas policies are not easily changed, procedures and processes can be changed according to requirements and usually undergo continuous improvement as required. For example, if a software application is upgraded, the procedures used with this application would be revised.

Example procedure template

Organisations will have their own required procedure format. The following procedure format is given as a guide.

Organisation name and logo

Name of procedure

1. Introduction

A statement why this procedure is required.

2. Purpose

A specific statement about the purpose of the procedure.

3. Scope

A statement of who the procedure applies to.

4. Procedure

Procedure directions. This may include numbered steps or bullet points, graphics such as images or charts that help describe in more detail, checklists and so on.

5. Version control

Version number and date of issue.

Although standardisation may have been implemented with good reasons and evidence, over time the organisation and its staff may outgrow a set of procedures or processes. The procedures were created according to organisational needs, made on assumptions about stability over time. The success of the procedures or processes depends on how closely those assumptions match reality. So, it is inevitable that some procedures become less relevant, for example, through changes in the legal environment or in the technologies used to perform tasks.

Procedures and processes, however, can also stifle creativity, especially when they become bureaucratic. The structure of the procedures or processes and how these interact with other parts of the business may not promote innovation, collaboration, or an understanding of how the procedures align. This can make the organisation less competitive and responsive to changes in the business environment. Procedures that are too rigid may not allow for any flexibility. In addition, they may not allow staff members to improve their skills if they aren't allowed to perform other tasks. The rigidity may then lead to decreased job satisfaction and staff morale.

Six Sigma is a quality improvement methodology with a foundation in manufacturing. The Six Sigma tools are designed to improve efficiency by reducing or eliminating defects and wastage, while increasing efficiency. See the article and accompanying video Six Sigma 'killed' innovation in 3M to find out how these attempts at defining and imposing processes worked against the company 3M, a leader in innovation. A Forbes article by Tendayi Viki, Six

[Principles For Creating A Good Corporate Innovation Process](#) further details the mistake of applying core process management techniques to innovation efforts.

✏️ **Practice activity**

Activity 2: Security guidelines

1. Refer to the [Australian Government Information Security Manual](#) and match the recommended network security policies of a typical organisation to their functions.

Function	Recommended Guideline
Prevents an adversary from propagating through a network and accessing target data after they have gained initial access	
Monitors the status of network devices such as switches, routers and wireless access points	
Determines whether devices such as switches, routers, wireless access points and internet dongles on a network or connected directly to workstations are rogue or not	
Helps to implement network segmentation and segregation as long as the networks are all official networks or all the same classification	
Prevents users carelessly connecting a network to another network	
Reduces the opportunity for an adversary to connect to a network if they can gain physical access to network devices	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.

Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Legal responsibilities

Copyright

Emerging technologies and practices in the IT industry have created challenges, which also means you have a responsibility to meet those challenges. For example, digital communication technologies have created issues relating to digital reproduction and copyright. The Australian Copyright Council has numerous useful fact sheets on copyright.

Privacy

Another important legal issue relates to privacy. The nature of information technology is that data and information are constantly being managed, manipulated and stored. Frequently, this doesn't belong to the person who is handling the information, for example, many businesses will capture personal details associated with their customers. Businesses in Australia need to comply with the Privacy Act 1988 and other relevant legislation, or they may have to pay fines.

The Notifiable Data Breaches (NDB) scheme (under the Privacy Act) established requirements for APP entities to respond to data breaches. When a data breach is likely to result in serious harm to any individuals whose personal information is involved in the breach, an APP entity has a data breach notification requirement.

You should be familiar with the NDB Scheme and understand when a report of a breach is required under legislation.

▷ Video

Video: Notifiable data breaches scheme

The video New Notifiable Data Breach scheme (YouTube 00:43 mins) by QBE Insurance further explains the legal obligations of business who are subject to the NDB scheme.

https://youtu.be/CmbPkyECiLU
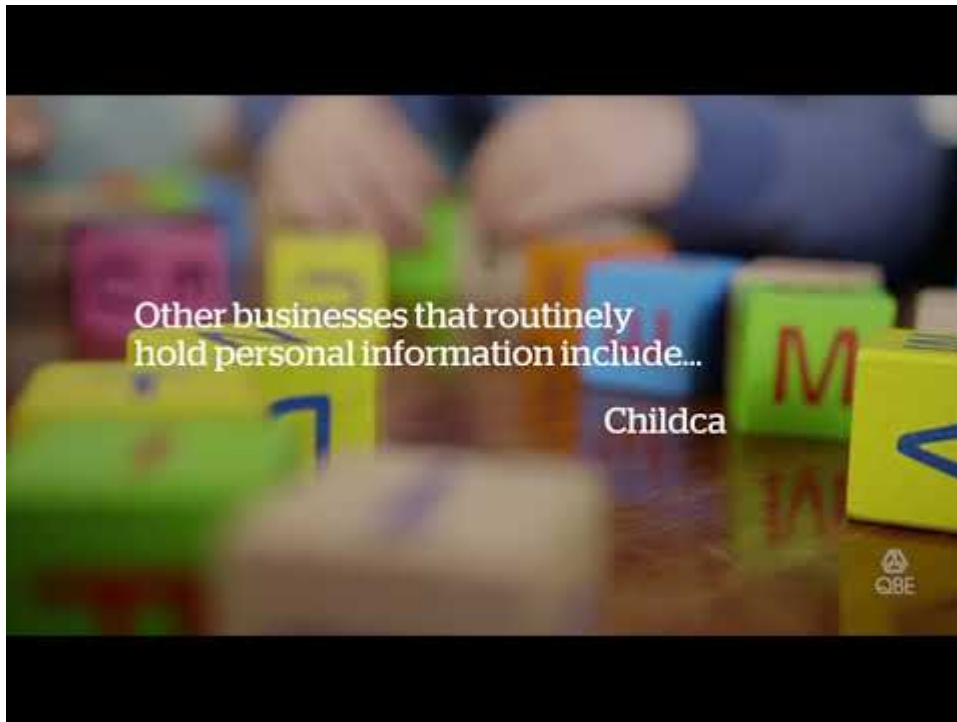
Work, Health and Safety (WHS)

Regardless of the industry in which you work, there are legal requirements that stipulate the requirements for establishing a safe work environment.

For many years there was a variety of different occupational health and safety legislation that applied to each state, territory and the Commonwealth in Australia, which varied to some degree.

In 2011 Safe Work Australia developed a single set of WHS laws to be implemented across Australia, known as model laws. This was released as the Work Health and Safety Act 2011. In NSW, the Work Health and Safety Act of 2011 is administered by SafeWork NSW.

The Work Health and Safety Act 2011 describes the general requirements necessary to ensure a safe and healthy workplace. It is also designed to reduce illness and the number of injuries in the workplace by imposing responsibilities on employers, employees, and others. Those responsibilities are usually implemented through consultative processes within the workplace.

Workplace health and safety obligations include:

- establishing hazard management to identify specific workplace hazards

- establishing and maintaining a system for managing workplace health and safety

- understanding and applying the duty of care responsibilities

- developing a written safe operation procedure manual

- establishing a workplace health and safety record-keeping system

- developing and implementing procedures to evaluate and review the effectiveness of risk control measures.

Environmental sustainability (ES)

The [NSW Business Chamber Sustainability Toolkit – Offices](#) defines sustainability as follows.

> Sustainability is a form of progress or development that meets current needs without compromising the ability of future generations to meet their needs. It is a term used to describe process impacts on climate change, water, energy, natural resources and waste.

Overall, sustainability is a broad concept that includes a balance of three objectives:

- environmental

- social (cultural)

- economic

Source: [National Centre for Sustainability, 2006](#).

This is sometimes referred to as the three pillars of sustainability or the triple bottom line (TBL).

Environmental laws and regulations

There are numerous Commonwealth (federal) and state environmental laws and regulations designed to protect the environment and all those that inhabit it.

Table 1 Environmental laws and legislation

Level of law or regulation	Comment/example
International	Australia is a signatory to the Paris Agreement. The Australian government's target is to reduce greenhouse emissions to [26–28 per cent on 2005 levels by 2030](#).

Level of law or regulation	Comment/example
Federal	The [Environment Protection and Biodiversity Conservation Act 1999](#) (EPBC) requires particular activities such as those in sensitive ecosystems to obtain federal planning approval. [National Greenhouse and Energy Reporting Act 2007](#)
State/territory	In NSW, the relevant environmental authority is the [NSW Department of Planning. Industry and Environment](#).
Local council	The local council will also have environmental requirements

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✏️ Practice activity

Activity 3: Objectives of the EPBC Act

1. Which of the following are objectives of the EPBC Act?

Option	Indicate with 'X'
Enhance the protection and management of important natural and cultural places	
Provide for the protection of the environment, especially matters of national environmental significance	
Promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.	
Conserve biodiversity of the ASEAN region	
Limit the national environmental assessment and approvals process	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Sort the following objectives of the EPBC Act by their attribute – Environment or Biodiversity. An example would be the objective "enhance the protection and management of important natural and cultural places" belongs to "Environment".

Objective of EPBC Act	Environment	Biodiversity
Conserve Australian biodiversity		
Provide a streamlined national environmental assessment and approvals process		
Control the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife		
promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources		
recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity		

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.

General	Thank you for taking the quiz.

Sustainability in the ICT workplace

The ICT industry is a high user of electrical energy. Fujitsu Australia [Sustainable ICT Solutions and Services](#) reports that ICT energy use for office spaces can represent up to 60% of a company's electricity spend.

The goal of sustainable, or green, ICT is the minimal use of resources and energy in the manufacture, use and disposal of ICT equipment. Virtually every stage of the ICT lifecycle has an impact on the environment in some way.

One obvious impact is the energy consumption of ICT devices. Water is also used in large quantities, particularly in the manufacturing process and for cooling in data centres. Waste, such as packaging materials and end-of-life e-waste, is generated throughout the product lifecycle.

The use of ICT technologies can also have a positive effect on the environment through the use of technologies, for example, using video conferencing for meetings instead of travelling by car -reducing greenhouse gases.

Accessibility

The term 'accessibility' is sometimes confused with the concept of usability, or with internet or communications technology. In a digital context, accessibility means being able to access and interact with digital content.

To find information on a website, fill in an online form, or use an app to navigate, users with accessibility requirements may need some adjustments or use assistive devices to access digital content. Organisations are driving users to access forms and information directly online. These organisations also have an obligation to ensure that their content is accessible for all users and to provide alternative ways of accessing their services if the online version does not allow interaction for users with accessibility requirements.

Several organisations act as advocates for accessibility principles in design. In Australia, legislation and policy is in place to help and guide organisations to meet accessibility principles. However, a lot of internet content remains inaccessible.

The organisations listed are leaders in accessibility advocacy and have very good information and resources, particularly about designing for accessibility.

- [Centre For Accessibility Australia](#)
- [Interaction Design Foundation – What is Accessibility](#)

- [Centre for Inclusive Design – Inspiration series page](#)

The Web Content Accessibility Guidelines (WCAG) 2.1 is a set of technical specifications used to test digital content on web sites and mobile devices. The WCAG is developed by the World Wide Web Consortium (W3C), an international community that develops web standards. The specific WCAG standards provide a set of criteria written as statements that can be tested. The statements are not specific to a particular technology.

<div>
  <p>💬 Collaboration</p>
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Activity 4: WCAG 2.1 for website accessibility testing

1. Match the following accessibility principles with a suitable example of a technique that meets the principle. In the Answer column, write the number of the accessibility principle from Column A that matches the example technique in Column B.

Column A – Accessibility principle	Answer	Column B – Example of accessibility technique
1. Principle 1 – Perceivable		A. Abbreviations are explained using a glossary
2. Principle 2 – Operable		B. An animation on a web page does not flash more than three times per second
3. Principle 3 – Understandable		C. HTML tags are opened and closed correctly
4. Principle 4 – Robust		D. Alternative text is provided on images

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Equal employment opportunity (EEO) and anti-discrimination (AD)

In 1973, the Australian Government signed the International Labour Organization (ILO) Convention on discrimination in employment and occupation. This showed a commitment to a policy of EEO.

EEO means that all employment and management practices operate in a way that gives everyone equality of opportunity in the workplace. It requires decision making to be based on clear, predefined, job-related criteria, such as relevant skills, experience, qualifications, aspirations, potential and aptitude, in all aspects of staff management such as recruitment, termination of employment and promotion.

Decisions on such matters **must not** be made on the basis of criteria such as gender, age, disability, race and many others.

Federal and state AD laws are the primary source of EEO obligations.

The following laws operate at a federal level and the Australian Human Rights Commission has statutory responsibilities under them:

- Age Discrimination Act 2004

- Australian Human Rights Commission Act 1986

- Disability Discrimination Act 1992

- Racial Discrimination Act 1975

- Sex Discrimination Act 1984

In NSW, the *Anti-Discrimination Act 1977* (NSW) operates and is administered by the Anti-Discrimination Board of NSW. Its role is to resolve enquiries and complaints, raise awareness about discrimination and its impacts, and take action to influence change.

More specific details of these laws can be found in this publication from the Australian Human Rights Commission—A quick guide to Australian discrimination laws.

EEO target groups are people affected by past or continuing disadvantage or discrimination in employment. As a result, they may be more likely to be unemployed or working in lower-paid jobs. These groups are:

- women

- Aboriginal people and Torres Strait Islanders

- members of racial and ethnic minority groups, and

- people with a disability.

Women are under-represented in the ICT workplace. A recent [report commissioned by the Australian Computer Society](#) showed that the participation rate for women in all ICT occupations was 28%, compared with 45% across all professional industries.

It also found a significant difference in the average earnings of male and female ICT workers in Australia with an average pay gap of around 20% across all ICT occupations.

Another group that is under-represented in the workplace are workers older than 55. In 2017, only 12% of Australia's ICT workforce was aged 55 or older, compared to 15% of workers across all professional industries.

The Australian Government recently released a report on [Advancing Women in STEM](#). (STEM stands for Science, Technology, Engineering and Mathematics). It states that this gender imbalance means that Australia is at risk of losing the important contributions that Australian girls and women stand to make. The study quotes a study which found that gender-diverse companies are 15% more likely to financially outperform their counterparts.

✏️ Practice activity

Activity 5: Diversity

Visit the [Australian Government Business EEO and diversity web page](#).

1. Determine if the following statements are true or false.

Statement	Indicate 'True' or 'False'
Diversity is good for business because it promotes better business performance and employee productivity.	
A diverse workplace is one where decision making is slow.	
Diversity encourage staff to be more innovative and think creatively.	
Research shows that diversity in the workplace is linked to improved staff health and wellbeing.	
Diversity increases the risk of discrimination and harassment in the workplace.	

Diversity lowers the risk of discrimination and harassment in the workplace.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Which of the following statements are true about diversity in the workplace?

Option	Indicate with 'X'
Culturally and linguistically diverse (CALD) people can provide better customer service by using their language and cultural skills.	
People with disabilities tend to take fewer days off.	
There is evidence that mature aged workers exhibit lower rates of absenteeism.	
CALD employees cannot provide access to new market segments and networks.	
Constantly changing or setting unrealistic work targets is an example of bullying.	
Evidence shows that employees with disabilities take more sick leave and don't stay in jobs as long as other workers.	

Feedback type	Comment
Correct	Great work! These statements are a true reflection of the benefits of diversity in the workplace.

Partially correct	Reflect on your gameplay experience and see if you have encountered any more of these characters, or if some are missing from your gameplay
Incorrect	Sorry! Try again.
General	Some generic feedback for the question

Planning tasks

At work, you have a responsibility to deliver the work expected of you, to the required standard and within the required timeframe; this is what your employers employ you to do. In some circumstances, an employee has no control over what they do and when they do it – employees working on a production line in a factory, for example, have their work schedule dictated to them by the pace of the production line they are working on.

In a different context, such as ICT support, employees may have varying degrees of flexibility in terms of how they decide which tasks to perform and when. In some circumstances, it won't matter the precise order in which tasks are completed, so long as they're completed to the required standard and deadline. This is one of the factors that can be motivating in a job role – the freedom and ability to decide when to complete individual tasks.

In other cases, the task order *will* matter and it's important to know how to sequence those tasks appropriately. This is where it's important to be able to access the organisation's policies and procedures so that you have this understanding and knowledge.

Having established an understanding of what's to be done in the work role, you should assess and prioritise your workload. This will help you plan your tasks to ensure that the most important or urgent priorities are tackled first and that time-sensitive activities are completed within the required timeframe. A useful place to start is with a to-do list. This is simply a list of tasks that are to be completed within a set time – this may be a day, week or month, depending on the context of your role.

> ▶ Video

Video: Getting started with Trello

In the video, you will learn how to use Trello, a free online planning tool that allows you to create to do lists, set up reminders and create notes.

- [Getting Started With Trello](#) (YouTube, 04:55 mins)

https://www.youtube.com/watch?v=xky48zyL9iA
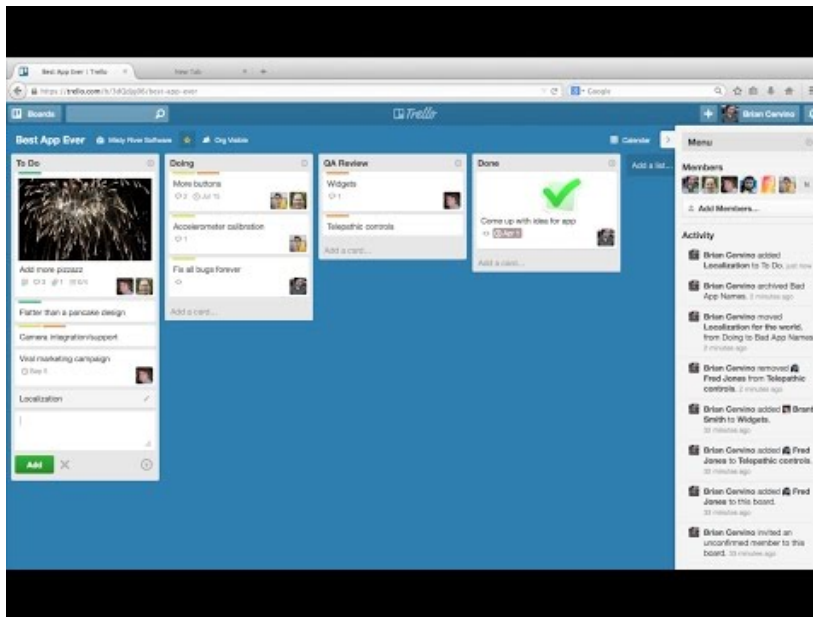
Practice activity

Activity 6: Use a planning tool

1. Why is it important to be able to plan your tasks well at the workplace?

Option	Indicate with 'X'
Being able to plan your tasks well often lets you take off early from work.	
You have a responsibility to deliver the work expected of you, to the required standard and within the required timeframe.	
Working in ICT support gives you the freedom to decide when to complete individual tasks, but sometimes it's important to know how to sequence tasks appropriately.	
Planning well ensures that the most important or urgent priorities are tackled	

first and that time-sensitive activities are completed within the required timeframe.	
A to-do list is a primitive planning tool that has no place in a modern, connected ICT support workplace.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Imagine you were part of a group working on a communication campaign promoting the use of digital collaborations tools at work. You need to plan the following tasks so the team can deliver the digital media campaign to the required standard and within the required timeframe. Order the tasks below.

Task	Order
Upload digital campaign materials to your organisation's channels	
Design campaign graphics	
Make necessary changes from Branding/Marketing review	
Brainstorm campaign concept	
Have Branding/Marketing review produced materials	
Shortlist campaign ideas	
Write the copy	
Produce campaign	
Storyboard campaign ideas	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Topic 2: Communicating in the workplace

Overview

In ICT, you will communicate with internal staff, customers and vendors. Having good communication skills will help you to identify and resolve problems. Successful communication in the workplace uses a pattern of listening and questioning, and then questioning and listening to identify and resolve the issue.

Good communication skills, both oral and written, are essential to communicate with all stakeholders in an organisation. This includes using clear, easy to understand language, and being able to translate industry-specific terminology into plain English.

In this topic you will learn about:

- different types of communication
- using questioning techniques to communicate with customers, colleagues and other stakeholders
- obtaining feedback.

Body language

Body language is one of the most important ways of expressing ideas. When you talk to someone face-to-face, your message is made up of non-verbal language (or body language), tone of voice and spoken language. How something is said can affect how it may be interpreted.

You learn body language from those around you. For example, in our society, it's generally accepted that it's rude to stare at someone or to point your finger at them. There can be differences in body language from one culture to another.

It's important when dealing with clients that your body language is appropriate, particularly the first time you meet them. To make a favourable first impression, you must be aware of your body language and the messages that this conveys about you.

Written communication

Information is often conveyed in writing. In your job you may need to prepare a range of documents, such as emails and reports. Other written tasks may involve taking messages and completing workplace documentation.

When writing any of these types of documents, apply the following rules:

- Accurate spelling, grammar and punctuation
- Appropriate tone, format and style
- Short, simple and correct sentences
- Legible handwriting
- Plain English
- Avoid jargon
- Accompany technical detail with an explanation
- Proofread and edit.

Oral communication

As well as communicating in writing, there will also be times when you need to speak to clients. This could be in a meeting, in a presentation, face to face, over the telephone or via video conference. Listening and questioning techniques will help you communicate effectively in these situations.

Active listening

Active listening happens when you focus on the message you're receiving from the other person, without thinking about what you want to say next. Your response to the sender is one that paraphrases what you've heard. That is, you summarise what you've heard, and say it back to the sender in your own words. This ensures that you've understood the idea the sender wants to give you.

You can often tell if someone is really listening to you, if they're:

- smiling
- nodding
- staying silent
- making eye contact
- using a friendly and interested tone of voice
- encouraging you to continue
- asking open questions
- reflecting how you (the speaker) are feeling
- leaning towards you (the speaker).

Questioning techniques

A customer may be confused or have limited knowledge about the technology they use. They may be frustrated or angry. As an ICT support worker, you will need to practice self-management techniques to stay calm and focused to successfully resolve issues for the customer. These questioning techniques are also useful in discussions with team members and stakeholders, and for applying critical thinking skills.

Questions can be used in the following ways:

- To explore possibilities, using what-if (or hypothetical) scenarios.
- To sort through a lot of information when clients don't get to the point.
- To clarify what they're saying.
- To help them plan or work out what to do next.
- To go deeper into the issue or problem.

There are four types of questions that produce different kinds of answers and give you the right kind of information you need at the time depending on the stage of the service call. Knowing when to use each type is the key. Using a combination of these will ensure that your questioning is inclusive.

These four question types are: closed, open, probing and confirming.

Closed questions seek answers that are short; typically, they are looking for a 'yes' or 'no' response, or a few brief words. The common question words include verbs like can, may, will, have, could, would, should, is and does. Using these verbs helps you narrow down the enquiry. In some situations, you may also want to let the customer know that you'll be asking them a series of these short answer questions. This will help you focus on the issue, help guide or focus the call and keep the conversation on track.

Open questions seek more information and often start with the question word 'when', or 'how'. Open questions encourage the customer to give more information. They help build rapport, by allowing you to have a conversation about the issue and listen to the answers. Use open questions to lead the customer to tell you more, for example, about when they first noticed that the problem started. As a note of caution in using open questioning techniques, try a different way to phrase a question other than with the word 'why'. The customer may think you are being impatient or judgemental, even if you are only trying to troubleshoot their issue.

Probing questions go into the issue in more depth and detail.

Confirming questions seek agreement or consent from the customer, for example, checking that the customer does not need any more assistance and has no more questions before you end the call.

> ▷ Video

Videos: Presenting persuasively

Gaining approval for proposals or other business ideas often means making formal, persuasive presentations. The following courses from LinkedIn Learning include information about presenting professionally and persuasively. You can watch the whole courses, or just the parts that you need:

- [Communicating to Drive People to Take Action](#) (LinkedIn Learning 00:35 mins)

- [Getting Your Ideas Approved](#) (LinkedIn Learning 01:59 hrs)

- [Creating and Giving Business Presentations](#) (LinkedIn Learning 01:08 hrs)

Selecting communication methods

As already discussed, types (or modes) of communication include verbal and non-verbal. There are also numerous channels of communication, including face to face, telephone, video conference, emails and reports. One more thing to consider is the form of communication – formal or informal.

So how do you choose the appropriate type, channel and form? One thing to consider is the goal of the communication:

- Do you need a written record of the communication?

- Is it urgent?

- Is the message complicated?

- Do you need immediate feedback?

- Do you need to see and/or hear the other person?

- Who is the audience? A work colleague (informal) or higher management (formal)?

> ### 📄 Resources

Additional resources on communication methods

You can read through this article on [Different Types of Communication and Channels](#) to learn more about understanding and selecting appropriate communication methods.

> ### ✏️ Practice activity

Activity 7: Select communication methods

1. Match the following communication activities with their respective communication methods. In the Answer column, write the alphabet for Communication methods from Column B that matches the Communication activities in Column A.

Column A – Communication activities	Answer	Column B – Communication methods
1. An urgent reply to a client		A. Email
2. Reporting on a project to the General Manager		B. Telephone
3. Activity update for a colleague		C. Face to face meeting
4. Discussion about a project with a new external client		D. Formal report

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

▷ Video

Videos: Communication skills

The following courses and videos from LinkedIn Learning include information about communication strategies that you can use when communicating with people in your organisation, as well as communicating with ICT clients. You can watch the whole courses, or just the parts that you need:

- Communication Foundations (LinkedIn Learning 01:17 hrs)
- Writing business reports (LinkedIn Learning 01:57 hrs)
- Technical Writing: Reports (LinkedIn Learning 02:30 hrs)
- Writing in plain English (LinkedIn Learning 01:51 hrs)
- Skills for Inclusive Conversations (LinkedIn Learning 00:53 mins)
- Professionalism (LinkedIn Learning 03:08 mins)
- Communication (LinkedIn Learning 06:47 mins).

🗎 Resources

Additional resources on communication

The article Plain Language in Spoken Communication is a useful resource on how to speak in plain English.

▷ Video

Videos: Anatomy of a contact

The section Anatomy of a Contact (LinkedIn Learning 19:59 mins) in the LinkedIn course *IT Service Desk: Customer Service Fundamentals* has an excellent overview of the stages of a customer support call, along with recommendations for how and when to use the questioning techniques. You can watch all the videos in this section or just the ones you need.

✏️ Practice activity

Activity 8: Formal and informal expressions

1. Match the following Informal expressions with their respective Formal expressions. In the Answer column, write the alphabet for Formal expressions that matches the Informal expressions.

Informal expression	Answer	Formal expression
1. Hey		A. Yours sincerely
2. lol		B. want to
3. wanna		C. Dear
4. Cheers		D. That's funny.

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Communicating with ICT clients

When you are communicating with a client, your words and tone should be clear, polite and professional. You must also keep the client informed about how you have resolved or escalated their issue.

Since parts of a written response will be the same each time, a common approach is to choose from a range of templates that you can then tailor to the customer. Many organisations will have a range of prepared responses. However, it is important to note that

in a case where a customer did not receive good service, then you will need to write a more personal response that covers that specific situation.

Standard response templates are sometimes called 'canned responses'. For every customer enquiry process, you should include certain elements, such as a greeting and the customer's name, the details of the enquiry, and the action you will take or the result of that action, as well as information about when you will follow up, or that the issue has been resolved. Your organisation will usually have a set of templates ready for ICT support staff to use.

Another common type of communication template is used after the enquiry. This is usually a survey that asks the customer for feedback about their experience. The organisation uses this feedback in quality control.

✏️ Practice activity

Activity 9: Stages of an ICT enquiry

1. Match the stage of enquiry to its corresponding type of response.

Type of response	Stage of enquiry
We're still working on your case.	
We can't do that, but here's another option.	
We've received your message and we're working on it.	
We need more information to complete your order.	
We can do that, but there is a simpler option.	
Were you happy with the resolution?	
Were you satisfied with our customer support?	
Thanks for working with us! We're closing this ticket now.	
We've resolved your case.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Using appropriate language

People who work as ICT professionals have a great deal of technical knowledge, which allows them to do their job well. However, ICT language uses a lot of acronyms and abbreviations.

This means that you should be careful about using technical words when talking to clients. Sometimes, if you're talking to someone who understands the terms, then a highly technical explanation is appropriate. However, technical words can often make clients defensive. This can make it harder to identify what's gone wrong or for them to understand your solution.

The language you use when communicating with clients is very important; not just the way you speak, but how you speak. The communicated message should be concise, directive, purposeful, correct, courteous and culturally sensitive. Use a clear and audible voice as well as a courteous tone when speaking to clients.

There is certain etiquette to follow in the workplace when communicating on the telephone, by email or any other form of communication. Etiquette refers to unspoken rules that guide the way people communicate and behave.

Examples of general telephone etiquette when answering the phone in the workplace:

1. Use a positive tone and say 'Good morning' or 'Good afternoon'.

2. State the name of the organisation you are working for.

3. Introduce yourself.

4. Ask the person how you might help them.

It's important to remember that when you communicate by email, the non-verbal communication (body language) isn't coming through along with the written message. If you're concerned that anything may be misinterpreted, it's a good idea to explain it, or just keep it simple. It should also be noted that in many workplaces, email is a formal method of communication and can be kept as evidence of your actions, as with any other forms of documentation.

Keeping the client informed

Keeping the client informed is one of the key features of best practice in client service. It's important to let the client know the status of their request from beginning to end.

This includes every step in the process – from explaining why, if you need to put a client on hold or must transfer them to another person, to letting them know what progress has been made if hardware needs to be ordered for their system.

Your organisation may have a policy statement or an item in your service level agreement that states what level or means of follow-up with the client is required. This might include:

- phoning the client after service has been completed

- sending out feedback surveys to client about the service they received

- sending an email asking the client to respond

- employing an independent person or company to interview clients.

Confirming client requirements

Before any advice can be provided, the details of what the client requires must be documented, understood by both parties and then confirmed.

The first step to gathering requirements is to communicate with the client and determine what they need. One technique for confirming requirements is to ask the question 'What is the benefit?' If there is no benefit then either the requirement is not a warranted requirement or there is a misunderstanding as to what is being requested.

As an example, a staff member has requested a new computer complaining that the current one is too slow and just isn't good enough. After meeting with the client you find out the staff member does a lot of work with photo editing software. You examine the computer and notice it is only a few months old. The CPU is good, but only 4 Gigabytes of RAM is installed. As a result you advise the client that a new computer is not required and instead offer to install additional RAM.

There are many techniques available for gathering information and confirming requirements such as:

- one-on-one interviews and group interviews

- questionnaires

- prototyping

- user cases (user stories)

- observation.

Gathering information on requirements also typically includes consideration of any time and cost constraints. When does it have to be done by? What will it cost?

In some cases a feasibility report is required to determine if something is worth the cost. As an example, it might not be feasible for a small organisation to purchase and maintain a server just to store less than 300 gigabytes of data. An existing service such as One Drive or Dropbox might provide better value.

Documenting the requirements

Documentation is another way of confirming requirements. This provides a method for recording the details, terms and timelines for a request. It often provides clarification and a reference for the future. There are many products available for recording and managing requirements.

Table 2: Client requirements confirmation provides a general example of information that can be recorded.

Table 2: Client requirements confirmation

Item	Client requirements confirmation
Client name	
Project name	
	I understand your requirements as follows:
[Product A]	To be delivered within one week of the contract being signed Twelve lots of [Product A] required
[Service A]	To be provided within two days from the delivery date of [Product A]
[Product B]	[Product B] must be compatible with existing network
[Product C]	Must be able to be used in outdoor locations without risk of damage

Item	Client requirements confirmation
	Must be cheaper than the existing product
	Our signatures on this document confirm our shared understanding of the above requirements in this project.
Client signature	
Service provider signature	
Date	

The client requirements confirmation form is completed with very specific information about the current project. The signature of the client, as well as your signature, indicates a shared understanding of the project. Alternatively, an email could be sent to confirm your understanding of the client's requirements.

The most important characteristic of any of these documents is to record two key items accurately:

- the service which is to be provided to the client

- the time frame in which it must be delivered to the client.

Costs may also be included in these documents if appropriate. Time taken to get this stage of a project correct will save many hours later on.

Obtaining approval

An approval process helps organisations ensure adequate consideration is given to what has been requested. Some larger organisations require two or more quotes from different providers before anything is approved. This requirement ensures that a variety of options have been considered and that well-informed decisions are likely.

Obtaining approval might happen in a number of ways. Different sized organisations will have different requirements and approval processes. A small business might just need verbal approval followed by an email that outlines the details. Larger organisations will have an established workflow where approvals are required at different levels of a reporting line, for example, a large organisation might first require the written approval of a manager followed by the director's written approval.

One way of obtaining approval is to have the client provide a written purchase order for the work. Alternatively, the client might write a letter outlining their agreement to your requirements document, asking you to go ahead with the work. Lastly, a contract can be drawn up whereby the client can formally sign an agreement.

Any approval document that is produced should include agreement on:

- the standard of the goods or services to be provided

- the price of the goods or services to be provided

- the timelines for the project (either broken down into timelines for specific tasks or for the entire project)

- any ongoing or follow up services required or foreseen.

Remember, a person's signature is generally required for an agreement to be legally binding. You should ensure that an authorised person from your client's organisation signs all documents before you commence any work.

Implementation of a solution should not go ahead until the client has approved all aspects of the project outlined in the documentation.

Obtaining feedback

Obtaining and reviewing stakeholder feedback helps the organisation to determine how effective their service is, whether this is providing ICT support or presenting a proposal. Stakeholders can include clients, management or anyone who has an interest in the service. Feedback is needed to determine if your efforts have provided guidance, improved understanding or reduced issues/problems.

Client feedback is very useful to ensure client satisfaction, which is an important business goal. Although some people consider any negative feedback as criticism, there is generally a positive aspect to it. It's vitally important to examine criticism and identify areas of improvement. The ability to change and improve will ensure success in any business. You should approach client feedback with the attitude that you can do better next time, especially if you consider feedback as being genuinely valuable.

A client can be invited to give feedback using a range of channels. Often, an ICT client will be asked for feedback at the end of a support call or online enquiry, when their experience of the service is fresh and immediate.

For a formal evaluation, you would develop some type of tool to gain documented, structured feedback, such as an online survey. This type of feedback provides a quick and immediate response (if the client replies).

For a small, informal demonstration or other service, it's generally enough to ask for feedback at the time of the demonstration. However, it's still useful to prepare some questions beforehand.

Some important things to remember when writing feedback survey questions are as follows:

- Your questions must be clear and concise.

- Avoid long, double-barrelled, ambiguous or leading questions.

- Give reasons why the survey is important and how it will help everyone to do their job better.

- Keep it short – it may only have three or four relevant questions.

▷ Video

Video: Surveys

Watch the following videos from LinkedIn Learning for additional information on effective questions and surveys:

- Writing effective questions LinkedIn Learning (03:09 mins)

- Steps to prepare an effective survey LinkedIn Learning (07:45 mins).

Types of questions used for feedback surveys

Questions that ask about subjective information (a user's thoughts and feelings) are known as qualitative questions. Quantitative questions, on the other hand, are designed to produce measurable information. They force the user to respond by selecting one of a range of pre-defined options. Quantitative responses allow all users' responses to be accurately compared with each other. Each type of question has value. By designing a tool with these strategies in mind, you should be able to produce high-quality user feedback that can be both informative and measurable.

Designing quantitative questions

You've probably filled in questionnaires that asked you to rank certain aspects of a course or a training session on a scale of 1 to 10. Alternatively, you may have been asked to say whether something was excellent, satisfactory, good or poor. In other words, your answers were limited to pre-assigned response categories. This is an example of a quantitative evaluation method.

A quantitative question will have several predefined answers, which should evenly represent the range of possible responses from the very positive to the very negative.

Designing qualitative questions

In some other evaluations, your answers may not have been limited to pre-assigned response categories. You may have been asked a question that didn't presuppose an answer, and that allowed you to elaborate on your answer. That is, you may have been asked open-ended questions rather than closed questions. The information obtained from open-ended questions is said to be qualitative. A qualitative question will allow a free-form answer that should provide more detail on why the person is satisfied or dissatisfied.

When you design a questionnaire or interview questions, you would typically use a combination of open-ended and closed questions. Sometimes a checklist is also used. It's important to note that the quality of the answer depends mostly on the quality of the question. Make sure that each question you ask is clearly expressed and has a specific focus.

Practice activity

Activity 10: Obtain feedback

1. Match the questions to their corresponding types.

Questions	Type
Based on a scale of 1 to 10, how would you rate our product?	
What are the best practices one should follow to excel in academics?	
What are the ways you think are best for a business to grow?	

Why are your views about the new smartphone launched in the market?	
How many days a week should you work out?	
How often do you drink coffee at home?	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Reviewing the feedback received

For feedback to be useful, you need to do something with it. You need to analyse the data you get back so you can turn it into information that is helpful to you. You should be able to use the information to inform you on how you went at meeting a particular client's needs. Good evaluation tools should also let you identify ways to improve your service in the future.

Some types of data are less formal, but no less valuable. For example, a casual conversation with a client may result in some interesting insights into the organisation. Even this type of feedback should be recorded later. Find out your organisation's guidelines for noting down this feedback. This should help you to keep doing what you do well and to change what you don't do so well. It may even alert you to a problem that requires a more formal evaluation tool.

When there's a need for a more formal summary, the information that you gain can be shared more easily with others in your organisation. You can also do a more thorough analysis of the information.

The way the feedback is reviewed will obviously depend on the type of survey or feedback design, that is, if it's paper based or web based.

Practice activity

Activity 11: Customer satisfaction surveys

Read the Qualtrics article How to use IT help desk surveys to increase satisfaction and answer the following questions about the article.

1. Which of the following are the reasons for conducting customer satisfaction surveys?

Option	Indicate with 'X'
To understand the degree of satisfaction of the employee	
To help the employees resume their work at earliest	
The employees perceive that a brand cares for them as an actual person and not only a customer	
To set objectives for the scope of improvement of an organization	
To promote your business	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Which of the following are the two commonly used metrics in customer satisfaction surveys?

Option	Indicate with 'X'

Net Promoter Score (NPS)	
Customer Service Satisfaction (CSS)	
Customer Effort Score (CES)	
Customer Health Score (CHS)	
Customer Satisfaction (CSAT)	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

3. Which of the following security considerations are crucial while distributing a survey to obtain customer feedback?

Security consideration	Indicate with 'X'
Ensure that the provider's system is equipped with anti-virus software in the system	
You must use a third-party server to ensure the safety of the customer's data	
You must use a survey software or a CX platform that keeps your customer's data secure	
Ensure your provider's servers are protected by high-end firewall systems	
Have time-to-time security updates to protect the customer's data	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity

Activity 12: Feedback metrics

This is a two-part activity on feedback metrics. Make sure you complete Part 1 first.

Part 1: Rank service management metrics

1. Rank each item in the order that you think is most important.

ICT Service management metrics	Order
First-contact resolution	
Technician job satisfaction	
Technician utilisation	
Customer satisfaction	
Balanced score	
Cost per ticket	
First-level resolution	
Mean time to resolve	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Part 2: Importance of metrics

1. Which of the following are the components of operating expense under the ICT service management metrics?

Option	Indicate with 'X'
Salaries and benefits for indirect personnel	
Benefits for employee's dependants	
Salaries and benefits for support technicians	
Facilities expense	
Special allowances	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Match the following features to their respective metrics.

Features	Metrics
This metric is the single biggest driver of customer satisfaction	

This metric is the greatest lever to reduce and contain the cost per ticket	
This metric is a proxy for total cost of ownership (TCO) and is a critical measure of overall IT support efficiency	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Topic 3: Investigating workplace solutions

Overview

ICT is an exciting industry characterised by constant change. In this competitive environment, new solutions, products and processes are being promoted by vendors. In your ICT workplace, you may be asked to investigate and report back on a range of solutions. It is important to find reliable information, and to use a framework to evaluate the information. Critical thinking and research skills are key.

At work, you will make decisions and choices. To make an effective decision, you need to research and gather information about the idea and the choices available, organise that information into similar groups and options, analyse the information, weigh up the pros and cons of each option now and into the future, and then present that information to those involved in the decision-making process.

When the management of an organisation makes a business decision that will impact on the operation of the business, they use the same research process. To make a well-balanced decision that is effective and sustainable requires sufficiently detailed, valid and reliable information.

In this topic you will learn about:

- critical thinking concepts, characteristics and techniques
- how to apply critical thinking to analyse workplace processes and services, and to acknowledge the limitations
- developing a proposal
- researching ICT solutions using technical documentation
- defining a problem using the most common approaches to research: qualitative and quantitative research
- how to identify and categorise primary and secondary sources of information by audience, credibility and context
- useful techniques for documenting your research journey, including how to create an annotated bibliography in the process of evaluating sources.

Critical thinking

What is critical thinking?

Critical thinking is being able to think clearly and rationally, making logical connections between ideas. It requires you to use reasoning, questioning ideas and assumptions instead of accepting them at face value.

Concepts in critical thinking processes

Critical thinking is a skill that you can develop through actions. Some actions are steps that help you to reconsider your first judgements. Other actions will guide you to finding more information and to seek feedback.

Many organisations will use a decision-making framework to clarify the key elements, and how important each element is. This framework helps the organisation to make decisions that are in line with its organisational strategy.

A critical thinking approach uses techniques and tools to explore problems in more detail. Some key concepts in the critical thinking process include asking questions, continuing to gather evidence to explore the problem space, and not jumping too quickly to a solution. By using these approaches, you will be able to develop effective solutions based on evidence.

Key characteristics of critical thinking processes

Five primary characteristics are the hallmarks of a successful critical thinking process. They are:

- analysing
- evaluating
- interpreting
- problem solving
- questioning.

These considerations are equally important; your critical thinking is only as successful as your weakest link. For example, you can analyse, evaluate, interpret and problem solve to a high standard. However, if you don't ask the right questions, you may end up with inadequate information.

- **Analysing:** Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalisations.

- **Evaluating:** Also referred to as critical analysis, often used to emphasise the depth of evaluation required. You will be required to present and defend opinions by making judgements about information, the validity of ideas or quality of work based on a set of criteria.
- **Interpreting:** Demonstrate understanding of facts and ideas by organising, comparing, translating, describing and stating main ideas.
- **Problem solving:** The ability to identify the critical questions in a problem, develop possible plans for solving, follow through on those plans, and evaluate both the project's success and the solution.
- **Questioning:** It's important to note that questions can go off in many different directions, some of which will be dead ends. Questioning determines the agenda of thinking.

> ✎ Practice activity

Activity 13: What kind of critical thinker are you?

Watch the BBC Ideas video Five simple strategies to sharpen your critical thinking. (YouTube, 4:29 min).

https://www.youtube.com/watch?v=NHjgKe7JMNE
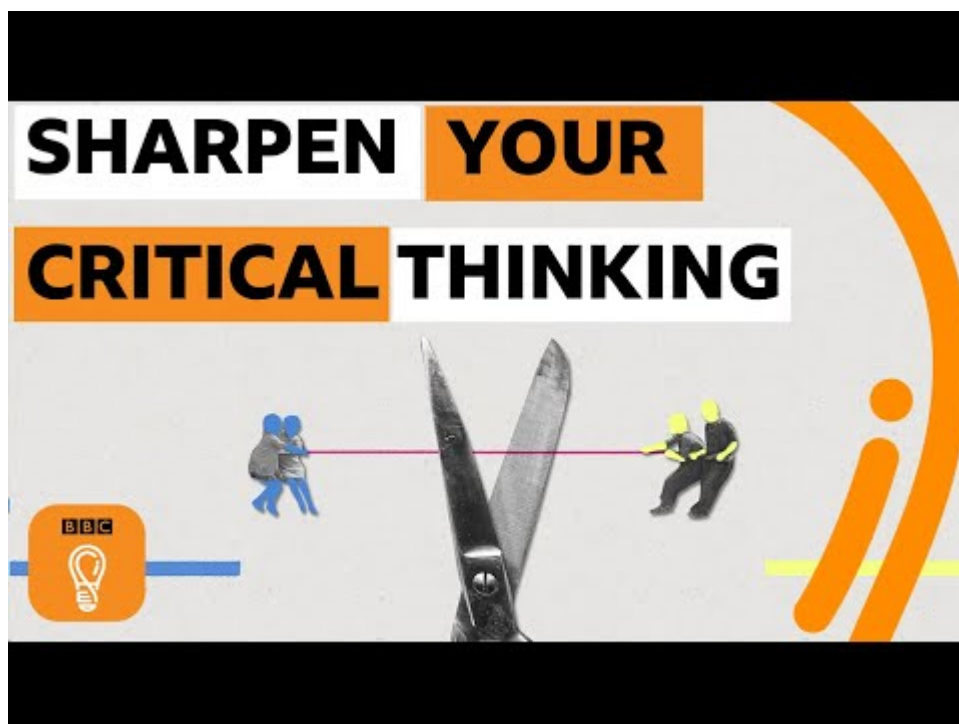
1. Determine if the following statements are true or false.

Statement	Indicate 'True' or 'False'
Critical thinking is being able to think clearly and rationally, making logical connections between ideas.	
Critical thinking requires you to be critical of another person's work.	
Critical thinking can be developed through actions that help you to reconsider your first judgements.	
A good critical thinker always has solutions to problems instantly.	
A key concept in the critical thinking process is not jumping too quickly to a solution.	
Asking questions is a key characteristic of the critical thinking process.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Match the key characteristics of the critical thinking process with their short descriptions.

Short Description	Key Critical Thinking Characteristic
Identify the critical questions in a problem, develop possible plans for solving, follow through on those plans, and evaluate both the project's success and the solution.	

Demonstrate understanding of facts and ideas by organising, comparing, translating, describing and stating main ideas.	
Examine and break information into parts by identifying motives or causes.	
This action can sometimes lead to dead ends, but it determines the agenda of thinking.	
Also referred to as critical analysis, often used to emphasise the depth of evaluation required.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

3. Which of the following are key characteristics of the critical thinking process?

Option	Indicate with 'X'
Questioning	
Meditating	
Analysing	
Interpreting	
Problem solving	
Evaluating	
Drawing	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Asking questions

Asking questions is a very important part of critical thinking. Questions will help you to learn more about a topic, if you ask the right questions. You can ask questions of yourself to focus your research. You can also ask questions of other people, such as your colleagues or other stakeholders in the workplace.

You should also consider different perspectives when asking questions; this will help in understanding how other people may be affected or how they may feel about a topic. For example, if a business is considering introducing a new workplace process, they need to understand the current processes from different perspectives; this may include staff members from all levels of management through to workers who work with the current processes at a more detailed level.

| Resources |

Resources on asking questions

Look through the Right Question Institute website to learn more about asking questions.

Watch the LinkedIn Learning course Using Questions to Foster Critical Thinking and Curiosity (LinkedIn Learning 00:31 mins) to learn more about the benefits of asking questions and how to ask them effectively.

Critical thinking techniques or approaches

There are many different critical thinking techniques, approaches or models. Some examples include the following:

Pearson RED Model of critical thinking

The RED model of critical thinking is based on three key aspects to thinking critically. Each of the steps are designed to be conducted in sequential order. It requires the user to:

- **R**ecognise assumptions
- **E**valuate arguments
- **D**raw conclusions.

Recognise assumptions

Noticing and questioning assumptions helps to reveal information gaps or unfounded logic. Assumptions also need to be examined from different viewpoints.

Questions you can ask yourself to recognise assumptions:

- What is the key issue/problem that you are trying to solve?
- What information and facts do you have about this issue?
- What are your ideas and assumptions that support your strategy or plan?
- Is there solid evidence to support those assumptions, and what might be some gaps in your reasoning?
- Who are the key stakeholders and what are their viewpoints?
- What other ideas should be explored?
- What else do you need to know?

Evaluate arguments

This entails analysing information objectively and accurately, questioning the quality of supporting evidence and understanding how emotion influences the situation. Common barriers include confirmation bias or allowing emotions to get in the way of objective evaluation.

Questions you can ask yourself to evaluate the arguments:

- What are the pros and cons of the solution you are proposing?
- What are your biases?
- Is there someone who has a different opinion that you could run your ideas by?
- What impact will your decision have on others and how will you handle this?
- What will be the financial impact of your decision?
- Who would disagree with your proposed solution and what is the rationale that supports their viewpoint?

- What key points or perspectives do you need to keep in mind as you evaluate the options?

Draw conclusions

This requires the thinker to bring diverse information together to develop a conclusion that logically follows from the available evidence.

Questions you can ask yourself to evaluate the arguments:

- After evaluating all the facts, what is the best possible conclusion?
- What specific evidence is driving your conclusion?
- Is there new evidence that would impact your decision?
- What does your common sense and experience tell you to do?
- What is the timeline for making a decision (for example, would your decision be different in a month)?
- What opportunities does your conclusion provide?
- What risks are associated with your conclusion?

DAE Model

DAE (Description, Analysis, Evaluation) is a three-stage model adapted from LearnHigher. This model specifically assists in generating questions to understand, analyse and evaluate your issue.

Description

Starting with the description stage, you ask questions such as: What? Where? Why? and Who? These help you establish the background and context. For example, if you are reading a journal article, you might ask questions such as:

- Who wrote this?
- What is it about?
- When was it written?
- What is the aim of the article?

If you are thinking through a problem, you might ask:

- What is this problem about?
- Who does it involve or affect?
- When and where is this happening?

These types of questions lead to descriptive answers. Although the ability to describe something is important, to really develop your understanding and critically engage, we need to move beyond these types of questions. This moves you into the analysis stage.

Analysis

Here you will ask questions such as: How? Why? and What if? These help you to examine methods and processes, reasons and causes, as well as the alternative options. For example, if you are reading a journal article, you might ask:

- How was the research conducted?
- Why are these theories discussed?
- What are the alternative methods and theories?

If you are thinking through a problem, you might ask:

- What are the contributing factors to the problem?
- How might one factor impact another?
- What if one factor is removed or altered?

Asking these questions helps you to break something into parts and consider the relationship between each part, and each part to the whole. This process will help you develop more analytical answers and deeper thinking.

Evaluation

Finally, you come to the evaluation stage, where you will ask 'so what?' and 'what next?' questions to make judgments and consider the relevance; implications; significance and value of something.

You may ask questions such as:

- What do I think about this?
- How is this relevant to my project?
- How does this compare to other research I have read?

Making such judgements will lead you to reasonable conclusions, solutions, or recommendations.

Resources

Additional resources on critical thinking

Read the following articles to learn more about critical thinking and why it's important:

- The Most Useful Critical Thinking Mental Models to Know About
- 6 Benefits of Critical Thinking and Why They Matter
- Chapter 7: Critical Thinking and Evaluating Information

Video

Videos: Critical thinking

The following courses from LinkedIn Learning will help you learn more about critical thinking and problem solving. You can watch the whole courses, or just the parts that you need:

- Critical Thinking (LinkedIn Learning 00:59 mins)
- Improving Your Thinking (LinkedIn Learning 00:31 mins)
- Problem Solving Techniques (LinkedIn Learning 01:32 hrs).

Applying critical thinking in the workplace

As has been discussed, critical thinking is useful for solving problems and making decisions. These are important skills that should be applied in the workplace.

Consider the situation where your workplace thinks there may be problems with their existing practices, products or services and wants to improve them. To do this effectively, critical thinking should be applied so that you can:

- understand the current practices, products or services
- find out where the problems are
- investigate and evaluate improvements that can be made
- reach and justify decisions on proposals for improvements.

<div style="border: 1px solid #ccc; padding: 10px;">
Collaboration
</div>

Activity 14: Workplace situations for critical thinking

1. Sort the questions to ask yourself by their key aspect in the RED Model of critical thinking. An example would be the question "What other ideas should be explored?" belongs to the "Recognise assumptions" aspect.

Questions to ask yourself	Recognise assumptions	Evaluate arguments	Draw conclusions
What information and facts do you have about this issue?			
What does your common sense and experience tell you to do?			
Who are the key stakeholders and what are their viewpoints?			
What are your biases?			
What will be the financial impact of your decision?			
Is there new evidence that would impact your decision?			
What risks are associated with your conclusion?			
Is there someone who has a different opinion that you could run your ideas by?			

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. What does the three-stage DAE Model of critical thinking stand for?

Option	Indicate with 'X'
Description	
Definition	
Assessment	
Analysis	
Evaluation	
Examination	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

3. Sort the questions to ask when thinking through a problem by their stage in the DAE Model. An example would be the question "What if one factor is removed or altered?" belongs to the "Analysis" stage.

Question to ask when thinking through a problem	Description	Analysis	Evaluation
How might one factor impact another?			
How is this relevant to my project?			
How does this compare to other research I have read?			
When and where is this happening?			
What is this problem about?			
What are the contributing factors to the problem?			

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Developing a proposal

Proposals are a way to suggest ideas and give you the opportunity to make a structured, logical argument. Its purpose may be to win new business for a company, or to gain approval for an idea you want to implement within your company. A proposal outlines a solution to a problem.

An effective proposal requires good planning and development, as it is essentially a sales pitch. You need to think about your audience, the content and the formatting. It requires the use of critical thinking skills to analyse and understand:

- the current situation (the problem you are trying to solve)
- the limitations and/or constraints involved (Are there dependent systems on the current processes? Is there a time limit or budget constraints?)
- a proposed solution (this will involve research, evaluation and making decisions).

▷ Video

Watch the video An overview of proposal writing (LinkedIn Learning 05:25 mins) from the LinkedIn Learning course *Writing a Proposal* to understand the basics of what is involved in writing a proposal.

Researching solutions

Research approaches

A research approach is a plan and procedure that outlines how you will collect, analyse and interpret data. This is based on the type of research problem being addressed and the audience for the research.

Three approaches to research include qualitative, quantitative and mixed methods. These aren't necessarily separate categories, rather they are at opposite ends of a spectrum. So, your research may tend to be more qualitative or quantitative. The mixed methods approach incorporates elements of both relatively equally.

Qualitative research

Qualitative research obtains descriptive data; it is about quality rather than quantity and is exploratory. The aim of this is about understanding the how and why a behaviour or occurrence works as it does. It helps to gain an insight into the problem and uncover trends in thinking.

Quantitative research

Quantitative research obtains data in a numerical form, which can then be measured in units. This data can be represented in graphs and tables. This approach is seen as rational and objective because it is based on statistics.

> ▷ Video

Video: Qualitative vs Quantitative

Watch the following video to learn more about qualitative and quantitative research approaches:

- [Qualitative vs. Quantitative](#) (YouTube 09:02 mins)
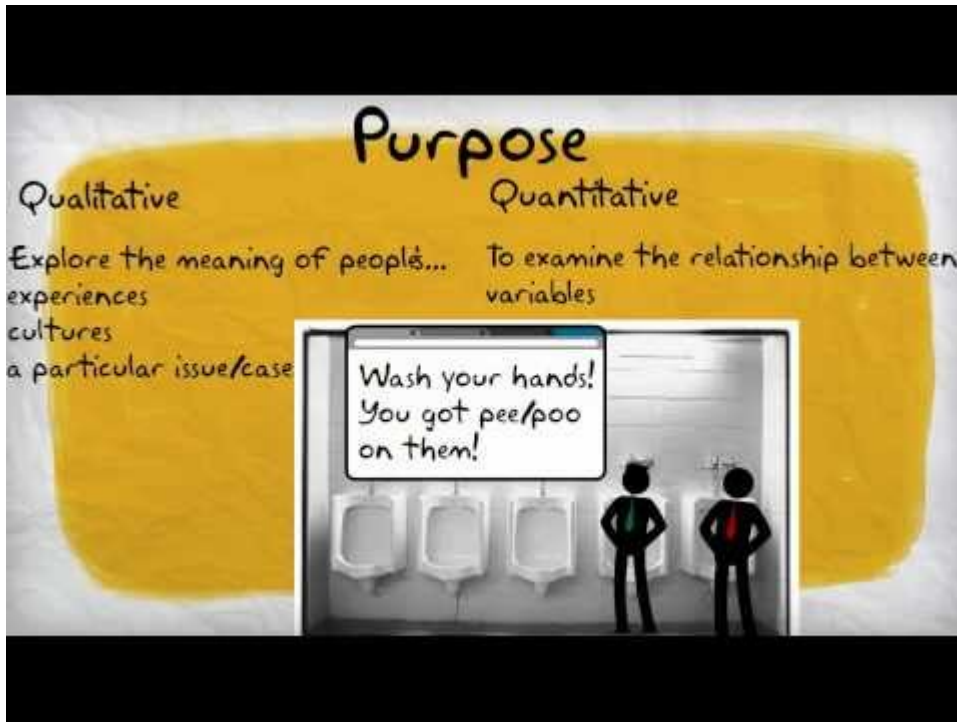
Define the problem

To enable research to have a focus and to be able to drill down and gather the relevant information it must have an objective or a problem that will provide direction for the research activity. So, you need to ask yourself 'What is the problem?' or 'What is the objective?'.

Examples may include:

- How to find new customers for a business.
- How to improve productivity levels of the team.
- How to save costs on packaging.

Recording research sources

When researching for any formal purpose, such as presenting a workplace proposal, it's very important to keep track of your sources and make notes as you go. Sources of research used for a formal report are often listed in a bibliography or reference list. These may also be annotated with notes about the validity of the source. This will help you in evaluating your sources and deciding which ones to explore in more detail.

Word processing applications will usually have tools you can use to record your sources and automatically create a bibliography. Annotations will usually have to be added manually however these can be recorded separately and copied in when you have finalised your list.

Read the Microsoft support page Create a bibliography, citations, and references to learn how to use these tools in Microsoft Word.

To learn more about using Microsoft Word, you can watch some of the videos in the LinkedIn Learning course Word Essential Training (LinkedIn Learning 02:10 hrs).

Resources

Resources on researching and referencing

Read through the following webpages, which will help you with researching and creating an annotated bibliography:

- TAFE NSW Researching and Referencing: Referencing skills

- Advice for Students: 10 Steps Toward Better Research

- How to Prepare an Annotated Bibliography: The Annotated Bibliography

- Analyzing, Interpreting and Reporting Basic Research Results.

Sources of information

When starting your research for a new project, you'll find that a large variety of information sources is available to you.

Scholarly and popular sources

Scholarly sources have usually been written by highly qualified experts, gone through a review process and include a list of references. Their audience is usually other experts or academics.

Popular sources are written for a general audience, such as websites, blogs and magazines.

There are search engines that will help you to find scholarly articles, such as Google Scholar and arXiv.org.

Primary and secondary sources

Primary sources of information are those that have been collected firsthand and are considered to be authoritative. They are the first time that the original research appears. You can conduct your own primary research by methods like interviewing, surveying or observing.

Secondary sources are usually an explanation of a primary source – the primary source has been analysed or interpreted in some way.

▷ Video

Video: Capturing business information

Watch this video from the *Business Analysis Fundamentals* course in LinkedIn Learning to learn some more about information sources. Although the video discusses business analysis and gathering data for projects, the video contains important information about sources of information and how to gather this information.

- [Capturing business information](#) (LinkedIn Learning 06:04 mins).

Evaluating sources of information

When evaluating a source of information, it's important to verify whether the source is credible. Information literacy is the process of identifying what information is needed, locating a source of information, then determining the quality of the source and information contained.

Information literacy is important as you need to ensure that your decisions are made based on valid data. In the internet age, everyone has the opportunity to publish information online, so you must ensure you're looking at valid information.

▶ Video

Video: Evaluating information sources

Watch the following video, which discusses the importance of analysing information sources. Although it focuses on academic research, the same skills apply when analysing data for ICT needs.

- Evaluating information sources (YouTube, 03:05 mins)

https://www.youtube.com/watch?v=VfMh9Gd79iU

📄 Resources

Additional resources on evaluating sources

The following pages from Purdue University outline some general guidelines for evaluating your sources that you should follow (this website contains much more useful information on research and writing that you can explore):

- Evaluating Sources: General Guidelines

- [Evaluating Bibliographic Citations](#)
- [Evaluating Digital Sources.](#)

✏️ Practice activity

Activity 15: Search and evaluate information

1. Search the internet for both scholarly and popular sources for information on emerging technologies and practices relevant to the IT industry. Include the URLs below.

2. Evaluate the sources you've located according to suitable criteria to identify their reliability and how reputable they are.

Interpreting technical documents

When reading complex technical documentation, it may be useful to develop a strategy to help you with interpreting it. Following are some tips that may help:

- Start by breaking down complex documents and data into smaller components.

- Take notes of the major themes of the document on your first read through. If you need to do a second read through, you can take more detailed notes if you find gaps in your first notes.

- Think about how the ideas in the documentation could be applied in real terms or other contexts. For example, how could you apply this idea in the workplace or in your own life? How would you implement it?

- You could also try discussing the documentation with someone else; it helps with your own understanding when you teach someone else.

Resources

Additional resources on terminology

If you're not sure of any ICT-related terminology that you need to know when researching, you can use an online computer dictionary or glossary like the following sites:

- TechTerms

- DP Solutions IT Terminology Glossary.

Sources of technology information

Emerging technology or emerging practices are broad terms generally used to refer to technology or practices that:

- are currently being developed

- are expected to be available in the next five to 10 years

- are relatively new, but not yet widely adopted

- already exist, but are in continuing development.

There are several sources available to you when researching in this area.

Surveys and research on technology trends

- PwC Global

- Educause Horizon Report

- Academic research papers will list their references. The reference list or bibliography these will be useful sources for you to explore.

Consultancies

Organisations that consult with companies in implementing new technologies and practices may post blog articles, hold events, workshops, webinars and so on. For example:

- IDEO
- Singularity University
- Foresight Mindset.

Government departments

Government departments related to technology, for example:

- Department of Industry, Innovation and Science
- Digital Transformation Agency
- Australian Bureau of Statistics.

Business magazines

- Business Insider Australia
- Harvard Business Review
- The Enterprisers Project.

Technology expos and conference

- CEBIT Australia
- EduTECH
- SXSW
- TED Talks.

Technology websites

- Gizmodo
- Engadget
- Technorati

- [The Verge](#)
- [TechRepublic](#)
- [Slash Gear](#)
- [Digital Trends](#)
- [The Next Web](#)
- [TechCrunch](#)
- [Wired](#)
- [TechRadar](#)

> ## Resources

Additional resources on emerging technology and practices

Read through the following webpages, which have some great examples of emerging technology and practices:

- [8 TED Talks on emerging technologies to watch](#)
- [Emotional intelligence: 7 essential tips for leaders](#)
- [Design thinking: 5 ways to put it to work in 2020](#)
- [Agile project management: 4 lessons learned this year](#)
- [DevOps: Breaking the Development-Operations barrier.](#)

> ## Video

Video: Emerging technology and practices in IT

Bill Gates and Steve Jobs are two giant names in the field of emerging technology. The videos give interesting insights into the achievements of these two figures.

Bill Gates

In the video [Bill Gates interview: How the world will change by 2030](#) (The Verge on YouTube, 17:50 min), you will find out about the work to achieve sustainable development goals through technology

https://www.youtube.com/watch?v=8RETFyDKcw0

Steve Jobs

In the video, [Steve Jobs: How a Dreamer Changed the World](#) (YouTube, 15:47 min) you will find out about Steve Jobs through interviews with those who knew him and worked with him. The video reveals his style of leadership, management and creative process.

https://www.youtube.com/watch?v=5fI3zz2cp3k

The following video courses from LinkedIn Learning include information about modern workplace practices. You can watch the whole course, or just the parts you need:

- [Leading with Innovation](#) (LinkedIn Learning 01:31 hrs)

- [Business Collaboration in the Modern Workplace](#) (LinkedIn Learning 01:33 hrs)

Topic 4: Making workplace decisions

Overview

Evaluating the features and functions of any technology or practice that is being considered for implementation is an important task to complete. The organisation must be able to consider its advantages and disadvantages, as well as how it will impact on the organisation.

In this topic you will learn about:

- evaluating technology and practices
- identifying features and functions, and how to categorise and analyse them in terms of their usefulness in an organisational context
- using frameworks to make and justify decisions
- assessing impacts, opportunities and threats
- planning for implementation including identifying changes needed to move the organisation towards its objectives
- reviewing the effectiveness of decisions
- developing and reflecting on your own professional development
- using feedback to improve organisational and professional performance.

Evaluating technology and practices

When evaluating emerging technologies and practices, you'll need to decide on the evaluation criteria. This will allow you to make an informed judgement. What is your overall view of how good or bad the technology or practice is? While the evaluation is generally based on your opinion, it shouldn't come across as opinionated.

Having clear criteria will prevent your evaluation seeming biased or opinionated. For example, if you were evaluating a restaurant, your criteria might include quality of food, service, price and so on. You also need evidence to back up your judgement. If you say that the prices are too high at this restaurant, you could give examples from the menu and comparison prices of similar restaurants.

Determining the features and functions of the technology or practice will give you the criteria needed for evaluation. Understanding the organisational context and their requirements will allow you to determine the advantages and disadvantages for the organisation.

Activity 16: The battle of the collaborative tools

In this group task, you will put your communication skills, questioning techniques and critical thinking skills into practice to assess an ICT tool. Think about the appropriateness of the tool and the context for its use.

For this activity, work with other students in a small group.

Part 1: Scenario

At XYZ company, colleagues in the support team like to get together to map out issues and design solutions to problems using collaborative tools. There are three favourite tools, but no one can agree on which one to use. The tools the team uses are Miro, Lucidchart and Padlet. For this activity, you can also decide to investigate other tools.

1. Create a collaborative spreadsheet in Excel or Google and include the information in the following table. In the last row, include one more feature or function. Discuss this with the group and decide on a feature.

2. In the spreadsheet, name a spreadsheet tab for each tool. You should have three tabs. If you decide to investigate another tool, then insert a tab.

3. Test the features and functions of the tools. (You may need to create an account to use the tool.)

4. For each tool, identify and test the features and functionalities. If one is not present, write N for 'No'. Add some notes about the test and your findings. Then rate the functionality for each feature.
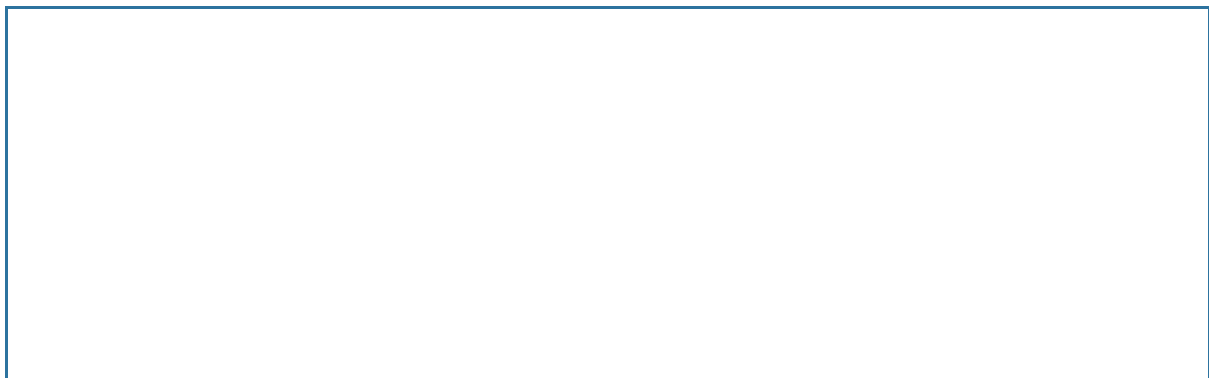
Table 3 – Collaborative tool weighted decision matrix

Feature #	Feature description	Feature present	Research notes	Rating 1 to 5 (5 is the best)	Weighting factor (1, 2 or 3)	Final weighted score
1	Standard template - variety					
2	Standard template – design quality					
3	Export to other formats (for example pdf, .csv)					
4	Functionality – for example, can upload or create rich media, voice recording, video, map.					
5	Stable when working					

Feature #	Feature description	Feature present	Research notes	Rating 1 to 5 (5 is the best)	Weighting factor (1, 2 or 3)	Final weighted score
	together in real time					
6	Accessibility WCAG specification (check the vendor notes on the web site for the level achieved)					
7	User privacy – for example, login only					
8	Special conditions in the fine print (think about the privacy and data implications)					
9	One more criterion – your choice					

Part 2: Calculate the weighted score

1. When you have finished testing, documenting and scoring the tools, as a group, discuss the results and decide on how important each feature is. Apply a weighting factor, based on your group decision. For each tool, include a weighting factor for each feature in the **Weighting factor column**. A weighting factor of 1 means it is not very important. A weighting factor of 3 means it is very important. You may need to discuss a scope that shows the context or the reason for using the tool.

2. For each collaborative tool, in the spreadsheet, calculate the result for the Final weighted score for each feature. Multiply the rating by the weighting factor to give a final score.

3. Summarise the results in a new spreadsheet that show the total for each tool. Identify two strengths and two limitations.

4. Take a screenshot of the summary of the results for the tools with the weighted score totals and upload it. If you prefer, you can copy and paste in your summary spreadsheet results.
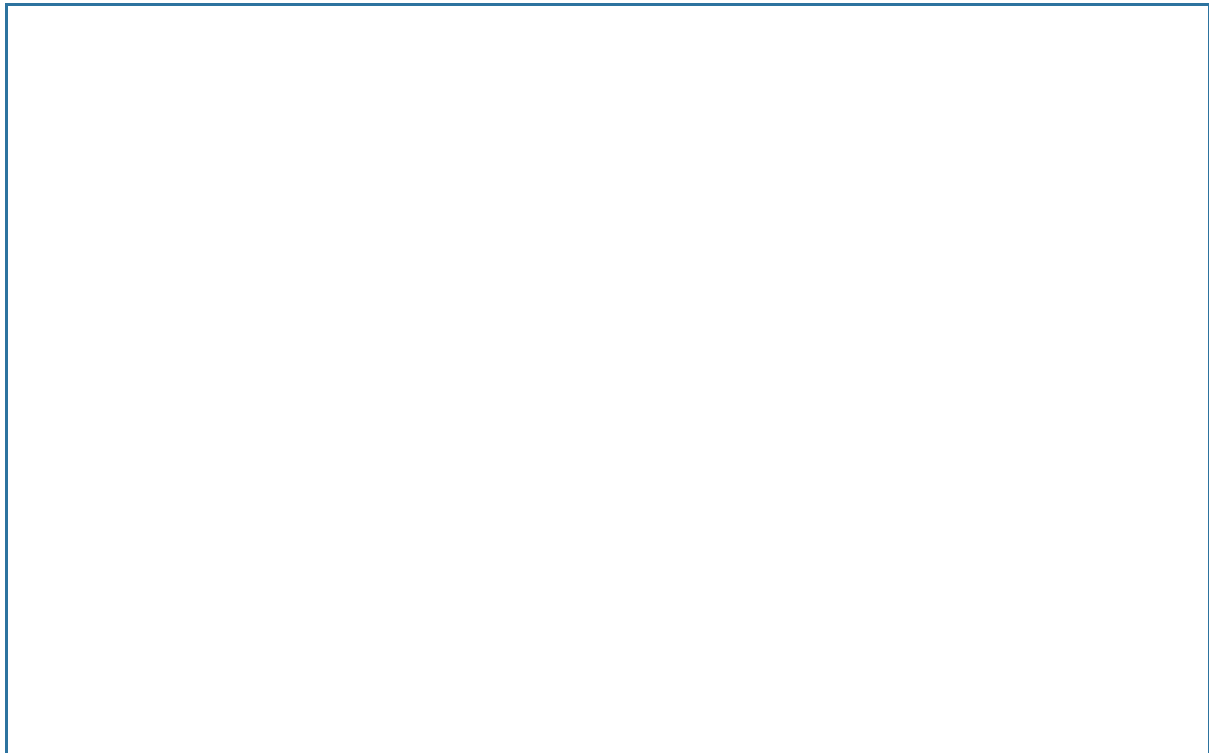
Part 3: Scenario – new information about the team

At XYZ Company, one of the colleagues is vision impaired and uses a screen reader to interact with technologies. Consider how this may affect your recommendation for a collaborative tool.

Discuss the following questions with your group. Note down your answers and supporting research (about 200-300 words).

1. How can you ensure that a vision impaired team member can also contribute to the team? Think about how you could find out more information about the key issues. Check your results from the accessibility ratings and notes for each tool.

2. How does this new information affect the choice of each tool?

3. What alternative tools or approaches would you explore to include the vision-impaired colleague? For example, think about how you could check your assumptions, and how you know that your recommendations will work for the user.

Decision-making frameworks

Decision-making frameworks are a set of guidelines that can help you to make decisions. Using these can result in consistent and effective results. They can also help with justifying your decisions as you can provide evidence of your analysis.

While decision-making frameworks vary in design and purpose, they generally have common elements that include:

- identifying and formulating problems

- identifying clear goals

- highlighting key questions that help people scope problems and management options

- processes for building knowledge and applying appropriate analytical tools to assess actions, options, trade-offs, risks and uncertainties

- connecting decision-making authorities to outcomes associated with those decisions.

In addition to these common elements, decision-making frameworks generally provide:

- transparency about goals, information and decision processes

- inclusiveness of relevant participants

- structures or processes to adapt decisions over time in response to new goals, changing circumstances, or new knowledge.

Sample decision making framework

1. Listing possible solutions/options

To come up with a list of all the possible solutions and/or options available it is usually appropriate to use a group (or individual) problem-solving process. This process could include brainstorming or some other idea-generating process.

2. Setting a time scale and deciding who is responsible for the decision

In deciding how much time to make available for the decision-making process, it helps to consider the following:

- How much time is available to spend on this decision?

- Is there a deadline for making a decision and what are the consequences of missing this deadline?

- Is there an advantage in making a quick decision?

- How important is it to make a decision? How important is it that the decision is right?

- Will spending more time improve the quality of the decision?

3. Information gathering

Before making a decision, all relevant information needs to be gathered. If there is inadequate or outdated information, then it is more likely that a wrong decision might be made. If there is a lot of irrelevant information, the decision will be difficult to make and it will be easier to become distracted by unnecessary factors.

4. Weighing up the risks involved

One key question is how much risk should be taken in making the decision. Generally, the amount of risk an individual is willing to take depends on:

- the seriousness of the consequences of taking the wrong decision
- the benefits of making the right decision
- not only how bad the worst outcome might be, but also how likely that outcome is to happen.

5. Deciding on values

Everybody has their own unique set of values – what they believe to be important. The decisions that you make will, ultimately, be based on your values. That means that the decision that is right for you may not be right for someone else.

6. Weighing up the pros and cons

It is possible to compare different solutions and options by considering the possible advantages and disadvantages of each. Some organisations have a formal process that is required at this stage, including a financial assessment, so check beforehand.

7. Making the decision

Your information-gathering should have provided sufficient data on which to base a decision, and you now know the advantages and disadvantages of each option. It is now time to actually make the decision.

Resources

Additional resources on decision-making frameworks

Read through these articles for more information on decision-making frameworks in the workplace:

- An effective framework for strategic decision-making
- Effective Decision Making – A Framework
- Untangling your organization's decision making
- 3 Frameworks For Making Complex Decisions

Assessing impact, opportunities and threats

Part of evaluation is to assess the potential impacts of the technology or practice on the organisation. This will first involve identifying the potential opportunities and threats. This may involve more research, for example, investigating an organisation that has already

implemented the same technology or practice. If this isn't possible, you will need to conduct an activity such as brainstorming to identify the impacts, opportunities and threats.

Read the article Futures Wheel by Jerome Glenn to understand a form of structured brainstorming that can be used for this.

At this point of your research and evaluation, you would obtain feedback from an appropriate person within the organisation on your work so far. This will help you to review your impact assessment and incorporate their feedback into your report.

☐ Collaboration

Activity 17: Assess impact of technology

Review the web page The Essential Eight from PwC Global. It lists eight technologies and their features and uses. The questions below are all related to the web page.

You can draw the futures wheel template on paper or use an online template. For example – Creately futures wheel template.

1. Which of the following technologies can help automate trust and create an immutable supply chain?

Option	Indicate with 'X'
Internet of Things (IoT) and Blockchain	
Artificial Intelligence (AI) and Robotics	
Artificial Intelligence (AI) and Internet of Things (IoT)	
Robotics and Blockchain	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.

General	Thank you for taking the quiz.

2. What is the convergence theme for Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR)?

Option	Indicate with 'X'
Extended reality	
Immersive interfaces	
Working autonomy	
Hyperconnected networks	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

3. Augmented Reality (AR) is primarily used in _____.

Option	Indicate with 'X'
Extended reality	
Automating trust	
Immersive interfaces	
Digital reflection	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.

Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

4. _____ is the primary sector where 3D printing is widely used.

Option	Indicate with 'X'
Information technology	
Manufacturing	
Aerospace	
Pharmaceutical	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Resources

Additional resources on impact of technology

Read the following webpages to learn more about assessing the impact of technology and practices on an organisation:

- How Your Organisation Can Identify and Respond to Technology Megatrends

- How to Assess the Risk of a Change with 5 Simple Questions

- Business Impact and Risk Analysis in ITIL Service Design.

▶	Video

Video: Technology challenges

Watch the videos in Chapter 1 from the LinkedIn Learning course *Project Management: Technical Projects* to learn more about challenges and approaches for technology projects. You can watch all the videos or just the ones you need:

- [Ch 1. Technology Project Challenges and Approaches](#) (LinkedIn Learning 29:41 mins)

Planning for implementation

Once you've researched, evaluated and decided on the emerging technologies and practices, you need to develop the strategies to prepare the organisation for implementation. This will include understanding the organisation's objectives, identifying the changes required and identifying what implementation planning methods will be used. You will need to make recommendations for the organisational response and incorporate any feedback as necessary into your final proposal.

Organisational objectives

An objective is a goal – what are you trying to achieve? Or in this case, what is the organisation trying to achieve by implementing an emerging technology or practice?

Objectives provide a focus and direction for the organisation. SMART goals are generally used to help guide the objectives. SMART stands for:

- Specific
- Measurable
- Achievable
- Realistic
- Timely/timebound

Understanding the organisation's objectives will help you in developing your strategies.

Resources

Additional resources on SMART goals

Read the webpage What is a SMART Goal? to learn more about SMART goals.

Collaboration

Activity 18: Create SMART goals

1. What does the acronym SMART stand for?

Option	Indicate with 'X'
Simple, Methodical, Achievable, Realistic, Timely/timebound	
Specific, Measurable, Achievable, Realistic, Timely/timebound	
Specific, Measurable, Actionable, Result-Oriented, Timely/timebound	
Specific, Measurable, Achievable, Relevant, Timely/timebound	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Select the statement that best describes a SMART goal.

Option	Indicate with 'X'
We will create an AI-based Application Tracker by the end of this quarter, after we shift Talent Management to a digital platform.	
We will create an AI-based Application Tracker after we shift Talent Management to a digital platform.	
We will create an Application Tracker after we shift Talent Management to a digital platform.	
We will create an AI-based Application Tracker by the end of this quarter.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Identifying changes required

In the evaluation phase, you will have identified the potential impacts, opportunities and threats of the emerging technologies and practices. These will affect the changes that the organisation will need to make to their current technologies and practices. For example, you may have identified that there will be an impact on the duties of current staff members, so the changes may involve retraining for those staff members.

Developing strategies for implementation

When developing strategies for implementation, you'll need to consider several things, such as:

- data migration

- security

- storage

- timelines

- training

- contingencies.

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Video: Digital transformation and planning

Watch the following LinkedIn Learning courses to find out about planning for digital transformation for organisations:

- [Digital Transformation](#) (LinkedIn Learning 47:28 mins)

- [Ch 2. Planning Your Technology Project](#) (LinkedIn Learning 24:05 mins).

<table>
<tr><td>📄 Resources</td></tr>
</table>

Additional resources on digital transformation

Read the webpage [What is digital transformation?](#) to learn more about what digital transformation means for an organisation.

Finalising the proposal

The organisational objectives, changes and implementation plan should be documented in the final proposal for the organisation. You will need to make recommendations for how the organisation should respond to the emerging technologies and practices. The organisation needs to know why you're recommending these technologies and practices and how implementing them will meet their objectives.

As with the impact assessment, you should obtain feedback from an appropriate person within the organisation and incorporate their feedback into your final proposal.

Reviewing effectiveness of decisions

Every decision, piece of feedback or system implementation should be reviewed for its effectiveness. Part of this process also includes assessing your contribution or role and searching for opportunities for your own professional development. This process will help you to identify areas that you want to learn more about, or skills that you want to improve or develop.

Self-reflection for future action

An inward-looking approach, along with tools and a system for documenting your professional development, can also help with future evaluations at work. As part of an approach that aims to close the feedback loop, look for positive ways to incorporate feedback to improve your own communication strategies and performance.

▷ Video

Video: Johari window

The Johari Window is an example of a tool that helps to identify which of your actions are successful, which ones you should stop and actions that you need to start doing.

Watch the video 360 Feedback #4: The Johari Window, (YouTube 02:52 min), which outlines how to incorporate feedback to improve your own communication strategies using the concept of the Johari Window.
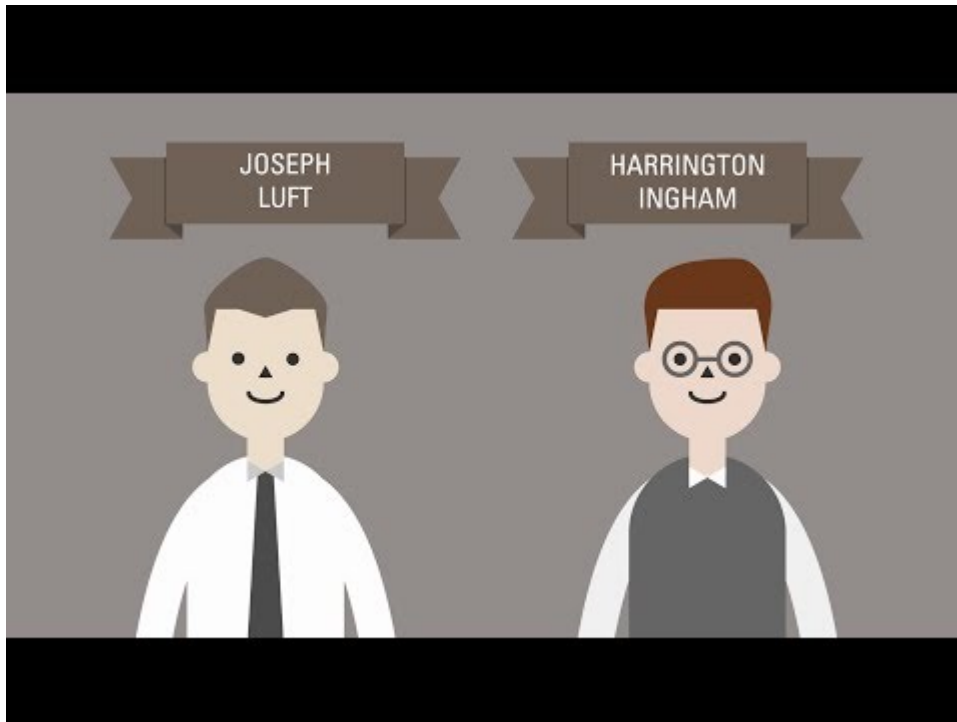
https://youtu.be/_aF-olRMuoQ

Professional development

Technology is an area that's constantly changing so it's essential that you're proactive about keeping your skills up to date. This will enable you to be more confident in using emerging technology. Upskilling will allow you to collaborate more effectively with your team and become a better leader. You will also become more versatile and secure as you acquire in-demand skills.

Working in IT means constantly learning so you should take advantage of any training opportunities offered by your workplace including courses, workshops and attending conferences. Of course, being proactive means taking responsibility for your own professional development – read widely from different sources, attend meetups and technology expos and arrange your own training when needed.

📑 Resources

Additional resources on professional development

Read the following webpages on IT upskilling to learn more:

- [PwC New world. New skills.](#)

- [CompTIA 10 Skills You Didn't Know Could Land You an IT Job.](#)

Topic 5: Working in ICT support

Overview

This topic will provide you with a basic understanding of what is involved in the operation of a service desk. This includes having the knowledge required to record and prioritise client support activities, determine the required resources, solve client problems related to ICT or escalate as necessary.

In this topic you will learn about:

- how the service desk functions
- the basic operations of a service desk
- service desk software
- how to identify and resolve ICT problems and incidents
- how to escalate problems to a third party
- how to perform ICT maintenance and disposal tasks in a sustainable way.

Service desk terminology

Help desk vs. service desk

You may wonder what the difference is between the terms *help desk* and *service desk*. Have a look at the definitions for both terms given below.

Help desk and service desk both provide a single point of contact for customers.

IT help desk is more focussed on providing support for technology-related questions and fixing problems.

IT service desk is based on **Information Technology Service Management** (ITSM) best practice framework ITIL (Information Technology Infrastructure Library). The main concept behind the IT service desk is to manage IT *as a service*.

> The **help desk** is a single point of contact within a company for technology-related questions and incidents.
> The **service desk** is a single point of contact within a company for managing customer incidents and service requests.

Therefore, we can say that service desks provide a broader scope of responsibilities than help desks.

Information Technology Service Management (ITSM)

To understand what ITSM is, first you need to understand the following:

- What is an IT service?
- How can ITSM help service providers deliver and manage these services?

IT service

An IT service is a service provided by an IT service provider. An IT service is made up of a combination of information technology, people and processes.

IT service types

IT services can be broadly categorised as customer-facing services and other supporting services.

- A **customer-facing service** directly supports the business processes of one or more customers and its service level agreement.
- Other IT services, called **supporting services**, are not directly used by the business but are required by the service provider to deliver customer-facing services.

IT service management

ITSM is the implementation and management of quality IT services that meet the needs of the business. ITSM is performed by IT service providers through an appropriate mix of people, process and information technology.

Basic operations of a service desk

Overview of basic tasks

Operations in a service desk environment involve a mix of the following basic tasks:

- Communicate – this can be either verbally or through other forms of communication, such as email, web portal comments, etc. At various stages of IT service management, service desk operators need to interact with different stakeholders to clarify requirements, obtain information, gain approval for tasks, make service or change requests and so on.

- Document – everything related to incidents, problems, changes in the systems, releases, IT assets and so on need to be documented in the service desk system. The communication that occurs when obtaining information from stakeholders, any configuration changes done in systems, solutions and workarounds for problems and so on, need to be documented and recorded in sufficient detail.

- Operate service desk software – service desk operators need to be trained on how to use the service desk software used in the organisation. They need to be familiar with the basic operations, follow the correct process and record information in the service desk system accurately and efficiently.

- Understand policies, procedures used in the organisation and best practices of the specific industry.
    - Policies: Service Level Agreements, Warranties, Standard Operating Environment, security policy, IT equipment procurement, Work Health and Safety, e-waste disposal policy and so on.
    - Procedures/Guidelines: Software installation procedures, software upgrade procedures, specific system configuration procedures, network guidelines, security guidelines and so on.
    - Industry best practices: ICT sustainability, IT Service delivery, ITSM best practice framework and so on.

- Understand and follow the reporting structure of the organisation – you need to know and be familiar with the organisational hierarchical structure. In some situations, service desk staff or technical support staff need to obtain approval from management before proceeding any further. In this case, the correct reporting structure should be followed.

- Awareness of resources available – service desk operators need to know and be aware of all resources in the organisation that are involved with IT services. This would include IT assets both hardware and software, (such as computers, peripherals, printers, servers, operating system software, application software and so on). This also would include the involvement, allocation and availability of staff members who, request, provide or authorise services (such as, technicians, users, management and so on).

Service desk software

There are various types of software systems available in today's market that are designed to manage service desk operations. It is important that organisations choose the correct IT service desk software product that adheres to best practices of ITSM.

Resources

Additional resources

Read through the following websites for a basic understanding of IT service/help desk software:

- Jira Service Management
- ManageEngine ServiceDesk Plus
- Software Advice: Help Desk Software
- Capterra: Help Desk Software
- PC Mag: The Best Help Desk Software for 2020

Practice activity

Activity 19: Set up service desk software

Jira Service Management can be combined with Confluence to provide a free version of a service desk system with a knowledgebase. Note that the free version is based on a limited number of users and size.

After setting up Jira Service Management, you can find your service desk system by going to the Atlassian start page. You can also switch between Jira Service Management and Confluence by selecting the switch icon:

Jira Service Management

To raise a service request in your system:

    a. In the sidebar, select Service requests.

    b. In top menu, click Create.

1. Read the instructions provided in the [support document](#) to set up a free version of Jira Service Management. Based on the instructions given in the document, determine if the following statements are true or false.

Statement	Indicate 'True' or 'False'
To sign up for Jira Service Management, you need to select Confluence as the second product.	
The format for entering the site name for your system is *YourFirstnameYourSurname*.	
Jira Service Management allows you to create a Space for your knowledge base.	
In Jira Service Management, your ITSM project can be created using the IT service management template.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

2. Read the [Jira Service Management get started guide](#). Based on the instructions provided in Step 1 of the guide, rank the following instructions in the correct order.

Instruction	Order
Create your ITSM project	

Set up email requests	
Customize your portal	
Add team members	
Set up your services	
Add a logo to your portal	
Go beyond the basics	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

3. Read through the instructions on the page [Use Confluence as a Knowledge Base](#) and determine if the following statements are true or false.

Statement	Indicate 'True' or 'False'
You'll need the Create Space global permission to create your knowledge base space.	
You can use any Jira application to link a Confluence space.	
You can connect Jira Service Management with Confluence 5.10 or later.	
Only those users who have a Confluence license can search your knowledge base directly from within the customer portal.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.

Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Identify, document and resolve ICT problems

Identifying and documenting ICT problems is an important task. Keeping records helps to build a picture of whether services are running correctly, or whether a number of users are experiencing the same related issue, and for how long a service has been affected. These measures are used to document the quality of the service. The IT vendor provides services using a contract that outlines the agreed level of service, and how the vendor will ensure the quality of service to the customer. The contract may include conditions that will force the vendor to pay a penalty if the agreed quality level falls below a certain standard.

A client will report a problem, but you may need more information to try to reproduce the error. For example, you will also want to know about the operating system, a browser version and the specific error message. Depending on the ticketing system, you may have access to more detailed information about the problem in a service log. Obtaining this information will help to understand more about the problem.

ICT vendors offer support for their products in several ways. Apart from tutorials, specialised training and technical specification documents, they also run community sites where users support each other.
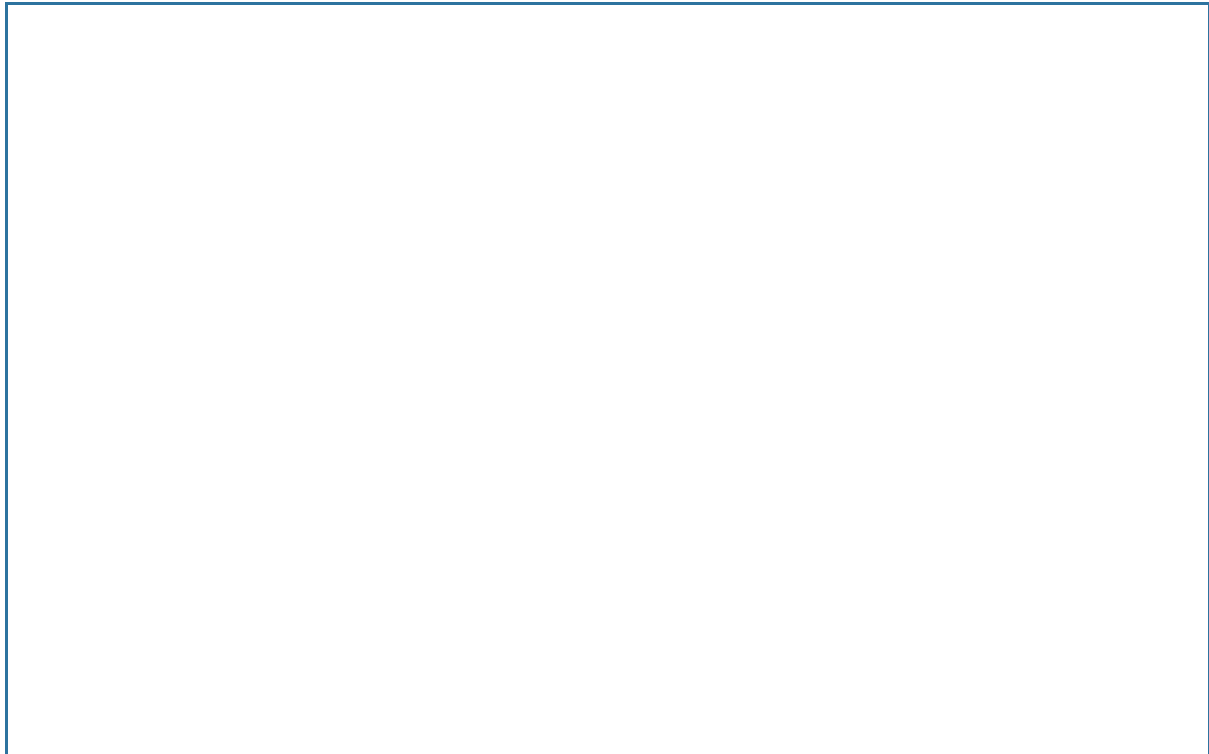
> ✏️ Practice activity

Activity 20: Jira community query

A user of the Atlassian product Jira is experiencing problems and has posted a query to the community site.

Read the Jira Community post and the response carefully. Focus on critical thinking techniques and the effectiveness of the response. Answer the following questions.

1. Is the response clear and easy to understand?

2. How helpful would you find this response as a Jira user? Why or why not?

3. Does the response consider the level of experience of the user?

4. Search Jira using the term 'Issue deleted' and read through some related entries. Is this issue an example of a known issue, or is it a feature of the product design?

Incident management process

An incident management process is a set of pre-defined steps and procedures taken to resolve issues and support requests. The main objective is to ensure normal service operations are restored as soon as possible. The definition of normal service operations is usually defined in the SLA between the support provider and client.

Although not strictly required, software with the specific purpose of managing incidents and service requests can be of great assistance to ensure pre-established and best practice processes are applied.

The stages for managing incidents are shown in Figure 1: Incident Management Process.
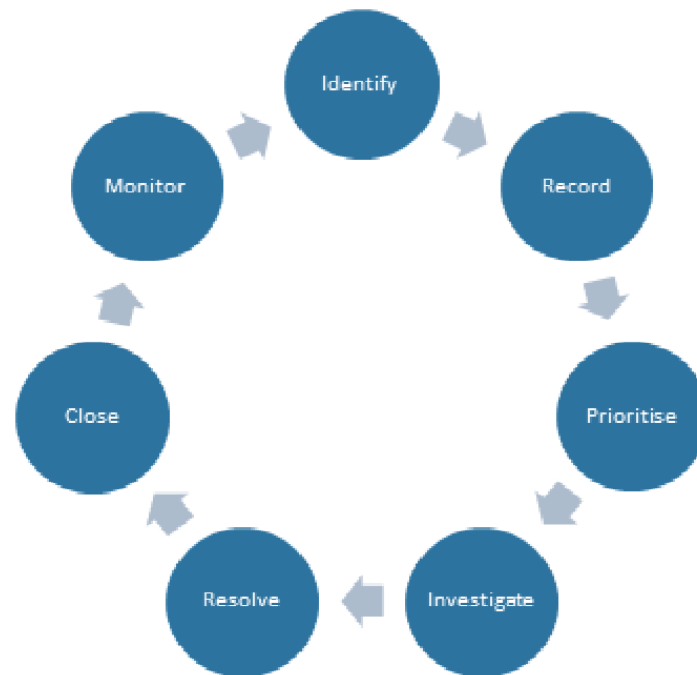
Figure 1: Incident Management Process

- **Identify** - An incident may be reported by a client (end-user) or identified by the ICT department. When an incident happens, the first step is to identify the exact nature and extent of the problem.

- **Record** - Information about the incident is then recorded in either an incident management system or by other means such as in a spreadsheet. Ensuring the incident is accurately recorded can assist with resolving the problem as quickly as possible.

- **Prioritise** - What is the extent of the problem? How many users are affected? What impact does the incident have on business operations? These questions need to be asked when prioritising an incident. The priority will determine the appropriate action to be taken along with the number of staff or resources assigned to the incident.

- **Investigate** - What is the cause of the problem? Has this happened before and if so, how it was resolved? This step of the process typically requires technical expertise. The incident could be a known issue that can be quickly resolved by Level 1 support or something more complex and challenging that needs to be escalated to Level 2.

- **Resolve** - Once the incident has been resolved, details of how it was fixed are recorded for future reference and the client is notified that the problem has been resolved.

- **Close** - After the incident has been resolved its status is changed to 'closed'. This lets everyone know that the incident no longer needs attention. The details are stored for historical reporting and reference.

- **Monitor** - An incident should be monitored for a short period after it has been resolved; it is not unusual for a problem to re-appear soon after it has just been resolved. As an example, if the network card in a computer has a fault, is repaired or replaced and soon after has another fault, it may indicate that something else is causing the fault, such as a faulty port in the motherboard. Monitoring an incident will help to ensure that an incident has been resolved properly and will not continue to happen.

Checking the logs and recording information

When a problem is reported, it is useful to check the service desk logs or the known problems database (or knowledge base) to see if similar problems have been reported in the past. There are strong reasons for this:

- Many organisations have large numbers of identical computer systems. Repeated instances of hardware failure in these systems can indicate a fault that will progressively occur in many more systems. The hardware vendor can be contacted to avoid large-scale disruption to operation.

- Repeated calls about problems that relate to usage, rather than hardware failure, can indicate the need for specific training. An example of this could be how to change a client password.

- Many organisations build up a knowledge base, where solutions to previous problems are detailed. Help desk staff can check the knowledge base before escalating the problem. This has the potential to greatly improve the time taken to resolve common problems and can be particularly useful for new help desk staff. As well, this ensures that knowledge built up over time is not lost as individual help desk staff move on.

- Even if you're employed by an organisation that does not have many employees, you should develop a system for recording support calls from clients. This will avoid issues where calls are not followed up and will also provide an audit trail showing the nature and complexity of your workload.

Resolving client problems

Where possible, client problems should be resolved with minimum disruption to their work. The time taken to resolve the problem may mean that ICT functions that are important to the organisation will not be available if equipment is not operational. In this case, consider alternative options to allow the affected client to carry out their tasks.

Many organisations provide support remotely. Support staff can install software using the organisation's network. Organise a suitable time for remote support to minimise disruption to the client.

For repairs to ICT equipment under warranty, a staff member may have to be present to provide access. Ensure that someone will be available at this time to avoid delays and extra charges from vendors.

For training, follow organisation procedures to liaise with the managers of the affected business area managers and schedule a suitable time. This is particularly important when clients need to attend group training sessions, which will take clients away from their normal duties for extended periods of time.

> ▷ Video

Videos: ICT support

ICT support requires skills and knowledge for technical assistance and client communications. The following videos, courses and collections from LinkedIn Learning provide information on:

- working in a service desk
- interacting with a client
- common technical skills required for supporting an organisation.

You can watch all the videos and courses, or just the parts you need. Write a summary of points from each to help you with this topic.

- What is an IT help desk? (LinkedIn Learning, 02:19 mins)
- Working in a service desk (LinkedIn Learning, 01:50 mins)
- Interacting with the client (LinkedIn Learning, 44:08 mins)
- Computer components and peripherals for IT technicians (LinkedIn Learning 02:19 mins)
- Troubleshooting: Diagnosing errors, incidents and problems (LinkedIn Learning 06:03 mins)

Hardware and software

Working in ICT support means having a good general knowledge of different hardware and software products.

Operating systems

Regardless of the size and complexity of the computer and the operating system, all operating systems perform basic functions that include the following:

- File management: This refers to the way that the operating system manipulates, stores, retrieves and saves data on mass storage devices.

- Memory management: An operating system is responsible for managing what is stored in random access memory (RAM) to allow multiple tasks to be completed.

- Process management: Processes are programs, which are managed by the operating system. It allocates the central processing unit (CPU) to ensure processes are run efficiently.

- Providing an interface: this may be a graphical user interface (GUI), where interaction may be through clicking a mouse, or a command line interface (CLI), where instructions are typed in.

- Print management: Operating systems control the printing functions for a computer. All printing commands are sent to a printing queue and processed individually.

> Video

Videos: Hardware and software

- The Professor Messer CompTIA A+ videos are an excellent way to obtain a working knowledge of hardware, networking, operating systems and security.

- Application software may include commercial packages such as word processing, spreadsheet, database, accounting and multimedia. If you need to learn about any of these, LinkedIn Learning is a good place to start.

Practice activity

Activity 21: Understanding problem management

1. Read through *Chapter 3* of the [ITIL Heroes Handbook](#) and determine if the following statements are true or false.

Statement	Indicate 'True' or 'False'
The goal of Problem Management is to find the root cause of incidents and reduce the impact on business.	
You need to analyse patterns and symptoms in the problem identification stage.	
You need to record basic details related to the problem in the problem analysis stage.	
In case of a known error, the Helpdesk technician can get back to the user with the workaround/solution.	
It is the responsibility of helpdesk engineers or frontline support staff to update users about all the activities while closing a problem.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Scenario: Handling an incident

This section will help you understand how the overall service desk process would function in real-world scenarios.

A client (Jane) is making a phone call to report an incident. A level 1 service desk operator (Bob) answers the call.

Bob answers the call professionally, using the organisation's standard script:

Level 1 Operator: "Thank you for calling the ABC help desk. This is Bob speaking. How can I help you today?"

Jane briefly reports the incident.

Client: "Hi Bob. I'm calling to report that my printer is not working"

While listening to what the client is saying, Bob opened a new incident record in the help desk system and records the customer's problem. Bob now needs to verify who the caller is by asking their full name so that he can locate the caller's information from the system.

Level 1 Operator: "Can I have your full name please?"

Client: "Yes. My name is Jane Smith"

Since the organisation has many departments and locations, Bob would ask another question to verify details of the client's department and location (verification details would also include the workstation number, employee number and so on).

Level 1 Operator: "Which department location are you calling from Jane?"

Client: "I'm calling from the Accounts department in Level 5"

Bob listens carefully to the client's responses and records this information accurately in the help desk system. Now, that the initial details have been recorded, Bob focuses more on the incident. Since the client is located in Level 5, Bob checks from the help desk system the names of printers available on that level and also does a quick search for any printer problems already recorded in the **known problems database**.

Bob would ask a series of questions to determine the client's requirement. Following are some sample questions Bob would ask:

- What is the name of the printer you are trying to print from?

- When was the last time you printed?

- Can others in your department print from this printer?

- How urgently do you need to print?

Bob listens carefully to the responses provided by the client for all the above questions and records it in the incident record.

At this stage, Bob would also classify and categorise the incident record in the system. Bob is familiar with the organisation's SLA and would refer to the problem impact analysis matrix to determine the correct impact and priority level.

Problem impact analysis matrix	The problem affects the whole **organisation**	The problem affects the whole **department**	Problem affects only individual **user**	The client is a **VIP user** (Department Manager, General Manager, Director)
Can the user still perform daily tasks without significant effect from the problem?	Medium	Normal	Low	Normal
Can the user still perform daily tasks, but has significant effects from the problem? (Example: Delay in performance)	High	Medium	Normal	Medium
Does the problem prevent a user from doing day to day work?	Critical	High	Medium	High

Here is Bob's thought process when deciding the priority of the problem:

- Is the client a VIP user? No. Jane is an accounts clerk.
- Can the user perform normal day to day tasks? Yes. Only printing is a problem.
- Does the problem affect only the individual user?
  - The answer can be **yes** if it is determined that the problem is something other than the actual printer itself and impacts only the user. Then this would be classified as a *normal* priority, with *normal* impact. If the client is a VIP user, this should be classified as *medium*.
  - The answer can be **no** if it is determined that the problem is actually with the operation of the printer, which is used by the whole department. Then, this would be classified as *medium* priority, with *medium* impact. This could be classified as a *high* priority, depending on the urgency of the situation.

If there was a problem previously identified with the same printer (**Printer-A**), Bob would follow the correct procedure and would associate the new incident record with the existing problem record in the service desk system. If this was the case, Bob would inform the client that this problem had been identified and is being investigated.

Bob would further read through the problem record in the system, to see if there is a workaround or resolution identified.

Assume that this printer problem was already reported by another client half an hour ago and is recorded in the system by another technician. This technician had already performed diagnostics on Printer-A. The problem record in the system states that the printer had malfunctioned, therefore cannot be fixed immediately. A workaround is recorded for this problem to inform all staff in Level 5 who would normally use Printer-A, to use Printer-B in Level 4, until Printer-A is fixed.

After reading through the workaround for the reported printer problem, Bob would inform the client of the temporary solution for the problem.

In summary, here's what Bob would have to say:

Level 1 Operator: "I've just checked our system, and the printer that you've mentioned seem to have malfunctioned. The problem is being looked into by our technicians and unfortunately, it will take some time to get it fixed. As a temporary solution, I suggest that you use Printer B in Level 4."

Bob would end the call professionally and would provide the user with an incident number for future reference.

Level 1 Operator: "Thank you for calling ABC help desk. I have recorded your issue into our system. Please make a note of the issue number 14526, if you need to report any other information the same issue. Have a nice day!"

Scenario: Making a service request to a third party/ vendor support

This is a continuation of the previous scenario. Assume that the Printer-A problem is now escalated to a level 2 service desk operator (Pat) for further investigation of the problem.

Pat would first try to familiarise with the problem by looking at the following:

- Problem details (what is the problem, priority, impact, assets involved and so on)

- Notes from other service desk operators

- Diagnostic tests performed by other technicians

- Other incidents reported by clients on the same problem

After going through the details of the problem, Pat realises that the main issue here is with the Printer-A and it needs to be fixed. In this case, Pat checks the details of Printer-A from the assets listed in the service desk system to find the following:

- Printer name and model

- Vendor support and warranty details

- Maintenance log

Pat identifies that Printer-A is still under warranty. Pat is aware of the organisation's Service Level Agreement and realises that Printer-A problem can only be fixed by contacting vendor support so that the printer's Warranty terms have not been breached.

Pat is now preparing to contact vendor support to solve the printer problem. Before making the call, Pat takes some time to gather all the necessary information related to the printer.

- Printer model and serial number

- Date of purchase

- Details of warranty terms and conditions

- Contact details of vendor support

Pat is now ready to communicate with the vendor support. Pat makes the call and communicates professionally.

Vendor Support: *"Thank you for calling XYZ support. This is Mary speaking. How can I help you today?"*

Pat: *"Hi Mary, I'm Pat calling from ABC Company. I would like to report that one of our XYZ printers which are still under warranty have malfunctioned."*

At this stage, the vendor support would ask for specific details about the product. Such as the serial number, product model, date of purchase and so on, to locate and access information related to the service request. A sample question is shown below:

Vendor Support: *"Can you tell me the model and the serial number of the printer please?"*

After getting the necessary details, the vendor support staff would inform the process of handling the service request.

At this stage, Pat would record all the information provided by the vendor support staff in the problem record.

Pat would also ask questions from the vendor support for clarification and to obtain more information about the process.

For example:

- How long will it take for the printer to be repaired?

- Will a replacement printer be provided by the vendor while the specific printer is being fixed?

- Will the printer be picked up from the organisation's premises by vendor support or be delivered to the vendor's support centre?

Maintenance

The aims of maintenance are to:

- preserve ICT systems in optimal condition

- fix problems that happen

- upgrade the existing systems to minimise future risks to the business.

This includes the maintenance of hardware, software and data.

Types of maintenance

Hardware and software maintenance falls into two broad categories:

- Preventative (or routine maintenance)

- Corrective (or non-routine).

Software maintenance also includes:

- adaptive maintenance to adapt the software in line with changes to business requirements (e.g., to make it run on an Intranet)

- perfective maintenance to improve the performance of the software.

It's not only the hardware in an organisation that needs to be maintained – software maintenance is also required. An organisation that has custom-built software needs programmers to maintain it.

Apart from custom-built software, organisations need to maintain other software. There may be patches, version updates, driver updates, etc. to be installed. Upgrading packaged

software across an organisation to standardise software versions is a good way of helping to reduce the level of support and maintenance required.

Maintenance of a hard disk is a form of software/data maintenance. A variety of tools are available for 'cleaning up' a disk, removing unwanted programs and data and backing up data. Protecting the system from viruses and malware is also part of this sort of maintenance.

Preventative maintenance

Specific devices require different preventative maintenance procedures. However, there are a few broad areas that can be considered that require preventative maintenance practices. These include:

- protection of equipment due to changes in electrical supply
- protection from environmental conditions
- protection of data using backups
- protection of data from threats such as viruses, malware and hackers through the use of both hardware and software security measures
- keeping software updated through service packs, patches driver and firmware upgrades
- checking integrity and performance by using diagnostic tools – routine running of any built-in diagnostics and/or checking for display of maintenance messages generated by the device.

Corrective or reactive maintenance

Corrective maintenance refers to actions taken to fix problems after they have happened. To continue with the car example, when you get a flat tyre and have to replace it, this is a simple example of corrective maintenance. You can probably think of many ICT examples, such as replacing a broken cable or fixing software bugs.

Determining maintenance requirements

From the point of view of an ICT Support person, how do you determine exactly what maintenance should be done and how often it should be done? What information should you refer to?

To start with, your organisation will have specific procedures that deal with maintenance and how it is scheduled. These procedures will be either because of, or in conjunction with, the following:

- Organisational policies, for example, a particular procedure may be in place because of your organisation's policy on the management of risk.

- Equipment is covered by warranties and maintenance contracts. These will often involve an agreed level of support for the equipment, also called a service level agreement (SLA).

- Both equipment and software are provided with documentation regarding their handling and maintenance requirements.

- Support is also often provided by phone or website and may even involve the provision of training.

- If you work in ICT support within your own organisation, the service you provide to your internal clients will also be governed by an SLA.

Organisational policies

The maintenance procedures in an organisation will be determined by several factors, including:

- how critical the ICT components and/or software are

- cost constraints

- the risk to business continuity

- pre-existing commitments

- expectations of service by the organisation's business units.

Obtaining components for maintenance

ICT hardware and software are often expensive items. Organisations will usually have policies and procedures in place that outline what is required when obtaining components. This may include considerations such as:

- obtaining initial approval to obtain quotes

- selection criteria of equipment, such as the product requirements (for example, minimum processor speed or monitor size), warranty, training requirements, price and preferred vendors

- purchasing procedures

- approval to purchase.

Performing maintenance

There are many different forms of maintenance that can be performed. The following videos and resources outline some of these.

Watch

Videos: Windows update

Watch the following videos from LinkedIn Learning to learn how to configure for a Windows backup and update:

- Configuring Windows Backup (LinkedIn Learning 03:43 mins)
- Configuring Windows Update (LinkedIn Learning 02:19 mins)

Watch

Videos: Diagnostic tools

Watch the following videos from LinkedIn Learning to learn how to use some Windows diagnostic tools:

- Running the memory diagnostic (LinkedIn Learning 02:02 mins)
- Working in the Disk Management Console (LinkedIn Learning 04:05 mins).

Resources

Additional resources on diagnostic tools

Read through the following articles to learn more about diagnostic tools for Windows, including third party tools:

- 13 Windows Diagnostics Tools to Check Your PC's Health

- [How to use the Windows 10 System Diagnostic Report to gather troubleshooting info on the fly](#)

✏️ Practice activity

In these activities you'll be performing diagnostic functions either on your computer or in a virtual environment. To set up a virtual environment, follow the instructions in the support document (Cl_ICTAnalysis_SW_Appx2.pdf).

Activity 22: Use memory diagnostic tool

Estimated duration: 20 minutes

1. Use the Windows memory diagnostic tool to check memory errors on your computer or virtual machine.

Activity 23: Optimise the hard drive

Estimated duration: 15 minutes

1. Perform the following steps to optimise the hard drive.

    a. Either search for defrag/optimise drives, or go to Control Panel > Administrative Tools > Defragment and Optimise Drives.

    b. Select drive and click Optimise.

Activity 24: Free up disk space

Estimated duration: 15 minutes

1. Perform the following steps to free up disk space:

    a. Search for Disk Cleanup, or go to Control Panel > Administrative Tools > Disk Cleanup.

    b. Select the drive and click OK.

    c. After analysis, select required files and click OK.

Storage and handling of used components

Used components may need to be either disposed of or stored for future use. When disposing of e-waste, it's important that organisational and environmental guidelines are followed.

Manufacturer's requirements

When handling computer equipment, you need to follow the manufacturer's guidelines on handling and storage. The most obvious place to find that information is the User Guides/Manuals that accompany the product.

One of the best ways to locate the current information is the manufacturer's website. Apart from documentation, you can also access online user groups.

Moving computer hardware

Care should be taken when moving computer hardware due to the sensitive nature of many components, particularly hard disks. When moving computers, always ensure that they are shut down. Give the hard disk drive platters several seconds to stop spinning before moving the device to prevent a disk head crash.

Storing equipment

You will find that manufacturers will almost invariably require that equipment should be stored in the same packaging in which it was delivered. While this is valid in principle, often it can be impractical. Empty packaging can consume significant storage space, which may not seem justifiable on a cost basis. However, if you don't have on-site support to return equipment to the supplier, you'll need enough to cover the basics. For example, if you have five printers from one manufacturer, you may choose to keep the packaging of one printer.

When storing equipment, you must consider the factors of temperature, humidity, dust and so on. Although if the equipment is not in use then such factors as temperature are less of an issue than if the equipment were in current use.

If unused or stored equipment is packaged like its original state, this will usually be good enough. Any partially-used consumables like ink or toner cartridges shouldn't be stored but disposed of in the manner prescribed by the manufacturer. While this may seem wasteful, after a short time it's unlikely that the consumables will be in a useable state.

Disposing of equipment

Electronic waste, or e-waste, can and should be recycled wherever possible to avoid adding to landfill. In addition, ICT components that include data should be sanitised before disposal to ensure that any personally identifiable information is removed.

Resources

Additional resources on disposal

Read through the following webpages to learn more about disposing of e-waste:

- E-waste in the workplace Sustainability Victoria
- The Australian Signals Directorate include several pages on secure disposal:
    - ICT equipment sanitisation and disposal
    - Media disposal
    - Media sanitisation
    - Media destruction

Systems maintenance logs

What is a systems maintenance log?

A systems maintenance log, at its most basic, is a document that identifies each maintenance task that has been completed on a particular system. Many of these maintenance tasks are a direct result of a problem being identified on the system. Other tasks, however, may simply be a part of a preventative maintenance schedule or may involve system modifications.

Types of systems maintenance logs

Some systems maintenance logs may be corrective in nature. This means that they detail the maintenance procedures used to solve a particular problem or incident. Other systems maintenance logs may be preventative in nature. This means that they contain a list of maintenance tasks completed as part of a preventative maintenance program. Many systems maintenance logs will contain elements of both of these types of logs.

While some computer systems may require individual maintenance logs, others may share a common log with other maintained computer systems in an organisation.

The media in which logs are stored may also vary. Some logs may be paper based while others may be in electronic form.

What should a systems maintenance log include?

A systems maintenance log contains information that relates to maintenance tasks performed on a system. Many maintenance tasks are performed in response to a specific situation or problem. The maintenance task that is carried out on a system will also involve a procedure that was followed in solving the problem and may require specific resources.

The required format of a systems maintenance log may be based on such things as:

- the design components required to meet the internal business document standards

- proof that authority to perform maintenance procedures was given

- the need to record the time taken to perform the task

- proof that the procedures used in maintenance tasks and their results were referred to appropriate staff

- the contents of a support level agreement which may specify the level of detail required in maintenance log documentation

- the need to collate and analyse information from logs of similar devices

- the requirement to record that specific maintenance tasks were performed on devices according to a maintenance schedule

- confirmation that requirements have been met.

Answers and feedback for practice activities

Practice activity:	Page:
Activity 1: Purpose of policies and procedures	12

Question 1:

In the Dove Recruitment video Why you need Workplace Policies & Procedures (YouTube, 01:56 min) the presenter outlines the importance of policies and procedures in an organisation.

Determine the missing words below:

Answer 1:

Sentence	Answer
[Policies/Procedures/Processes] act as a guiding reference point for the organisation in its day-to-day operations and are expressed in broad terms.	Policies
[Policies/Procedures/Processes] are narrow in focus and aim to describe how, when and who of [policies/procedures/processes].	Procedures processes
[Policies/Procedures/Processes] tell staff how to do something in a way that is acceptable to the organisation and the context in which it operates.	Procedures
[Policies/Processes] follow on from procedures and provide more detail.	Processes

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Determine if the following statements are true or false.

Answer 2:

Statement	Indicate 'True' or 'False'
Providing procedures helps a select group of employees to work to company policy.	F
It is the employer's responsibility to follow policies and procedures.	F
Providing policies and procedures are part of an employer's responsibility in providing a safe workplace.	T
Policies and procedures are commonly published on the organisation intranet, or in a printed or digital form, so that they are easily accessible by employees.	T

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 3:

Why is adherence to organisation policies and procedures important?

Answer 3:

Option	Indicate with 'X'
They help everyone do their job in a standardised way.	X
They explain what everyone is expected to do	X

Because standardisation comes before creativity at work.	
They enable staff members to pick up where someone else left off if they're sick or on leave	X
Productivity is usually higher.	X

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	Page:
Activity 2: Security guidelines	16

Question:

Refer to the Australian Government Information Security Manual and match the recommended network security policies of a typical organisation to their functions.

Answer:

Function	Recommended Guideline
Prevents an adversary from propagating through a network and accessing target data after they have gained initial access	Network segmentation and segregation
Monitors the status of network devices such as switches, routers and wireless access points	Simple Network Management Protocol (SNMP)
Determines whether devices such as switches, routers, wireless access points and internet dongles on a network or connected directly to workstations are rogue or not	Network device register

Helps to implement network segmentation and segregation as long as the networks are all official networks or all the same classification	Virtual Local Area Networks (VLANs)
Prevents users carelessly connecting a network to another network	Network access controls
Reduces the opportunity for an adversary to connect to a network if they can gain physical access to network devices	Disabling unused physical ports

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity: **Page:**

Activity 3: Objectives of the EPBC Act   20

Question 1:

Read the introduction to the National Strategy for Ecologically Sustainable Development Introduction. Which of the following are objectives of the EPBC Act?

Answer 1:

Option	Indicate with 'X'
Enhance the protection and management of important natural and cultural places	X
Provide for the protection of the environment, especially matters of national environmental significance	X

Promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.	X
Conserve biodiversity of the ASEAN region	
Limit the national environmental assessment and approvals process	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Sort the following objectives of the EPBC Act by their attribute – Environment or Biodiversity.

An example would be the objective "enhance the protection and management of important natural and cultural places" belongs to "Environment".

Answer 2:

Objective of EPBC Act	Environment	Biodiversity
Conserve Australian biodiversity		X
Provide a streamlined national environmental assessment and approvals process	X	
Control the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife		X

promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources	X	
recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity		X

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	Page:
Activity 4: WCAG 2.1 for website accessibility testing	23

Question:

Review the WCAG 2.1 Quick Reference for accessibility requirements relating to the four categories perceivable, operable, understandable and robust.

Match the following accessibility principles with a suitable example of a technique that meets the principle.

In the Answer column, write the number of the accessibility principle from Column A that matches the example technique in Column B.

Answer:

Column A – Accessibility principle	Answer	Column B – Example of accessibility technique
5. Principle 1 – Perceivable	3	E. Abbreviations are explained using a glossary
6. Principle 2 – Operable	1	F. An animation on a web page does not flash more than three times per second

Column A – Accessibility principle	Answer	Column B – Example of accessibility technique
7. Principle 3 – Understandable	4	G. HTML tags are opened and closed correctly
8. Principle 4 – Robust	2	H. Alternative text is provided on images

Practice activity: **Page:**

Activity 5: Diversity   26

Question 1:

Visit the Australian Government Business EEO and diversity web page.

Determine if the following statements are true or false.

Answer 1:

Statement	Indicate 'True' or 'False'
Diversity is good for business because it promotes better business performance and employee productivity.	T
A diverse workplace is one where decision making is slow.	F
Diversity encourage staff to be more innovative and think creatively.	T
Research shows that diversity in the workplace is linked to improved staff health and wellbeing.	T
Diversity increases the risk of discrimination and harassment in the workplace.	F
Diversity lowers the risk of discrimination and harassment in the workplace.	T

Feedback type	Comment

Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Which of the following statements are true about diversity in the workplace?

Answer 2:

Option	Indicate with 'X'
Culturally and linguistically diverse (CALD) people can provide better customer service by using their language and cultural skills.	X
People with disabilities tend to take fewer days off.	X
There is evidence that mature aged workers exhibit lower rates of absenteeism.	X
CALD employees cannot provide access to new market segments and networks.	
Constantly changing or setting unrealistic work targets is an example of bullying.	X
Evidence shows that employees with disabilities take more sick leave and don't stay in jobs as long as other workers.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.

General	Thank you for taking the quiz.

Practice activity: **Page:**

Activity 5: Diversity   29

Question 1:

Why is it important to be able to plan your tasks well at the workplace?

Answer 1:

Option	Indicate with 'X'
Being able to plan your tasks well often lets you take off early from work.	
You have a responsibility to deliver the work expected of you, to the required standard and within the required timeframe.	X
Working in ICT support gives you the freedom to decide when to complete individual tasks, but sometimes it's important to know how to sequence tasks appropriately.	X
Planning well ensures that the most important or urgent priorities are tackled first and that time-sensitive activities are completed within the required timeframe.	X
A to-do list is a primitive planning tool that has no place in a modern, connected ICT support workplace.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Imagine you were part of a group working on a communication campaign promoting the use of digital collaborations tools at work. You need to plan the following tasks so the team can deliver the digital media campaign to the required standard and within the required timeframe.

Order the tasks below.

Answer 2:

Task	Order
Upload digital campaign materials to your organisation's channels	9
Design campaign graphics	5
Make necessary changes from Branding/Marketing review	8
Brainstorm campaign concept	1
Have Branding/Marketing review produced materials	7
Shortlist campaign ideas	2
Write the copy	4
Produce campaign	6
Storyboard campaign ideas	3

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:		Page:
Activity 7: Select communication methods		37

Question:

Match the following communication activities with their respective communication methods.

In the Answer column, write the alphabet for Communication methods from Column B that matches the Communication activities in Column A.

Answer:

Column A – Communication activities	Answer	Column B – Communication methods
1. An urgent reply to a client	B	A. Email
2. Reporting on a project to the General Manager	C	B. Telephone
3. Activity update for a colleague	A	C. Face to face meeting
4. Discussion about a project with a new external client	D	D. Formal report

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:		Page:
Activity 8: Formal and informal expressions		39

Question:

Match the following Informal expressions with their respective Formal expressions.

In the Answer column, write the alphabet for Formal expressions that matches the Informal expressions.

Answer:

Informal expression	Answer	Formal expression
1. Hey	C	A. Yours sincerely
2. lol	D	B. want to
3. wanna	B	C. Dear
4. Cheers	A	D. That's funny.

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	**Page:**
Activity 9: Stages of an ICT enquiry	40

Question:

Match the type of response to its corresponding stage of enquiry.

Possible stage of enquiry

A. Resolved – customer got what they wanted

B. Resolved – customer got something different

C. Request for more information

D. Suggestion – workaround

E. Suggestion – better option

F. Still under investigation

G. Request for feedback

H. Customer survey

I. Acknowledge enquiry

Answer:

Type of response	Stage of enquiry
We're still working on your case.	Request for more information
We can't do that, but here's another option.	Suggestion – workaround
We've received your message and we're working on it.	Acknowledge enquiry
We need more information to complete your order.	Request for more information
We can do that, but there is a simpler option.	Suggestion – better option
Were you happy with the resolution?	Customer survey
Were you satisfied with our customer support?	Customer survey
Thanks for working with us! We're closing this ticket now.	Resolved – customer got something different
We've resolved your case.	Resolved – customer got what they wanted

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Feedback:

Note that the answer for the last two "Type of Response" could be either A or B. This is because there isn't enough information provided in the response to understand whether the customer received what they wanted.

Practice activity:	Page:
Activity 10: Obtain feedback	47

Question:

Match the questions to their corresponding types.

Answer:

Questions	Type
Based on a scale of 1 to 10, how would you rate our product?	Quantitative
What are the best practices one should follow to excel in academics?	Qualitative
What are the ways you think are best for a business to grow?	Qualitative
Why are your views about the new smartphone launched in the market?	Qualitative
How many days a week should you work out?	Quantitative
How often do you drink coffee at home?	Quantitative

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	**Page:**
Activity 11: Customer satisfaction surveys	49

Question 1:

Read the Qualtrics article How to use IT help desk surveys to increase satisfaction and answer the following questions about the article.

Which of the following are the reasons for conducting customer satisfaction surveys?

Answer 1:

Option	Indicate with 'X'
To understand the degree of satisfaction of the employee	X
To help the employees resume their work at earliest	
The employees perceive that a brand cares for them as an actual person and not only a customer	
To set objectives for the scope of improvement of an organization	X
To promote your business	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Which of the following are the two commonly used metrics in customer satisfaction surveys?

Answer 2:

Option	Indicate with 'X'
Net Promoter Score (NPS)	
Customer Service Satisfaction (CSS)	
Customer Effort Score (CES)	X
Customer Health Score (CHS)	
Customer Satisfaction (CSAT)	X

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 3:

Which of the following security considerations are crucial while distributing a survey to obtain customer feedback?

Answer 3:

Security consideration	Indicate with 'X'
Ensure that the provider's system is equipped with anti-virus software in the system	
You must use a third-party server to ensure the safety of the customer's data	
You must use a survey software or a CX platform that keeps your customer's data secure	X
Ensure your provider's servers are protected by high-end firewall systems	X
Have time-to-time security updates to protect the customer's data	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.

General	Thank you for taking the quiz.

Practice activity: **Page:**

Activity 12: Feedback metrics   51

Part 1

Question:

Use your own knowledge and experience to rank the list of ICT service metrics.

Rank each item in the order that you think is most important.

Answer:

ICT Service management metrics	Order
First-contact resolution	3
Technician job satisfaction	7
Technician utilisation	4
Customer satisfaction	2
Balanced score	8
Cost per ticket	1
First-level resolution	5
Mean time to resolve	6

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Part 2

Question 1:

Which of the following are the components of operating expense under the ICT service management metrics?

Answer 1:

Option	Indicate with 'X'
Salaries and benefits for indirect personnel	X
Benefits for employee's dependants	
Salaries and benefits for support technicians	X
Facilities expense	X
Special allowances	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Match the following features to their respective metrics.

Answer 2:

Features	Metrics
This metric is the single biggest driver of customer satisfaction	First-contact resolution
This metric is the greatest lever to reduce and contain the cost per ticket	Technician Utilization

This metric is a proxy for total cost of ownership (TCO) and is a critical measure of overall IT support efficiency	First-level resolution

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	Page:
Activity 13: What kind of critical thinker are you?	57

Question 1:

Watch the BBC Ideas video Five simple strategies to sharpen your critical thinking. (YouTube, 4:29 min).

Determine if the following statements are true or false.

Answer 1:

Statement	Indicate 'True' or 'False'
Critical thinking is being able to think clearly and rationally, making logical connections between ideas.	T
Critical thinking requires you to be critical of another person's work.	F
Critical thinking can be developed through actions that help you to reconsider your first judgements.	T
A good critical thinker always has solutions to problems instantly.	F
A key concept in the critical thinking process is not jumping too quickly to a solution.	T

Asking questions is a key characteristic of the critical thinking process.	T

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Match the key characteristics of the critical thinking process with their short descriptions.

Answer 2:

Short Description	Key Critical Thinking Characteristic
Identify the critical questions in a problem, develop possible plans for solving, follow through on those plans, and evaluate both the project's success and the solution.	Problem solving
Demonstrate understanding of facts and ideas by organising, comparing, translating, describing and stating main ideas.	Interpreting
Examine and break information into parts by identifying motives or causes.	Analysing
This action can sometimes lead to dead ends, but it determines the agenda of thinking.	Questioning
Also referred to as critical analysis, often used to emphasise the depth of evaluation required.	Evaluating

Feedback type	Comment
Correct	Congratulations! This is the correct answer.

Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 3:

Which of the following are key characteristics of the critical thinking process?

Answer 3:

Option	Indicate with 'X'
Questioning	X
Meditating	
Analysing	X
Interpreting	X
Problem solving	X
Evaluating	X
Drawing	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	**Page:**
Activity 13: What kind of critical thinker are you?	65

Question 1:

Sort the questions to ask yourself by their key aspect in the RED Model of critical thinking.

An example would be the question "What other ideas should be explored?" belongs to the "Recognise assumptions" aspect.

Answer 1:

Questions to ask yourself	Recognise assumptions	Evaluate arguments	Draw conclusions
What information and facts do you have about this issue?	X		
What does your common sense and experience tell you to do?			X
Who are the key stakeholders and what are their viewpoints?	X		
What are your biases?		X	
What will be the financial impact of your decision?		X	
Is there new evidence that would impact your decision?			X
What risks are associated with your conclusion?			X
Is there someone who has a different opinion that you could run your ideas by?		X	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

What does the three-stage DAE Model of critical thinking stand for?

Answer 2:

Option	Indicate with 'X'
Description	X
Definition	
Assessment	
Analysis	X
Evaluation	X
Examination	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 3:

Sort the questions to ask when thinking through a problem by their stage in the DAE Model.

An example would be the question "What if one factor is removed or altered?" belongs to the "Analysis" stage.

Answer 3:

Question to ask when thinking through a problem	Description	Analysis	Evaluation
How might one factor impact another?		X	
How is this relevant to my project?			X
How does this compare to other research I have read?			X
When and where is this happening?	X		
What is this problem about?	X		

What are the contributing factors to the problem?		X	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity: **Page:**

Activity 13: What kind of critical thinker are you?   73

Question 1:

Search the internet for both scholarly and popular sources for information on emerging technologies and practices relevant to the IT industry. Include the URLs below.

Answer 1:

Question 2:

Evaluate the sources you've located according to suitable criteria to identify their reliability and how reputable they are.

Answer 2:

Practice activity:		**Page:**
Activity 13: What kind of critical thinker are you?		81

Question:

In this group task, you will put your communication skills, questioning techniques and critical thinking skills into practice to assess an ICT tool. Think about the appropriateness of the tool and the context for its use.

For this activity, work with other students in a small group.

Part 1: Scenario

At XYZ company, colleagues in the support team like to get together to map out issues and design solutions to problems using collaborative tools. There are three favourite tools, but no one can agree on which one to use. The tools the team uses are Miro, Lucidchart and Padlet. For this activity, you can also decide to investigate other tools.

2. Create a collaborative spreadsheet in Excel or Google and include the information in the following table. In the last row, include one more feature or function. Discuss this with the group and decide on a feature.

3. In the spreadsheet, name a spreadsheet tab for each tool. You should have three tabs. If you decide to investigate another tool, then insert a tab.

4. Test the features and functions of the tools. (You may need to create an account to use the tool.)

5. For each tool, identify and test the features and functionalities. If one is not present, write N for 'No'. Add some notes about the test and your findings. Then rate the functionality for each feature.

Answer:

Feature #	Feature description	Feature present	Research notes	Rating 1 to 5 (5 is the best)	Weighting factor (1, 2 or 3)	Final weighted score
1	Standard template - variety					
2	Standard template – design quality					
3	Export to other formats (for example pdf, .csv)					
4	Functionality – for example, can upload or create rich media, voice recording, video, map.					

Feature #	Feature description	Feature present	Research notes	Rating 1 to 5 (5 is the best)	Weighting factor (1, 2 or 3)	Final weighted score
5	Stable when working together in real time					
6	Accessibility WCAG specification (check the vendor notes on the web site for the level achieved)					
7	User privacy – for example, login only					
8	Special conditions in the fine print (think about the privacy and data implications)					
9	One more criterion – your choice					

Part 2: Calculate the weighted score

6. When you have finished testing, documenting and scoring the tools, as a group, discuss the results and decide on how important each feature is. Apply a weighting factor, based on your group decision. For each tool, include a weighting factor for each feature in the **Weighting factor column**. A weighting factor of 1 means it is not very important. A weighting factor of 3 means it is very important. You may need to discuss a scope that shows the context or the reason for using the tool.

7. For each collaborative tool, in the spreadsheet, calculate the result for the Final weighted score for each feature. Multiply the rating by the weighting factor to give a final score.

8. Summarise the results in a new spreadsheet that show the total for each tool. Identify two strengths and two limitations.

9. Take a screenshot of the summary of the results for the tools with the weighted score totals and upload it. If you prefer, you can copy and paste in your summary spreadsheet results.

Answer:

Part 3: Scenario – new information about the team

At XYZ Company, one of the colleagues is vision impaired and uses a screen reader to interact with technologies. Consider how this may affect your recommendation for a collaborative tool.

Discuss the following questions with your group. Note down your answers and supporting research (about 200-300 words).

10. How can you ensure that a vision impaired team member can also contribute to the team? Think about how you could find out more information about the key issues. Check your results from the accessibility ratings and notes for each tool.

11. How does this new information affect the choice of each tool?

12. What alternative tools or approaches would you explore to include the vision-impaired colleague? For example, think about how you could check your assumptions, and how you know that your recommendations will work for the user.

Answer:

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Practice activity:	Page:
Activity 13: What kind of critical thinker are you?	87

Question 1:

Review the web page The Essential Eight from PwC Global. It lists eight technologies and their features and uses. The questions below are all related to the web page.

You can draw the futures wheel template on paper, or use an online template. For example this Creately futures wheel template.

Which of the following technologies can help automate trust and create an immutable supply chain?

Answer 1:

Option	Indicate with 'X'
Internet of Things (IoT) and Blockchain	X
Artificial Intelligence (AI) and Robotics	

Artificial Intelligence (AI) and Internet of Things (IoT)	
Robotics and Blockchain	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

What is the convergence theme for Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR)?

Answer 2:

Option	Indicate with 'X'
Extended reality	X
Immersive interfaces	
Working autonomy	
Hyperconnected networks	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 3:

Augmented Reality (AR) is primarily used in _____.

Answer 3:

Option	Indicate with 'X'
Extended reality	
Automating trust	
Immersive interfaces	X
Digital reflection	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 4:

_____ is the primary sector where 3D printing is widely used.

Answer 4:

Option	Indicate with 'X'
Information technology	
Manufacturing	X
Aerospace	
Pharmaceutical	

Feedback type	Comment

Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	Page:
Activity 13: What kind of critical thinker are you?	91

Question 1:

What does the acronym SMART stand for?

Answer 1:

Option	Indicate with 'X'
Simple, Methodical, Achievable, Realistic, Timely/timebound	
Specific, Measurable, Achievable, Realistic, Timely/timebound	X
Specific, Measurable, Actionable, Result-Oriented, Timely/timebound	
Specific, Measurable, Achievable, Relevant, Timely/timebound	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Select the statement that best describes a SMART goal.

Answer 2:

Option	Indicate with 'X'
We will create an AI-based Application Tracker by the end of this quarter, after we shift Talent Management to a digital platform.	X
We will create an AI-based Application Tracker after we shift Talent Management to a digital platform.	
We will create an Application Tracker after we shift Talent Management to a digital platform.	
We will create an AI-based Application Tracker by the end of this quarter.	

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	**Page:**
Activity 13: What kind of critical thinker are you?	100

Question 1:

Read the instructions provided in the support document to set up a free version of Jira Service Management. Based on the instructions given in the document, determine if the following statements are true or false.

Answer 1:

Statement	Indicate 'True' or 'False'

To sign up for Jira Service Management, you need to select Confluence as the second product.	T
The format for entering the site name for your system is *YourFirstnameYourSurname*.	F
Jira Service Management allows you to create a Space for your knowledge base.	F
In Jira Service Management, your ITSM project can be created using the IT service management template.	T

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 2:

Read the Jira Service Management get started guide. Based on the instructions provided in Step 1 of the guide, rank the following instructions in the correct order.

Answer 2:

Instruction	Order
Create your ITSM project	1
Set up email requests	4
Customize your portal	2
Add team members	6
Set up your services	5
Add a logo to your portal	3
Go beyond the basics	7

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question 3:

Read through the instructions on the page Use Confluence as a Knowledge Base and determine if the following statements are true or false.

Answer 3:

Statement	Indicate 'True' or 'False'
You'll need the Create Space global permission to create your knowledge base space.	T
You can use any Jira application to link a Confluence space.	F
You can connect Jira Service Management with Confluence 5.10 or later.	T
Only those users who have a Confluence license can search your knowledge base directly from within the customer portal.	F

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Question:

A user of the Atlassian product Jira is experiencing problems and has posted a query to the community site.

Read the Jira Community post and the response carefully. Focus on critical thinking techniques and the effectiveness of the response. Answer the following questions.

13. Is the response clear and easy to understand?

14. How helpful would you find this response as a Jira user? Why or why not?

15. Does the response consider the level of experience of the user?

16. Search Jira using the term 'Issue deleted' and read through some related entries. Is this issue an example of a known issue, or is it a feature of the product design?

Answer 1:

Practice activity:	Page:
Activity 13: What kind of critical thinker are you?	109

Question:

Read through *Chapter 3* of the **ITIL Heroes Handbook** and determine if the following statements are true or false.

Answer:

Statement	Indicate 'True' or 'False'
The goal of Problem Management is to find the root cause of incidents and reduce the impact on business.	T
You need to analyse patterns and symptoms in the problem identification stage.	F
You need to record basic details related to the problem in the problem analysis stage.	F
In case of a known error, the Helpdesk technician can get back to the user with the workaround/solution.	T
It is the responsibility of helpdesk engineers or frontline support staff to update users about all the activities while closing a problem.	T

Feedback type	Comment
Correct	Congratulations! This is the correct answer.
Partially correct	This is partially correct answer. Please try again.
Incorrect	This is the incorrect answer. Please try again.
General	Thank you for taking the quiz.

Practice activity:	**Page:**
Activity 13: What kind of critical thinker are you?	118

Question:

Use the Windows memory diagnostic tool to check memory errors on your computer or virtual machine.

Answer:

Practice activity:	**Page:**
Activity 13: What kind of critical thinker are you?	118

Question:

Perform the following steps to optimise the hard drive.

    a. Either search for defrag/optimise drives, or go to Control Panel > Administrative Tools > Defragment and Optimise Drives.

    b. Select drive and click Optimise.

Answer:

Practice activity:	**Page:**
Activity 13: What kind of critical thinker are you?	118

Question:

Perform the following steps to free up disk space:

    a. Search for Disk Cleanup, or go to Control Panel > Administrative Tools > Disk Cleanup.

    b. Select the drive and click OK.

    c. After analysis, select required files and click OK.

Answer:

Hyperlinks

Link text	Website links
Security Policies, Standards, Procedures and Guidelines	https://frsecure.com/blog/differentiating-between-policies-standards-procedures-and-guidelines/
Why you need Workplace Policies & Procedures	https://www.youtube.com/watch?v=rYQZskPrBWQ
Six Sigma 'killed' innovation in 3M	https://www.zdnet.com/article/six-sigma-killed-innovation-in-3m/
Six Principles For Creating A Good Corporate Innovation Process	https://www.forbes.com/sites/tendayiviki/2018/03/26/six-principles-corporate-innovation-process/
Australian Copyright Council	https://www.copyright.org.au/ACC_Prod/ACC/Public_Content/Information_Sheets_A-Z.aspx?WebsiteKey=8a471e74-3f78-4994-9023-316f0ecef4ef
Privacy Act 1988	https://www.legislation.gov.au/Details/C2017C00283
Notifiable Data Breaches (NDB) scheme	https://www.oaic.gov.au/privacy-law/privacy-act/notifiable-data-breaches-scheme
New Notifiable Data Breach scheme	https://youtu.be/CmbPkyECiLU
Creative Commons Attribution 4.0 International Licence	https://creativecommons.org/licenses/by/4.0

Link text	Website links
Safe Work Australia	https://www.safeworkaustralia.gov.au/law-and-regulation/model-whs-laws
Work Health and Safety Act 2011	https://www.legislation.gov.au/Details/C2011A00137
Work Health and Safety Act of 2011	https://www.legislation.nsw.gov.au/
SafeWork NSW	https://www.safework.nsw.gov.au/home
NSW Business Chamber Sustainability Toolkit – Offices	http://www.businesschamber.com.au/NSWBC/media/Misc/Policy Documents/Sustainability-Toolkit-Offices.pdf
National Centre for Sustainability, 2006	http://www.ncsustainability.com.au/sustainability/
26–28 per cent on 2005 levels by 2030	https://www.environment.gov.au/system/files/resources/c42c11a8-4df7-4d4f-bf92-4f14735c9baa/files/factsheet-australias-2030-climate-change-target.pdf
Environment Protection and Biodiversity Conservation Act 1999	http://www.environment.gov.au/epbc/about
National Greenhouse and Energy Reporting Act 2007	https://www.legislation.gov.au/Details/C2019C00044
NSW Department of Planning. Industry and Environment	https://www.environment.nsw.gov.au/

Link text	Website links
National Strategy for Ecologically Sustainable Development Introduction	http://www.environment.gov.au/epbc/about
Sustainable ICT Solutions and Services	https://www.fujitsu.com/au/solutions/business-technology/sustainability/
Centre For Accessibility Australia	https://www.accessibility.org.au/
Interaction Design Foundation – What is Accessibility	https://www.interaction-design.org/literature/topics/accessibility
Centre for Inclusive Design – Inspiration series page	https://centreforinclusivedesign.org.au/index.php/inspiration-series/
WCAG 2.1 Quick Reference	https://www.w3.org/WAI/WCAG21/quickref/
Australian Taxation Office	https://www.ato.gov.au/
BBC UK	https://www.bbc.com/news/uk
Radio NZ	https://www.rnz.co.nz/
https://www.rnz.co.nz/	https://www.rnz.co.nz/
Age Discrimination Act 2004	https://www.legislation.gov.au/Details/C2017C00341

Link text	Website links
Australian Human Rights Commission Act 1986	https://www.legislation.gov.au/Details/C2017C00143
Disability Discrimination Act 1992	https://www.legislation.gov.au/Details/C2018C00125
Racial Discrimination Act 1975	https://www.legislation.gov.au/Details/C2014C00014
Sex Discrimination Act 1984	https://www.legislation.gov.au/Details/C2014C00002
Anti-Discrimination Act 1977	https://www.legislation.nsw.gov.au/
Anti-Discrimination Board of NSW	https://www.antidiscrimination.justice.nsw.gov.au/
A quick guide to Australian discrimination laws	https://www.humanrights.gov.au/sites/default/files/GPGB_quick_guide_to_discrimination_laws_0.pdf
report commissioned by the Australian Computer Society	https://www.acs.org.au/content/dam/acs/acs-publications/aadp2018.pdf
Advancing Women in STEM	https://www.industry.gov.au/sites/default/files/2019-04/advancing-women-in-stem.pdf
Australian Government Business EEO and diversity web page	https://www.business.gov.au/people/hiring/equal-opportunity-and-diversity

Link text	Website links
Australian Government Information Security Manual	https://www.cyber.gov.au/acsc/view-all-content/ism/cyber-security-guidelines
Getting Started With Trello	https://www.youtube.com/watch?v=xky48zyL9iA
Trello	https://trello.com/en
Communicating to Drive People to Take Action	https://www.linkedin.com/learning/communicating-to-drive-people-to-take-action?u=57684225&auth=true
Getting Your Ideas Approved	https://www.linkedin.com/learning/getting-your-ideas-approved?u=57684225&auth=true
Creating and Giving Business Presentations	https://www.linkedin.com/learning/creating-and-giving-business-presentations?u=57684225&auth=true
Different Types of Communication and Channels	https://2012books.lardbucket.org/books/an-introduction-to-organizational-behavior-v1.1/s12-04-different-types-of-communicati.html
Communication Foundations	https://www.linkedin.com/learning/communication-foundations-2?u=57684225&auth=true
Writing business reports	https://www.linkedin.com/learning/writing-a-business-report?u=57684225&auth=true
Technical Writing: Reports	https://www.linkedin.com/learning/technical-writing-reports?u=57684225&auth=true
Writing in plain English	https://www.linkedin.com/learning/writing-in-plain-english?u=57684225&auth=true
Skills for Inclusive Conversations	https://www.linkedin.com/learning/skills-for-inclusive-conversations?u=57684225&auth=true

Link text	Website links
Professionalism	https://www.linkedin.com/learning/comptia-a-plus-220-902-cert-prep-1-introduction-to-computers/professionalism?u=57684225&auth=true
Communication	https://www.linkedin.com/learning/comptia-a-plus-220-902-cert-prep-1-introduction-to-computers/communication?u=57684225&auth=true
Plain Language in Spoken Communication	https://www.plainlanguage.gov/resources/articles/plain-language-in-spoken-communication/
Anatomy of a Contact	https://www.linkedin.com/learning/it-service-desk-customer-service-fundamentals/contact-greeting-and-validation?u=57684225&auth=true
Writing effective questions	https://www.linkedin.com/learning/using-customer-surveys-to-improve-service/writing-effective-questions?u=57684225&auth=true
Steps to prepare an effective survey	https://www.linkedin.com/learning/surveymonkey-essential-training/steps-to-prepare-an-effective-survey?u=57684225&auth=true
How to use IT help desk surveys to increase satisfaction	https://www.qualtrics.com/blog/it-help-desk-surveys/
https://www.qualtrics.com/blog/it-help-desk-surveys/	https://www.qualtrics.com/blog/it-help-desk-surveys/
The 8 IT service management metrics that matter most	https://techbeacon.com/enterprise-it/8-it-service-management-metrics-matter-most
Five simple strategies to	https://www.youtube.com/watch?v=NHjgKe7JMNE

Link text	Website links
sharpen your critical thinking	
Right Question Institute	https://rightquestion.org/
Using Questions to Foster Critical Thinking and Curiosity	https://www.linkedin.com/learning/using-questions-to-foster-critical-thinking-and-curiosity?u=57684225&auth=true
LearnHigher	https://www.learnhigher.ac.uk/critical-thinking-and-reflection-tutorial/
The Most Useful Critical Thinking Mental Models to Know About	https://wabisabilearning.com/blogs/critical-thinking/useful-critical-thinking-mental-models
6 Benefits of Critical Thinking and Why They Matter	https://wabisabilearning.com/blogs/critical-thinking/critical-thinking-benefits
Chapter 7: Critical Thinking and Evaluating Information	https://courses.lumenlearning.com/austincc-learningframeworks/chapter/chapter-7-critical-thinking-and-evaluating-information/
Critical Thinking	https://www.linkedin.com/learning/critical-thinking?u=57684225&auth=true
Improving Your Thinking	https://www.linkedin.com/learning/improving-your-thinking?u=57684225&auth=true
Problem Solving Techniques	https://www.linkedin.com/learning/problem-solving-techniques?u=57684225&auth=true
An overview of proposal writing	https://www.linkedin.com/learning/writing-a-proposal/an-overview-of-proposal-writing?u=57684225&auth=true

Link text	Website links
Qualitative vs. Quantitative	https://www.youtube.com/watch?v=2X-QSU6-hPU
Create a bibliography, citations, and references	https://support.microsoft.com/en-us/office/create-a-bibliography-citations-and-references-17686589-4824-4940-9c69-342c289fa2a5
Word Essential Training	https://www.linkedin.com/learning/word-essential-training-office-365-microsoft-365?u=57684225&auth=true
TAFE NSW Researching and Referencing: Referencing skills	https://tafensw.libguides.com/research/referencing
Advice for Students: 10 Steps Toward Better Research	https://www.lifehack.org/articles/communication/advice-for-students-10-steps-toward-better-research.html
How to Prepare an Annotated Bibliography: The Annotated Bibliography	https://guides.library.cornell.edu/annotatedbibliography
Analyzing, Interpreting and Reporting Basic Research Results	https://managementhelp.org/businessresearch/analysis.htm
Google Scholar	https://scholar.google.dk/
arVix.org	https://arxiv.org/
Capturing business information	https://www.linkedin.com/learning/business-analysis-foundations-fundamentals-2014/capturing-business-information?u=57684225&auth=true

Link text	Website links
Evaluating information sources	https://www.youtube.com/watch?v=VfMh9Gd79iU
Evaluating Sources: General Guidelines	https://owl.purdue.edu/owl/research_and_citation/conducting_research/evaluating_sources_of_information/general_guidelines.html
Evaluating Bibliographic Citations	https://owl.purdue.edu/owl/research_and_citation/conducting_research/evaluating_sources_of_information/evaluating_bibliographic_citations.html
Evaluating Digital Sources	https://owl.purdue.edu/owl/research_and_citation/conducting_research/evaluating_sources_of_information/evaluating_digital_sources.html
TechTerms	https://techterms.com/
DP Solutions IT Terminology Glossary	https://www.dpsolutions.com/success-center/it-terminology-glossary
PwC Global	https://www.pwc.com/gx/en/ceo-agenda/ceosurvey.html
Educause Horizon Report	https://library.educause.edu/search
IDEO	https://www.ideo.com/
Singularity University	https://su.org/
Foresight Mindset	https://foresightmindset.com/
Department of Industry, Innovation and Science	https://www.industry.gov.au/data-and-publications/australias-tech-future

Link text	Website links
Digital Transformation Agency	https://www.dta.gov.au/
Australian Bureau of Statistics	https://www.abs.gov.au/Technology-and-Innovation
Business Insider Australia	https://www.businessinsider.com.au/tech
Harvard Business Review	https://hbr.org/
The Enterprisers Project	https://enterprisersproject.com/
CEBIT Australia	https://www.cebit.com.au/
EduTECH	https://www.terrapinn.com/exhibition/edutech-australia/index.stm
SXSW	https://www.sxsw.com/
TED Talks	https://www.ted.com/talks
Gizmodo	https://www.gizmodo.com.au/
Engadget	https://www.engadget.com/
Technorati	https://technorati.com/
The Verge	https://www.theverge.com/
TechRepublic	https://www.techrepublic.com/
Slash Gear	https://www.slashgear.com/
Digital Trends	https://www.digitaltrends.com/

Link text	Website links
The Next Web	https://thenextweb.com/au/
TechCrunch	https://techcrunch.com/tag/australia/
Wired	https://www.wired.com/tag/australia/
TechRadar	https://www.techradar.com/au
8 TED Talks on emerging technologies to watch	https://enterprisersproject.com/article/2019/7/emerging-technologies-8-ted-talks
Emotional intelligence: 7 essential tips for leaders	https://enterprisersproject.com/article/2019/12/emotional-intelligence-7-tips
Design thinking: 5 ways to put it to work in 2020	https://enterprisersproject.com/article/2019/12/design-thinking-5-ways-put-work-2020
Agile project management: 4 lessons learned this year	https://enterprisersproject.com/article/2019/12/agile-project-management-4-lessons
DevOps: Breaking the Development-Operations barrier	https://www.atlassian.com/devops
Bill Gates interview: How the world will change by 2030	https://www.youtube.com/watch?v=8RETFyDKcw0
Steve Jobs: How a Dreamer Changed the World	https://www.youtube.com/watch?app=desktop&v=5fI3zz2cp3k

Link text	Website links
Leading with Innovation	https://www.linkedin.com/learning/leading-with-innovation?u=57684225&auth=true
Business Collaboration in the Modern Workplace	https://www.linkedin.com/learning/business-collaboration-in-the-modern-workplace?u=57684225&auth=true
An effective framework for strategic decision-making	https://blog.hellostepchange.com/blog/an-effective-framework-for-strategic-decision-making
Effective Decision Making – A Framework	https://www.skillsyouneed.com/ips/decision-making2.html
Untangling your organization's decision making	https://www.mckinsey.com/business-functions/organization/our-insights/untangling-your-organizations-decision-making
3 Frameworks For Making Complex Decisions	https://medium.com/swlh/3-frameworks-for-making-complex-decisions-6a77099c9683
Futures Wheel by Jerome Glenn	https://www.toolshero.com/decision-making/futures-wheel-jerome-glenn/
The Essential Eight	https://www.pwc.com/gx/en/issues/technology/essential-eight-technologies.html
Creately futures wheel template	https://creately.com/diagram/example/jmu6vqxw4/Futures Wheel
How Your Organisation Can Identify and Respond to	https://www.translatemedia.com/translation-blog/organisation-identify-respond-technology-megatrends/

Link text	Website links
Technology Megatrends	
How to Assess the Risk of a Change with 5 Simple Questions	https://www.joetheitguy.com/how-to-assess-the-risk-of-a-change-with-5-simple-questions/
Business Impact and Risk Analysis in ITIL Service Design	https://blog.masterofproject.com/business-impact-risk-analysis/
Ch 1. Technology Project Challenges and Approaches	https://www.linkedin.com/learning/project-management-technical-projects/technology-project-challenges?u=57684225&auth=true
What is a SMART Goal?	https://corporatefinanceinstitute.com/resources/knowledge/other/smart-goal/
Digital Transformation	https://www.linkedin.com/learning/digital-transformation-2?u=57684225&auth=true
Ch 2. Planning Your Technology Project	https://www.linkedin.com/learning/project-management-technical-projects/planning-around-your-constraints?u=57684225&auth=true
What is digital transformation?	https://enterprisersproject.com/what-is-digital-transformation
360 Feedback #4: The Johari Window	https://youtu.be/_aF-olRMuoQ
PwC New world. New skills.	https://www.pwc.com/gx/en/issues/upskilling.html
CompTIA 10 Skills You Didn't Know Could Land You an IT Job	https://www.comptia.org/career-change/exploring-it/skills-for-it

Link text	Website links
Jira Service Management	https://www.atlassian.com/software/jira/service-management/free
ManageEngine ServiceDesk Plus	https://www.manageengine.com/products/service-desk/?pos=MEhome&loc=ProdMenu&cat=HD&prev=AB2
Software Advice: Help Desk Software	https://www.softwareadvice.com.au/directory/m112/help-desk/software
Capterra: Help Desk Software	https://www.capterra.com/help-desk-software/
PC Mag: The Best Help Desk Software for 2020	https://au.pcmag.com/cloud-services-1/36293/the-best-help-desk-software-for-2020
Atlassian start page	https://start.atlassian.com/
Jira Service Management get started guide	https://www.atlassian.com/software/jira/service-management/resources/get-started-guide
Use Confluence as a Knowledge Base	https://confluence.atlassian.com/doc/use-confluence-as-a-knowledge-base-218275154.html
posted a query to the community site	https://community.atlassian.com/t5/Jira-questions/Automation-for-Jira-throwing-errors-when-Issue-Deleted/qaq-p/1700365
What is an IT help desk?	https://www.linkedin.com/learning/it-help-desk-for-beginners/what-is-an-it-help-desk?u=57684225&auth=true
Working in a service desk	https://www.linkedin.com/learning/it-service-desk-careers-and-certifications-first-steps/working-in-a-service-desk?u=57684225&auth=true
Interacting with the client	https://www.linkedin.com/learning-login/share?account=57684225&forceAccount=true&redirect=https

Link text	Website links
	%3A%2F%2Fwww.linkedin.com%2Flearning%2Fcollections%2F6585029307616366592%3Ftrk%3Dshare_collection_url%26shareId%3DvEccw8qDQY%252B3fvVbHRjoLA%253D%253D&auth=true
Computer components and peripherals for IT technicians	https://www.linkedin.com/learning/computer-components-and-peripherals-for-it-technicians-3?u=57684225&auth=true
Troubleshooting: Diagnosing errors, incidents and problems	https://www.linkedin.com/learning/it-service-desk-careers-and-certifications-first-steps/troubleshooting-diagnosing-errors-incidents-and-problems?u=57684225&auth=true
Professor Messer CompTIA A+ videos	https://www.professormesser.com/free-a-plus-training/220-1001/220-1000-training-course/
LinkedIn Learning	https://www.linkedin.com/learning/me?u=57684225&auth=true
ITIL Heroes Handbook	https://download.manageengine.com/products/service-desk/itil-whitepaper.pdf
Incident notification fact sheet	https://www.safeworkaustralia.gov.au/doc/incident-notification-fact-sheet
Configuring Windows Backup	https://www.linkedin.com/learning/learning-pc-maintenance-and-performance-2/configuring-windows-backup?u=57684225&auth=true
Configuring Windows Update	https://www.linkedin.com/learning/learning-pc-maintenance-and-performance-2/configuring-windows-update?u=57684225&auth=true
Running the memory diagnostic	https://www.linkedin.com/learning/troubleshooting-common-pc-issues-for-users-2/running-the-memory-diagnostic?u=57684225&auth=true

Link text	Website links
Working in the Disk Management Console	https://www.linkedin.com/learning/troubleshooting-common-pc-issues-for-users-2/working-in-the-disk-management-console?u=57684225&auth=true
13 Windows Diagnostics Tools to Check Your PC's Health	https://www.makeuseof.com/tag/13-windows-diagnostics-tools-check-pcs-health/
How to use the Windows 10 System Diagnostic Report to gather troubleshooting info on the fly	https://www.techrepublic.com/article/how-to-use-the-windows-10-system-diagnostic-report-to-gather-troubleshooting-info-on-the-fly/
E-waste in the workplace	https://www.sustainability.vic.gov.au/recycling-and-reducing-waste/in-a-business/recycle-and-dispose/e-waste-in-the-workplace
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Media destruction	https://www.cyber.gov.au/acsc/view-all-content/guidance/media-destruction
Australian Government Information Security Manual	https://www.cyber.gov.au/acsc/view-all-content/ism/cyber-security-guidelines
Australian Government	https://www.business.gov.au/people/hiring/equal-opportunity-and-diversity

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