Australian Government

Department of Education, Employment and Workplace Relations

ICASAS426A Locate and troubleshoot IT equipment, system and software faults

Release: 1

ISC INDUSTRY SKILLS COUNCILS
Creating Australia's Future

ICASAS426A Locate and troubleshoot IT equipment, system and software faults

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to troubleshoot problems and apply systematic processes to fault finding across a wide range of information and communications technology (ICT) disciplines.

Application of the Unit

This unit applies to any IT practitioner who needs to apply a systematic approach to finding faults, troubleshooting problems and solving issues in a wide range of ICT-related areas.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Choose the most appropriate fault-finding method	1.1 Develop a **troubleshooting process** to help resolve problems
	1.2 Analyse and document the **system** that requires troubleshooting
	1.3 Identify available **fault-finding tools** and determine the most appropriate for the identified problem
	1.4 Obtain the required fault-finding tools
	1.5 Identify **legislation, OHS requirements, codes, regulations and standards** related to the problem area
2. Analyse the problem to be solved	2.1 Collect data relevant to the system
	2.2 Analyse the data to determine if there is a problem and the nature of the problem
	2.3 Determine **specific symptoms** of hardware, operating system and printer **problem**
3. Identify a solution and rectify the problem	3.1 Formulate a **solution** and make provision for rollback
	3.2 Systematically test variables until the problem is isolated
	3.3 Rectify the problem
	3.4 Create a list of probable causes of the problem
4. Test system and complete documentation	4.1 Test the system to ensure the problem has been solved and record results
	4.2 Identify and implement **common preventative maintenance** techniques to support ongoing maintenance strategies
	4.3 Document the signs and symptoms of the problem and its solution, and load to database of problems or solutions for future reference

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
    - liaise with clients
    - negotiate with other team members
    - provide customer service
    - work in teams
- literacy skills to:
    - analyse and evaluate information
    - document outcomes
- planning and organisational skills to:
    - conduct risk analysis for reviewing change procedures
    - maintain the continuity of IT operations and business functions
    - undertake basic training needs analysis
    - technical skills to apply methodology in fault diagnosis.

Required knowledge

- client support and maintenance practices
- current industry-accepted hardware and software products, including features and capabilities
- details of the system under modification
- one or more change-management tools
- quality assurance practices with regard to locating and troubleshooting IT equipment, system and software faults
- change control procedures
- system testing tools
- system's current functionality.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • develop a troubleshooting process • analyse and identify different faults • establish context and background information and determine the likely causes of the fault • obtain suitable tools and equipment and apply simple checks, tests and fault-finding methodology • apply the recommended means to rectify fault.
Context of and specific resources for assessment	Assessment must ensure access to: • system to be diagnosed • diagnostic and fault-finding tools • technical and system documentation • organisational requirements for documenting solution • appropriate learning and assessment support when required • modified equipment for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct observation of candidate locating and rectifying faults • verbal or written questioning to assess knowledge of types of faults and implications • evaluation of written reports prepared by candidate outlining signs and symptoms of the problem, test results interpretation and solution.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Troubleshooting process may include:	• documenting findings, actions and outcomes
	• establishing a theory of probable cause
	• identifying the problem, such as by questioning the user
	• identifying user changes to computer and performing backups before making changes
	• implementing preventative measures
	• implementing the solution
	• planning to resolve the problem
	• testing the theory to determine cause:
	    • if theory is confirmed determine next steps to resolve problem
	    • if theory is not confirmed re-establish new theory or escalate
	• verifying full system functionality.

System may include:	• computer systems • hardware and software components • network • website.

Fault-finding tools may include:	• for networking:
	    • mapping tools
	    • operating system tools
	    • open system interconnection (OSI) layered model
	    • Ping
	    • protocol analysers
	    • Telnet
	    • traceroute
	• for programming:
	    • break points
	    • compilers
	    • debug
	    • trace.

Legislation, OHS requirements, codes,	• environmental considerations, such as: • clean-up protection

regulations and standards may include:	- flashing lights - gas and other hazard detection equipment - identifying other services, including power and gas - noise, dust and clean-up management - safety barriers - safety equipment - stormwater protection - trench guards - warning signs and tapes - waste management - witches hats - OHS and environmental requirements relating to decommissioning and isolating worksite and lines prior to commencement - safe working practices, such as the safe use and handling of: - asbestos - chemicals - materials - special access requirements - tools and equipment - work platforms - suitable light and ventilation.
Specific symptoms may include:	- hardware-related symptoms: - alerts - excessive heat - noise - odours - status light indicators - visible damage, such as cable and plastic - laptop or mobile devices: - issues: - keyboard - pointer - power conditions - stylus - video - wireless card issues - methods: - check LCD cut-off switch - check switch for built-in wi-fi antennas or external

	antennas
	• plug in external monitor
	• remove unneeded peripherals
	• toggle Fn keys or hardware switches
	• verify backlight functionality and pixilation
	• verify power, such as LEDs, swap AC adapter
	• operating system (OS) related symptoms:
	• bluescreen
	• system lock-up
	• input or output device
	• application install
	• start or load
	• Windows-specific printing problems
	• print spool stalled
	• incorrect or incompatible driver
	• printers:
	• manage print jobs
	• print spooler
	• printer properties and settings
	• print a test page
	• use documentation and resources, including:
	• user or installation manuals
	• internet or web-based
	• training materials.
Problem may refer to:	• application
	• network
	• people in the organisation
	• problem with the business
	• system.
Solution may include:	• business processes
	• implementing a new system
	• new hardware and hardware upgrades
	• new software and software upgrades
	• user training.
Common preventative maintenance may include:	• backup procedures
	• ensuring proper environment
	• physical inspection
	• power devices:
	• appropriate source, such as power strip, surge protector or UPS

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	- scheduling preventative maintenance: - check disk - defrag - scandisk - start-up programs - updates: - driver - firmware - OS - security - use of appropriate repair tools and cleaning materials: - compressed air - computer vacuum and compressors - lint free cloth.

Unit Sector(s)

Systems administration and support