Research and design e-learning resources

This unit specifies the competency required to research the requirements for e-learning resources and to design resources based on that research.

Application of the Unit

Learning resources are designed to enhance and support the effectiveness of the learning process. They provide guidance, materials, learning and assessment activities, and relevant information that address the competencies/learning outcomes to be achieved by the learner.

An e-learning resource is any learning resource that is assisted by information and communication technology. This includes but is not limited to web-based and computer-based learning resources, virtual re-creations of vocational contexts, digital collaboration, Internet, Intranet, Extranet, interactive CD-ROM, hand-held computers and satellite broadcast.

- E-learning resources are used to support e-based learning or blended delivery and may be used in conjunction with print-based or other learning resources. The complexity of the e-resource will vary depending on its focus, type and audience. The emphasis is on the clarity and structure of the learning resource and how the technology supports this, not the technology itself.
- This unit focuses on the e-product design. Development of the e-learning resource is addressed separately in TAADES504A Develop and evaluate e-learning resources. Separate competency standards have been developed because these two functions are often undertaken separately and by different team members. Where competency is required across both the design and development phase co-learning and co-assessment is recommended.
- TAADES503A Research and design e-learning resources and TAADES504A Develop and evaluate e-learning resources are also closely linked with TAADES502A Design and develop learning resources, which focuses on print-based learning resources. Some outcomes and performance requirements of this unit are duplicated in TAADES502A but the overall competency is differentiated by the technological skills and knowledge that are applied and integral to performance. It is recommended that individuals undertake TAADES502A before commencing TAADES503A or TAADES504A.
- The competency specified in this unit is typically required by instructional designers, learning product developers, trainers/ facilitators and training consultants.

Unit Sector

Learning Design
<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>PERFORMANCE CRITERIA</th>
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<tbody>
<tr>
<td>1. Research and interpret the e-learning resource requirements</td>
<td>1.1 The brief, focus and type of e-learning resource is clarified with the client 1.2 The likely target audience/s and the e-learning environment is researched 1.3 The characteristics of the learners/end users are identified and their suitability for e-learning is evaluated 1.4 Existing information which may be relevant is investigated and analysed 1.5 Training Package and/or other relevant criteria are read, interpreted and analysed to determine suitability for e-learning delivery and assessment solutions and the outcomes of this analysis is clarified with the client 1.6 Ethical and legal considerations are identified and acted upon</td>
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<tr>
<td>2. Generate options for e-learning resource</td>
<td>2.1 Standards and guidelines relevant to the design and development of e-learning resources are identified and clarified 2.2 Competency standards or other relevant criteria are interpreted to generate and conceptualise design ideas in conjunction with other people 2.3 Principles of instructional design, other design techniques and learning theory are applied in proposing and selecting suitable ideas for the e-learning resource 2.4 Possible constraints are identified and considered in developing design options 2.5 Materials for the trainer/facilitator are identified and documented 2.6 A preferred design concept is selected and justified as meeting the client requirements</td>
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<tr>
<td>3. Create the design concept</td>
<td>3.1 Critical feedback is sought from relevant persons and is interpreted to modify and improve the design concept, as required 3.2 Collaborative arrangements to finalise the design concept are established, where appropriate 3.3 Sample content is developed which reflects the demonstrated application of e-learning instructional design principles and contains appropriate e-learning activities 3.4 The design demonstrates flexibility of application with contingency pathways integrated and described in the concept 3.5 Learner, trainer/facilitator support mechanisms are built into the design 3.6 A representation of the e-learning resource is created</td>
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4. Finalise the e-learning design concept

4.1 The design concept is reviewed in conjunction with relevant persons
4.2 The review process addresses relevant criteria to ensure relevance to the product and learner needs
4.3 The design concept is adjusted where required and finalised
4.4 The design concept is approved by the client

**KEY COMPETENCIES**

<table>
<thead>
<tr>
<th>Key Competency</th>
<th>Example of Application</th>
<th>Performance Level</th>
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<tbody>
<tr>
<td>Communicating ideas and information</td>
<td>collaborating with others effectively</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>communicating with internal and external stakeholders, clients and teams</td>
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<td></td>
<td>writing clearly when developing the e-learning design</td>
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<tr>
<td>Collecting analysing and organising information</td>
<td>gathering information about the learners</td>
<td>3</td>
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<tr>
<td></td>
<td>organising documentation in a useful way</td>
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<tr>
<td>Planning and organising activities</td>
<td>sequencing the learning appropriately</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>organising learning activities</td>
<td></td>
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<tr>
<td></td>
<td>working to deadlines</td>
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<tr>
<td>Working with others and in teams</td>
<td>working with a project team</td>
<td>3</td>
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<tr>
<td></td>
<td>negotiating ideas and designs</td>
<td></td>
</tr>
<tr>
<td>Using mathematical ideas and techniques</td>
<td>calculating budgets and determining resource allocation</td>
<td>2</td>
</tr>
<tr>
<td>Solving problems</td>
<td>altering the e-learning design as necessary</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>conceptualising a learning plan in a variety of formats, such as writing a plan, using drawings, or describing verbally</td>
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<tr>
<td>Using technology</td>
<td>using technology when designing the product</td>
<td>3</td>
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<tr>
<td></td>
<td>using knowledge of technology to maximise the learner benefits</td>
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**RANGE STATEMENT**

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

The brief may include:
- client proposal
- identified gap in the learning product market
- a tender
- an organisational need
Focus may include:
- a Training Package
- a Training Package qualification/qualifications
- a traineeship/apprenticeship qualification
- an accredited course
- individual competency standards/modules/subjects
- a non-accredited course
- a learning program
- a learning resource to support introduction/implementation of new technology/equipment

Type of e-learning resource may include:
- Training Package toolboxes
- assessment materials
- trainer/facilitator materials
- learner materials
- professional development materials
- generic skills materials
- industry/enterprise specific materials
- self-paced or instructor-led materials

Likely target audience/s must include:
- who the learning resource is for
- what the learning resource is designed to do
- why an e-learning medium is being considered
- how the learning resource will be used
- where learning resource will be used

The e-learning environment may be:
- web-based
- computer-based
- digital collaboration
- virtual environment
- Internet/Intranet/Extranet
- satellite broadcast
- a combination of these environments
- operate through learning or content management systems/platforms, for example:
  - WebCT
  - Blackboard
  - Janison Toolbox

Researched may include:
- Internet research
- questionnaires
- evaluations of existing products
- literature reviews
- interviews
- informal discussions
- focus groups
- workshops
### Characteristics of the learners/ end users may include:
- Level of prior experience/knowledge of content area
- Skill/competency profile
- Technical skills in operating in an e-environment
- Access to the type of computer required for e-learning
- Range and response to previous learning experiences
- Level of education
- Socio-economic background, age, gender
- Current work
- Work culture
- Cultural or ethnic background
- Disability or learning support needs
- Preferred learning styles
- Motivation for learning
- English language, literacy and numeracy needs

### Existing information may include:
- Industry/end user needs
- Industry best practice and culture
- Existing relevant learning and e-learning resources and materials
- Relevant Training Packages/competency standards
- Relevant courses, curriculum, modules
- Workplace procedures, documentation, and requirements
- Industry coverage
- Roles and responsibilities of groups and individuals
- Information from industry experts and advisers

### Other relevant criteria may include:
- Learning/assessment strategy
- Learning outcomes of curriculums
- Accreditation requirements
- Curriculum design
- Occupational health and safety (OHS) implications for delivering the learning strategy

### Ethical and legal considerations may include:
- Contract preparation
- Meeting contractual requirements
- Intellectual property
- Regulatory requirements including OHS
- Organisational requirements
- Equity issues and needs
- Potential legal consequences of false, misleading or incorrect information
Standards and guidelines may include:

- Guidelines for Toolbox Learning Materials
- ANTA Guidelines for Training Package Support Materials
- Training Package competency standards
- Preferred Standards to Support Cooperation in Applying Technology to Vocational Education and Training
- Web Accessibility Guidelines for content from the World Wide Web Consortium (interoperability)
- requirements under the Australian Quality Training Framework (AQTF) for access and equity
- legislative requirements relating to:
  - disability discrimination
  - equal opportunity
  - racial discrimination
  - sex discrimination

Other people may include:

- colleagues/team members
- the client
- staff of Industry Skills Councils/advisory bodies
- supervisors/coordinators
- project reference groups
- technical specialists

Instructional design principles may include:

- the need for learner-centred activities and interactivity
- the need for collaborative learning opportunities
- the need for authenticity in learning and assessment activities
- presenting material in a logical order and sequence and in order of increasing difficulty
- opportunities for review of material and repetition
- inclusion of a variety of approaches and techniques for presenting information and activities and for encouraging participation by learning
- structure of the information
- ensure learning is embedded in a realistic and relevant context
- what happens if the learner makes a mistake (feedback)
- how to get help
- techniques to engage the learner in learning

Other design techniques may include:

- creative thinking, for example:
  - brainstorming
  - mind mapping
  - scenario setting
  - lateral thinking
- visual/graphic design, for example:
  - format
  - composition
  - balance
  - typography
  - images/graphics
  - charts/diagrams
Learning theory may include:
- cognitive learning theory
- behavioural learning theory
- information processing theory
- andragogy
- problem-based learning

Constraints may include:
- limits of the technology and what types of things it can do
- financial limitations to achieve proposed options
- low levels of information technology (IT) skills of trainers/facilitators and intended learners/end users
- anticipated difficulties due to language, literacy and numeracy skills of learners/end users
- limited access of intended learners/end users to the necessary technology
- logistical issues
- access to relevant technical/subject matter experts

Materials may include:
- trainer/facilitator guide
- technical guide
- guide to using the learning resource

Critical feedback may be from:
- instructional designers
- graphic designers
- information technology experts
- intended learners/end users
- communication experts
- audio-visual experts
- language, literacy and numeracy specialists
- programmers
- IT help desk personnel
- the client
- project stakeholders
- members of the reference group
- critical friends

Appropriate e-learning activities may include:
- tutorials
- quizzes
- case studies
- images
- audio
- problems
- interviews
- projects
- tasks
- web-based role-play
- e-games for learning
- simulation
- checklists
- online discussions
- work-based practice activities
Learner, trainer/facilitator support mechanisms may include:

- telephone hotline for technical support
- email facilities
- regular learner contact with trainer/facilitator or tutor
- opportunities for feedback
- instructions
- orientation/induction
- schedules
- procedures

A representation of the e-learning resource may be:

- proof of concept
- web site shell
- diagrammatical representation
- sketches
- samples of other similar e-learning products
- product brief
- storyboard, for example:
  - PowerPoint presentation
  - html or handwritten show board

Relevant criteria may include:

- benchmarks/learning outcomes are achievable through e-learning
- design is relevant to targeted learners
- design is easy to navigate/use
- design encourages participation and engagement
- design motivates and provides effective learning resources
- design provides opportunities for learner reflection and collaboration
- design meets needs of client
EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of assessment followed by identification of specific aspects of evidence that will need to be addressed in determining competency. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the TAA04 Training and Assessment Training Package.

To demonstrate competency against this unit candidates must be able to provide evidence that they can research and design a e-learning resources that address the competency standards to be achieved (or learning outcomes derived from the competency standards), and that reflect the application of instructional design principles and other relevant principles, standards and guidelines in conceptualising the design.

The e-learning resource must meet the needs of the client and end user, be creative, easy to navigate and suitable for the learning content and the target audience. Collaboration with others in creating and finalising the design must be demonstrated.

Required knowledge includes:

- language, literacy and numeracy appropriate for the learner group
- cultural and educational background of the learners
- design features which facilitate access to e-learning by range of likely user groups, for example:
  - people with a hearing impairment
  - those with language, literacy and numeracy needs
- IT principles, for example:
  - Internet
  - technology capabilities
  - e-learning methodologies and vocabulary
- how to create an effective learning experience using electronic technology, e.g. using:
  - multiple perspectives
  - opportunities for reflection
  - opportunities for collaborative learning
  - authentic assessment
  - incremental learning
  - variety
  - organisation
  - best practice design
- a range of e-learning environments and their application in designing e-learning resources
- differences in e-learning mode versus face-to-face mode, for example:
  - ways of communicating electronically versus face-to-face for the learner and deliverer
  - electronic terms and new language that makes reference to specific functions of e-learning
  - ways of sharing information and collaborating electronically that differ from face-to-face learning
- instructional design for electronic materials, for example:
  - systematic instructional strategies
  - learning design principles
  - criterion-referenced test items
• order of increasing difficulty
• opportunities for review of material and repetition
• the need for interactivity
• inclusion of a variety of approaches and techniques for presenting information and activities
• structure of the information
• what happens if the learner makes a mistake
• how to get help
• techniques to hold the user’s attention

• project management, for example:
  • time management
  • team management
  • meeting budgets
  • administration

• relevant policy, legislation, codes of practice and national standards including Commonwealth and state/territory legislation, for example:
  • design of e-learning resources to meet worldwide accessibility and usability guidelines
  • copyright and privacy laws relating to electronic technology
  • security of information
  • plagiarism
  • competency standards
  • licensing
  • industry/workplace requirements
  • duty of care under common law
  • anti-discrimination including equal opportunity, racial vilification and disability discrimination
  • workplace relations
  • industrial awards/enterprise agreements

• OHS relating to the work role, and OHS considerations to include in the design of the e-learning resource
• OHS obligations of the training and/or assessment organisation, the trainer/facilitator and learner
Required skills and attributes include:

- representing an e-learning design in a variety of ways, for example:
  - describing the learner’s pathway through a program to a designer
  - writing the e-learning pathways in a report
  - describing the e-learning pathways in a sketch or drawing
  - referring to examples of other e-learning products with similar attributes to the desired online outcome
- learning, using and understanding electronic technology
- anticipating or predicting risks and plan contingencies
- ability to design e-learning resources in alignment with AQTF requirements e.g. if designing resources to support Training Packages
- collaboration skills to:
  - work with vendors and consultants
  - share ideas and information
  - seek feedback on the e-learning design
- research skills to:
  - determine the suitability of the learning content for electronic development
  - identify constraints, resources, standards and guidelines required to design and develop e-learning resources
  - generate options for the e-learning resource
- communication skills to:
  - negotiate
  - solve problems
  - listen to others
  - adjust personal use of technical language to meet others level of understanding

Products that could be used as evidence include:

- a design plan
- documentation of ideas generated
- documentation of briefs developed
- consultations and collaboration with others
- feedback from clients/learners
- demonstration web site
- CD-ROM

Processes that could be used as evidence include:

- description of the final e-learning resource
- how learning outcomes were addressed in the design and why
- how instructional design principles were maintained
- how evidence gathering opportunities were incorporated and why

Resource implications for assessment include:

- computer system and other technology
- support personnel
The collection of quality evidence requires that:

• assessment must address the scope of this unit and reflect all components of the unit i.e. the Elements, Performance Criteria, Range Statement, Evidence Requirements and Key Competencies
• a range of appropriate assessment methods/evidence gathering techniques is used to determine competency
• evidence must be gathered in the workplace whenever possible. Where no workplace is available, a simulated workplace must be provided
• the evidence collected must relate to a number of performances assessed at different points in time and in a learning and assessment pathway these must be separated by further learning and practice
• assessment meets the rules of evidence
• a judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated

Specific evidence requirements must include:

• a minimum of one completed design concept for an e-learning resource which reflects the outcomes and performance requirements of the unit and which demonstrates application of the specified knowledge and skills required to demonstrate the performance requirements

Integrated assessment means that:

• this unit can be assessed alone or as part of an integrated assessment activity involving relevant units in the TAA04 Training and Assessment Training Package. Suggested units include but are not limited to:
  • TAADES504A Develop and evaluate e-learning resources
  • TAATAS503A Manage contracted work.