

Food and fibre: Design and Technologies

Design and Technologies

The technologies contexts content descriptions in Design and Technologies provide a framework within which students can gain knowledge and understanding about technologies and design across a range of technologies contexts. These content descriptions focus on the characteristics and properties of technologies and how they can be used to create innovative designed solutions.

The technologies contexts provide a progression of learning from Foundation to Year 8 and optionally to Years 9–10 or lead to more specialised Technologies subjects in Years 9 and 10. They also reflect national priorities including workforce needs, food security and sustainable food and fibre production and health and wellbeing priorities.

Food and fibre production is one of the prescribed technologies contexts. Students will progressively develop knowledge and understanding about the managed systems that produce food and fibre through creating designed solutions. (Food and fibre production includes food specialisations from Foundation to Year 6.) The knowledge and understanding strand and processes and production strand are integrated to enhance learning.

Food and fibre dimensions

Design and Technologies - Years 9 and 10

Year 9

Knowledge and understanding

Content descriptions with elaborations:

Critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved (ACTDEK040)

- recognising the impact of past designed solutions and possible future decisions in relation to creating preferred futures, for example the design of public transport systems that use renewable energy and the design of rural communities to reduce fire risk

Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (ACTDEK041)

- predicting the impact of emerging technologies for preferred futures
- constructing scenarios of how the future may unfold (forecasting) and what impacts there may be for society and particular groups, and back casting from preferred futures

Investigate and make judgements on the ethical and sustainable production and marketing of food and fibre (ACTDEK044)

- examining emerging production technologies and methods in terms of productivity, profitability and sustainability, for example vertical farming, recirculation technologies in aquaculture
- investigating how digital technologies could be used to enhance food production systems, for example global positioning system (GPS) for managing animals, crop sensors or automated animal feeding or milking
- comparing the environmental impacts of intensive and extensive production systems and their contribution to food and fibre production
- investigating the interdependence of plants and animals in food and fibre production

- examining the marketing chain of a range of agricultural products and outlining the effect of product processing and advertising on demand and price
- taking account of animal welfare considerations in food and fibre production enterprises

Processes and production skills

Content descriptions with elaborations:

Critique needs or opportunities to develop design briefs and investigate and select an increasingly sophisticated range of materials, systems, components, tools and equipment to develop design ideas (ACTDEP048)

- critiquing a range of design and technologies ideas, for example assessing those that draw on the intellectual property of others, exploring how well the ideas respond to international and Australian standards

Develop, modify and communicate design ideas by applying design thinking, creativity, innovation and enterprise skills of increasing sophistication (ACTDEP049)

- using techniques including combining and modifying ideas and exploring functionality to generate solution concepts
- undertaking functional, structural and aesthetic analyses of benefits and constraints of design ideas, for example to different communities and environments including those from the countries of Asia
- re-imagining designs to feature emerging technologies

Work flexibly to effectively and safely test, select, justify and use appropriate technologies and processes to make designed solutions (ACTDEP050)

- modifying production processes to respond to unforeseen challenges or opportunities, for example when producing bulk quantities of recipes, lower than average rainfall and impacts on growth, materials with unexpected faults

Evaluate design ideas, processes and solutions against comprehensive criteria for success recognising the need for sustainability (ACTDEP051)

- evaluating and justifying the use and best combination of traditional, contemporary and emerging technologies during project development, including consideration of sustainability, for example farming methods in South-East Asia
- evaluating choices made at various stages of a design process and modifying plans when needed with consideration of criteria for success

Develop project plans using digital technologies to plan and manage projects individually and collaboratively, taking into consideration time, cost, risk and production processes (ACTDEP052)

- creating production flow charts using digital technologies to ensure efficient, safe and sustainable sequences

Year 10

Knowledge and understanding

Content descriptions with elaborations:

Critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved (ACTDEK040)

- recognising the impact of past designed solutions and possible future decisions when creating preferred futures (for example the design of public transport systems that use renewable energy and the design of rural communities to reduce fire risk)

Explain how products, services and environments evolve with consideration of preferred futures and the

impact of emerging technologies on design decisions (ACTDEK041)

- predicting the impact of emerging technologies for preferred futures
- constructing scenarios of how the future may unfold (forecasting) and what impacts there may be for society and particular groups, and back casting from preferred futures

Investigate and make judgements on the ethical and sustainable production and marketing of food and fibre (ACTDEK044)

- examining emerging production technologies and methods in terms of productivity, profitability and sustainability, for example vertical farming, recirculation technologies in aquaculture
- investigating how digital technologies could be used to enhance food production systems, for example global positioning system (GPS) for managing animals, crop sensors or automated animal feeding or milking
- comparing the environmental impacts of intensive and extensive production systems and their contribution to food and fibre production
- investigating the interdependence of plants and animals in food and fibre production
- examining the marketing chain of a range of agricultural products and outlining the effect of product processing and advertising on demand and price
- taking account of animal welfare considerations in food and fibre production enterprises

Processes and production skills

Content descriptions with elaborations:

Critique needs or opportunities to develop design briefs and investigate and select an increasingly sophisticated range of materials, systems, components, tools and equipment to develop design ideas (ACTDEP048)

- critiquing a range of design and technologies ideas, for example assessing those that draw on the intellectual property of others, exploring how well the ideas respond to international and Australian standards

Develop, modify and communicate design ideas by applying design thinking, creativity, innovation and enterprise skills of increasing sophistication (ACTDEP049)

- using techniques including combining and modifying ideas and exploring functionality to generate solution concepts
- undertaking functional, structural and aesthetic analyses of benefits and constraints of design ideas, for example to different communities and environments including those from the countries of Asia
- re-imagining designs to feature emerging technologies

Work flexibly to effectively and safely test, select, justify and use appropriate technologies and processes to make designed solutions (ACTDEP050)

- modifying production processes to respond to unforeseen challenges or opportunities, for example when producing bulk quantities of recipes, lower than average rainfall and impacts on growth, materials with unexpected faults

Evaluate design ideas, processes and solutions against comprehensive criteria for success recognising the need for sustainability (ACTDEP051)

- evaluating and justifying the use and best combination of traditional, contemporary and emerging technologies during project development, including consideration of sustainability, for example farming methods in South-East Asia
- evaluating choices made at various stages of a design process and modifying plans when needed with consideration of criteria for success

Develop project plans using digital technologies to plan and manage projects individually and collaboratively, taking into consideration time, cost, risk and production processes (ACTDEP052)

- creating production flow charts using digital technologies to ensure efficient, safe and sustainable sequences