



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **CUVDES404A Research and apply techniques in product design**

**Release: 1**

## CUVDES404A Research and apply techniques in product design

### Modification History

Version	Comments
CUVDES404A	This version first released with <i>CUV11 Visual Arts, Craft and Design Training Package version 1.0</i>

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to research and apply techniques for the design of products. It involves interpreting work briefs, organising resources, testing ideas, and refining approaches to a range of design challenges. The unit covers the design process to the point of producing prototypes of products.

### Application of the Unit

Individuals who generate product design ideas apply the skills and knowledge in this unit. Products could be diverse and may include items, such as soft furnishings, furniture, toys, decorative objects and kitchenware.

Skills associated with producing the final product can be found in units related to specific disciplines, e.g. carpentry, woodworking, ceramics, glasswork, textiles or furniture making. These units can be found elsewhere in CUV11 Visual Arts, Craft and Design Training Package, or in other Training Packages, such as LMF02 Furnishing; MSA07 Manufacturing; LMT07 Textiles, Clothing and Footwear; and CPC08 Construction, Plumbing and Services. At this level, research, experimentation and ongoing refinement are used to produce a range of design work where an individual is beginning the process of finding an individual style. Work is undertaken independently with supervision and guidance as required.

### Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

### Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

### Elements and Performance Criteria Pre-Content

<b>Element</b>	<b>Performance Criteria</b>
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>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.</i>

## Elements and Performance Criteria

<p>1. Interpret product design briefs</p>	<p>1.1 Interpret the <i>specifications</i> of design <i>briefs</i></p> <p>1.2 Take user or client requirements into account when making decisions about designing <i>products</i></p> <p>1.3 Clarify issues about specifications, <i>parameters and constraints</i> with relevant people as required</p> <p>1.4 Research and evaluate <i>information</i> pertinent to briefs</p>
<p>2. Organise resources for product design</p>	<p>2.1 Identify resources required to develop prototypes of products, including <i>work space, materials, tools and equipment</i></p> <p>2.2 Prepare and care for resources according to requirements</p> <p>2.3 Follow storage and inventory procedures</p>
<p>3. Test product design approaches</p>	<p>3.1 Produce <i>preliminary visual representations</i></p> <p>3.2 Identify possible <i>approaches</i> and establish <i>criteria</i> for selecting final approach</p> <p>3.3 Select appropriate materials, tools and equipment and <i>test</i> approaches and <i>techniques</i></p> <p>3.4 Evaluate testing processes against criteria and select the approach that best meets the requirements of briefs</p> <p>3.5 Critique own work and seek feedback as required</p> <p>3.6 <i>Refine</i> and <i>document the approach</i> to product design based on testing and evaluation</p>
<p>4. Make prototypes of products</p>	<p>4.1 Evaluate the need for object fabrication</p> <p>4.2 Select and organise materials, tools and equipment for fabrication according to design approach</p> <p>4.3 Safely make the prototype or sample ensuring consistency with design concepts and briefs</p> <p>4.4 Respond positively to feedback and refine work as required</p> <p>4.5 Present prototypes within agreed timeframes</p>

## Required Skills and Knowledge

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

### Required skills

- communication skills to engage with others about approaches to product design
- initiative and enterprise skills to experiment with techniques for product design
- learning skills to refine and improve a range of techniques
- literacy skills to:
  - interpret design briefs
  - research product design information
- numeracy skills to calculate material requirements and costs associated with producing products
- self-management and planning skills to plan work tasks
- technical skills to evaluate, adapt and integrate a range of techniques into the design and prototyping of products
- technology skills to search the internet for information to assist with the design of products.

### Required knowledge

- role of experimentation in designing products
- work and ideas of other product designers in one or more areas of product design
- formal elements and principles of design as they relate to product design in general, as well as to the design of specific products
- techniques, materials, tools and equipment and their application to product design and manufacture
- common formats and features of briefs relating to the design of products
- history and theory of design in relation to product design
- intellectual property issues and legislation and their impact on the design industry
- sustainability considerations for product design
- OHS requirements for the design of products in the relevant context.

## 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.*

<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• test and use a range of approaches and techniques for the design of products in response to a brief</li> <li>• produce a prototype of at least one product</li> <li>• apply knowledge of the processes and techniques used to design products.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>• briefs on which to base the design of products</li> <li>• equipment and tools used to produce prototypes of products.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• direct observation of design or prototyping work in progress, including exploration of, and experimentation with, techniques</li> <li>• evaluation of items designed by the candidate</li> <li>• questioning and discussion about the candidate’s intentions and the work outcome</li> <li>• review of portfolios of evidence</li> <li>• review of third-party reports from experienced practitioners.</li> </ul> <p>Assessment methods should closely reflect workplace demands (e.g. literacy) and the needs of particular groups (e.g. people with disabilities and people who may have literacy or numeracy difficulties, such as speakers of languages other than English, remote communities and those with interrupted schooling).</p>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>• BSBDES401A Generate design solutions</li> <li>• BSBDES402A Interpret and respond to a design brief.</li> </ul>

## 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.*

<b><i>Specifications</i></b> may refer to:	<ul style="list-style-type: none"> <li>• medium</li> <li>• purpose</li> <li>• style</li> <li>• target users of products.</li> </ul>
<b><i>Briefs</i></b> are usually prepared by a commissioning body or organisation and may be:	<ul style="list-style-type: none"> <li>• diagrammatic</li> <li>• verbal</li> <li>• visual</li> <li>• written.</li> </ul>
<b><i>Products</i></b> may include:	<ul style="list-style-type: none"> <li>• architectural fixtures and fittings</li> <li>• furnishings</li> <li>• furniture</li> <li>• hardware</li> <li>• household and garden products</li> <li>• kitchenware</li> <li>• tableware</li> <li>• toys.</li> </ul>
<b><i>Parameters and constraints</i></b> may refer to:	<ul style="list-style-type: none"> <li>• budgeting and financing requirements</li> <li>• conditions for use of products</li> <li>• cost of production</li> <li>• number of items</li> <li>• setting</li> <li>• timeframes.</li> </ul>
<b><i>Relevant people</i></b> may include:	<ul style="list-style-type: none"> <li>• clients</li> <li>• colleagues</li> <li>• industry practitioners</li> <li>• managers</li> <li>• mentors</li> <li>• supervisors.</li> </ul>
<b><i>Information</i></b> may be about:	<ul style="list-style-type: none"> <li>• considerations, such as:                             <ul style="list-style-type: none"> <li>• contractual</li> <li>• copyright</li> <li>• ethical</li> <li>• legal</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• technology</li> <li>• design standards</li> <li>• health and safety</li> <li>• industry standards</li> <li>• material characteristics and capabilities.</li> </ul>
<p><i>Work space</i> needs may include:</p>	<ul style="list-style-type: none"> <li>• dust extraction</li> <li>• lighting</li> <li>• process-specific space needs</li> <li>• ventilation</li> <li>• wet and dry areas.</li> </ul>
<p><i>Materials</i> may include:</p>	<ul style="list-style-type: none"> <li>• acrylic</li> <li>• binders</li> <li>• cardboard</li> <li>• clay</li> <li>• extenders</li> <li>• fabric</li> <li>• fibre</li> <li>• glass</li> <li>• glazes</li> <li>• inks</li> <li>• lacquers</li> <li>• latex</li> <li>• leather</li> <li>• metal</li> <li>• nails</li> <li>• oxides</li> <li>• paints</li> <li>• paper</li> <li>• plaster</li> <li>• plastics</li> <li>• pulp</li> <li>• resins</li> <li>• rubber</li> <li>• sand</li> <li>• screws</li> <li>• sheet metal</li> <li>• spun fibre</li> <li>• stains</li> <li>• stone</li> <li>• wire</li> <li>• wood and wood-based products.</li> </ul>



<p><b><i>Tools and equipment</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• bobbins</li> <li>• brushes</li> <li>• ceramics equipment</li> <li>• computer hardware and software</li> <li>• hand-printing equipment and digital printers</li> <li>• hand tools</li> <li>• hooks</li> <li>• kiln and kiln furniture</li> <li>• loom</li> <li>• measuring tools</li> <li>• moulds and casting equipment</li> <li>• needles</li> <li>• pins</li> <li>• power tools</li> <li>• receptacles</li> <li>• sewing machine</li> <li>• smithing equipment</li> <li>• soldering iron</li> <li>• spatulas</li> <li>• welding equipment.</li> </ul>
<p><b><i>Preliminary visual representations</i></b> may involve:</p>	<ul style="list-style-type: none"> <li>• computer-aided drawing</li> <li>• mock-up</li> <li>• sketching</li> <li>• technical drawing.</li> </ul>
<p><b><i>Approaches</i></b> may encompass:</p>	<ul style="list-style-type: none"> <li>• aesthetic and stylistic considerations</li> <li>• choice of medium and materials</li> <li>• design solutions</li> <li>• parameters of the brief.</li> </ul>
<p><b><i>Criteria</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• access to materials, tools and equipment required for making products</li> <li>• access to specialist fabricators</li> <li>• consistency with product briefs</li> <li>• ease of manufacture</li> <li>• personal affinity with medium and materials.</li> </ul>
<p>Strategies to <b><i>test</i></b> techniques may involve:</p>	<ul style="list-style-type: none"> <li>• exploring techniques by making practice pieces, test pieces, mock-ups or samples</li> <li>• testing materials by applying stress tests and colour tests.</li> </ul>
<p><b><i>Techniques</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• binding</li> <li>• cabinet making</li> <li>• carpentry</li> <li>• casting</li> </ul>

	<ul style="list-style-type: none"> <li>• ceramics and glass forming</li> <li>• digital imaging</li> <li>• fusing</li> <li>• knotting</li> <li>• leatherwork</li> <li>• metalwork</li> <li>• moulding</li> <li>• photography</li> <li>• printing</li> <li>• sewing</li> <li>• smithing</li> <li>• weaving.</li> </ul>
<p>Process followed to <i>refine</i> the design approach may involve:</p>	<ul style="list-style-type: none"> <li>• adjustment to design considerations</li> <li>• adjustment to design solution</li> <li>• adjustment to use the extended capabilities of the techniques.</li> </ul>
<p>Process used to <i>document the approach</i> may involve:</p>	<ul style="list-style-type: none"> <li>• final drawings</li> <li>• illustrations</li> <li>• material samples</li> <li>• models</li> <li>• photographs</li> <li>• plans</li> <li>• specifications for fabrication</li> <li>• written rationale or description.</li> </ul>

## Unit Sector(s)

Design – design process