



Australian Government

Department of Education, Employment and Workplace Relations

LMFFDT4004A Assess environmental impact of a design

Revision Number: 1

LMFFDT4004A Assess environmental impact of a design

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit specifies the outcomes required to assess the environmental impact of a design, recording its energy consumption, waste and material sustainability.
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Application of the Unit

Application of the unit	<p>This unit supports the attainment of skills and knowledge required for assessing design sustainability at all stages of production, product use and disposal or recycling. These skills and knowledge are to be used within the scope of the individual's job and authority.</p> <p>This unit requires employability skills in planning and organising and problem solving in order to assess environmental impact at all stages of production, use and disposal. Communication skills are used to interpret information and complete documentation. Initiative and enterprise is required to make judgement about environmental impact based on information.</p>
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the Evidence Guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess raw sources of material	1.1. Applicable OHS, legislative and organisational requirements relevant to assessing the environmental impact of a design are verified and complied with 1.2. Design brief is reviewed, confirmed and clarified with appropriate personnel 1.3. Communication with others to complete assessment is established and maintained 1.4. Materials are assessed from their source taking account of where they derived from, their processing techniques and energy used to obtain them 1.5. Materials are assessed for their ecological and environmental impact 1.6. Materials are assessed for their availability and sustainability
2. Assess the environmental impact of the design	2.1. User needs and desires are assessed and documented 2.2. Material choice and use as stated in the specifications is audited and assessed 2.3. Product lifecycle analysis is evaluated and longevity determined 2.4. Intended manufacturing processes including assembly and finishing are assessed for their impact on the environment 2.5. Final documentation outlining the full analysis of the designs impact on the environment is compiled and produced as a report
3. Assess the manufacturing process	3.1. Production timeline is assessed and energy use measured 3.2. Supply of raw materials for production is analysed and wastage estimated 3.3. Manufacturing process is assessed for equipment and assembly method energy usage and waste 3.4. Component production is analysed to measure energy use and waste 3.5. Finishing requirements are assessed for toxic waste levels and energy usage 3.6. Packaging, despatch and transport arrangements are analysed to measure energy usage 3.7. Final documentation outlining the full analysis of the manufacturing impact on the environment is compiled and produced as a report
4. Assess product	4.1. Ability for all components of product to be recycled are

ELEMENT	PERFORMANCE CRITERIA
potential for recycling	assessed 4.2. Non-recyclable components are identified and potential alternatives determined 4.3. Impact of non-recyclable components on environment is assessed 4.4. Recycling potential of the product is reported in documentation

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- collect, organise and understand information related to environmental impact of materials, processes and products
- communicate ideas, information and research findings
- prepare evaluation documentation
- apply analysis techniques to determine environmental issues
- recognise and respond to circumstances outside instructions or personal competence
- plan activities covering the choice of evaluation method, the preparation and layout of the information
- plan assessment within given task parameters
- accept responsibility for given tasks
- set, monitor and satisfy personal work goals
- satisfy the competency requirements for the job
- maintain current knowledge of materials and processes used in product production
- maintain current knowledge of environmental standards
- seek learning opportunities
- use the workplace technology related to electronic communication and documenting and presenting information.

Required knowledge

- State or Territory OHS legislation, regulations, standards and codes of practice relevant to assessing the environmental impact of a design
- organisational and site standards, requirements, policies and procedures for assessing the environmental impact of a design
- elements and principles of design
- ergonomics and aesthetic values
- types of tools and equipment and procedures for their safe use, operation and maintenance
- characteristics of materials, products, sources and defects
- energy consumption
- forest management and sustainability
- green house emissions
- resource utilisation
- waste and waste management
- computer programs
- product assembly techniques and equipment capabilities
- sketching and drawing
- procedures for the recording, reporting and maintenance of workplace records and

REQUIRED SKILLS AND KNOWLEDGE

information

- appropriate mathematical procedures for estimation and measurement
- environmental protection requirements
- established communication channels and protocols
- problem identification and resolution.

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the relevant Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- Effectively assess the environmental impact of a design from its raw source through manufacture to its end use and disposal and recording of the impact study outcomes
- Effectively measure the impact of design upon the environment
- Effectively produce a report on the impact study outcomes of a product
- Comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for assessing the environmental impact of a design
- Communicate effectively and work safely with others in the work area

Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
- The following resources should be made available:
 - workplace location or simulated workplace
 - materials and equipment relevant to assessing the environmental impact of a design
 - specifications and work instructions

Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Furnishing Industry Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure its correct interpretation and application
- Assessment may be applied under project related conditions

EVIDENCE GUIDE	
	<p>(real or simulated) and require evidence of process</p> <ul style="list-style-type: none">• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances• Assessment may be in conjunction with assessment of other units of competency
Guidance information for assessment	

Range Statement

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 in the Performance Criteria is detailed below. Add any 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.

OHS requirements	<ul style="list-style-type: none"> are to be in accordance with Commonwealth, State or Territory legislation and regulations, organisational safety policies and procedures requirements may include but not be limited to the use of personal protective equipment and clothing, fire fighting equipment, First Aid equipment, hazard and risk control and elimination of hazardous materials and substances, manual handling including lifting and carrying
Legislative requirements	<ul style="list-style-type: none"> are to be in accordance with applicable legislation from all levels of government that affect organisational operation requirements may include but not be limited to award and enterprise agreements, industrial relations, Australian Standards, confidentiality and privacy, OHS, the environment, equal opportunity, anti-discrimination, relevant industry codes of practice, duty of care and heritage
Organisational requirements	<ul style="list-style-type: none"> may include but not be limited to legal, organisational and site guidelines, policies and procedures relating to own role and responsibility, quality assurance, procedural manuals, quality and continuous improvement processes and standards, OHS, emergency and evacuation, ethical standards, recording and reporting, access and equity principles and practices, equipment use, maintenance and storage, environmental management (waste disposal, recycling and re-use guidelines)
Design brief	<ul style="list-style-type: none"> is to include the aims, objectives, milestones for the design project, the point of reference for everyone, elements and principles of design and may include organisational or personal profiles, aims, target audience, budget, timeline, consultation requirements, colour requirements, image requirements and function
Appropriate personnel	<ul style="list-style-type: none"> may include but not be limited to trainers, supervisors, suppliers, clients, colleagues and managers
Communication	<ul style="list-style-type: none"> may include verbal and non-verbal language, constructive feedback, active listening, questioning to clarify and confirm understanding, use of positive, confident and cooperative language, use of language and concepts appropriate to individual social and cultural differences, control of tone of

RANGE STATEMENT	
	voice and body language
Material	<ul style="list-style-type: none"> may include but not be limited to native timber (native and imported), man-made timber products, plastic, metal, alloys, stones, glass, textiles, fibreglass, foam, cardboard, paper products or any other manipulable substance
Sources	<ul style="list-style-type: none"> may include but not be limited to the origin of the raw material including, the type and location wood was derived from, how and where it was processed, graph impact growth and available seasoning lead time, the mining source of metal or alloys and how these were processed, the formulas for the composition of plastics, the origin of textiles and how these were milled
Energy	<ul style="list-style-type: none"> is to include the measure of energy output in correlation to the cost to the environment in terms of electricity, gas or fossil fuel usage
Ecological and environmental impact	<ul style="list-style-type: none"> are to include but not be limited to how the use of raw materials effects the ecology and environment and how its continued use will affect the area it has been sourced from, energy consumption in achieving the material, green house gases created, waste levels, resource utilisation and transport effects. Similarly what impact will be felt by reducing or stopping material from the source
Sustainability	<ul style="list-style-type: none"> is to include the amount of resource widely available based on demand and its capacity to renew or be renewed.
Documentation	<ul style="list-style-type: none"> may include but not be limited to working notes, hand written records, typed information and reports
Product lifecycle	<ul style="list-style-type: none"> is the evolution of a product from its raw source, through its inception, development, manufacture, completion and time as a completed product until potential renewal
Manufacturing process	<ul style="list-style-type: none"> may include but not be limited to the methods by which the product will be produced, these steps usually entail working from working drawings and specifications, producing components utilising machine operations, assembly of the components and finishing techniques
Assembly methods	<ul style="list-style-type: none"> may include but not be limited to nailing, gluing, screwing, welding, pressing, sewing, bonding, jointing or connecting various materials
Finishing	<ul style="list-style-type: none"> may include but not be limited to paints, waxes, lacquers, stains, pigments, oils and plastic coatings
Wastage	<ul style="list-style-type: none"> may include wasting of valuable raw materials, wastage of energy to obtain the raw materials, wastage during the manufacturing process and how waste is or isn't managed

RANGE STATEMENT	
	after it is produced
Equipment	<ul style="list-style-type: none"> • may include but not be limited to hand tools, static machinery, portable power tools and computer numerically controlled equipment • is to include procedures for lock out protecting operators and co-workers from accidental injury by isolating the machine from the power source
Components	<ul style="list-style-type: none"> • may include but not be limited to the parts which make up the whole of a product. Each component is often requires some level of machining to result in the desire part
Packaging and despatch	<ul style="list-style-type: none"> • may include but not be limited to wrapping in fabric, plastic wrapping, shrink wrapping, boxing, foam shells and despatch by mobile means
Transport	<ul style="list-style-type: none"> • may include movement by truck, trailer, train, plane or ship

Unit Sector(s)

Unit sector	Furniture design and technology.
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		