



AN EDUCATIONAL UNIT FOR JUNIOR SECONDARY SCHOOLS



Producing cattle and sheep... beef and lamb

YEARS 7 & 8

Design and Technologies
and Digital Technologies

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Cover photo courtesy
Meat & Livestock Australia

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The material in this Unit of Work is made available for the purpose of providing access to general information about food and fibre production and primary industries in Australia.



As content of the websites used in this unit is updated or moved, hyperlinks may not always function.

Rationale

This resource material aims to help teachers and students in primary schools investigate and understand more about primary industries in Australia.

The objectives of the educational resources are to:

- Support Primary Industries Education Foundation Australia and its members in expanding awareness about primary industries in Australia by engaging and informing teachers and students about the role and importance of primary industries in the Australian economy, environment and wider community.
- Provide resources which help build leadership skills amongst teachers and students in communicating about food and fibre production and primary industries in Australia.
- Develop educational resources that can be used across Australia to provide encouragement, information and practical teaching advice that will support efforts to teach about food and fibre production and the primary industries sector.
- Educate school students on ways food and animals are raised and grown.
- Demonstrate to students that everyone can consider careers in primary industries and along the supply chain of food and fibre products.
- Assist school students to spread this message to their families and the broader community.
- Develop engaging learning programs using an inquiry process aligned with the Australian Curriculum.
- Develop in school communities, an integrated primary industries education program that emphasises the relationship between food and fibre industries, individuals, communities, the environment and our economy.

These educational resources are an effort to provide practical support to teachers and students learning about food and fibre production and primary industries in schools.

An integrated primary industries education program that emphasises the relationship between food and fibre industries, individuals, communities, the environment and our economy.

The approach used, is the inquiry approach through five phases: Engage, Explore, Explain, Elaborate and Evaluate.

Several key principles underpin the theoretical and practical application to this unit.

In providing an *integrated framework for inquiry*, complemented by rich explorations of texts that are, in turn, supported by an emphasis on undertaking a challenge or task, the unit requires students to:

- Search for information using both digital and non-digital means
- Use research techniques and strategies
- Use thinking and analysis techniques
- Present findings to a real audience, and
- Reflect both on the product created and the process undertaken.

Rather than seeing knowledge as something that *is taught* the emphasis in this unit is on knowledge and understanding that *is learned*.

The unit involves students in:

- Working from a basis of their prior knowledge and experience
- Seeing a real task or purpose for their learning
- Being directly involved in gathering information firsthand
- Constructing their knowledge in different ways
- Presenting their learning to a real audience
- Reflecting on their learning.

The approach used, is the inquiry approach through five phases: **Engage, Explore, Explain, Elaborate** and **Evaluate**. The phases of the model are based on the 5Es instructional model (Bybee, 1997). This unit of work containing student activities assists students to raise questions, gather and process data, make conclusions and take action. These phases are:

- **Engage:** The 'Engage' phase begins with lessons that mentally engage students with an activity or question. It captures their interest, provides an opportunity for them to express what they know about the concept or skill being developed, and helps them to make connections between what they know and the new ideas.
- **Explore:** The 'Explore' phase includes activities in which they can explore the concept or skill. They grapple with the problem or phenomenon and describe it in their own words. This phase allows students to acquire a common set of experiences that they can use to help each other make sense of the new concept or skill.
- **Explain:** The 'Explain' phase enables students to develop explanations for the phenomenon they have experienced. The significant aspect of this phase is that explanation follows experience.
- **Elaborate:** The 'Elaborate' phase provides opportunities for students to apply what they have learned to new situations and so develop a deeper understanding of the concept or greater use of the skill. It is important for students to discuss and compare their ideas with each other during this phase.
- **Evaluate:** The 'Evaluate' phase provides an opportunity for students to review and reflect on their own learning and new understanding and skills. It is also when students provide evidence for changes to their understanding, beliefs and skills.

Source: *Primary Connections* <http://www.primaryconnections.org.au/about/teaching>

Resource description

This unit encourages students to examine aspects of cattle and sheep production and the things that farmers are doing to produce their cattle and sheep sustainably.

Students explore methods and technologies involved in production systems on Australian cattle and sheep farms. Students are given an insight into ways farmers raise cattle and sheep, manage resources, improve sustainability in farm practices, adapt to climate change and produce quality food products.

As the unit progresses, the emphasis shifts to investigating how to produce a documentary, original song, poster or a brochure. Students examine a range of documentary presentations, songs, posters and brochures. They are then encouraged to produce and publish their own presentations considering actual stories as told by industry representatives, and documenting and communicating the industry's opportunities and challenges. Students use technology, including the Internet, to produce, publish and update shared writing products, taking advantage of technology's capacity to link to other information and display material dynamically.

Having explored some of the production systems used, students are then introduced to the challenges of a changing climate in order to investigate potential climate change adaptation options for the cattle and sheep industry.

They think about how a changing climate and sustainability, demands improvements in current production systems to be made in order to reduce reliance on non-renewable and non-recyclable resources. Students investigate current research and development to generate ideas and explore options for producing meat and livestock in the future.

Finally, the students are encouraged to share understandings about production systems used via a presentation to others.

Year levels: 7 and 8

Curriculum focus

It contains a unit of work in **Design and Technologies** with a variety of student activities selected as vehicles to help students:

- Investigate and explore new and existing methods, systems and technologies used on Australian cattle and sheep farms to produce beef and lamb.
- Investigate concepts and ideas about land management, sustainable farming, climate adaptation and sustainability and how these influence the production systems.
- Select ideas and undertake an inquiry.
- Reflect on and evaluate the success of the actions cattle and sheep farmers are taking to improve yields, manage resources sustainably and adapt to climate change.

Teachers will find, as they examine this unit and its student activities that there are some learning areas which are more strongly represented than others. This is a consequence of the subject matter with which students are dealing. Sustainability is the dominant cross curriculum priority, and the Design and Technologies learning area feature strongly in the unit as the topics deal with livestock behaviours and adaptations, factors that shape the production systems used in beef and lamb production, characteristics of these systems and structures, and change. English and critical and creative thinking are featured strongly throughout the activities.

Examine aspects of cattle and sheep production and the things that farmers are doing to produce their cattle and sheep sustainably.

Deep understanding takes time – achieving it is a gradual process that evolves throughout the unit and is facilitated by reflection. This unit invites students to think beyond the information and data they gather and the texts they read and view – to step back from their investigations and do some big picture thinking about environmental, social, economic and political factors that influence the various ways in which global beef and lamb needs are met now and into the future. They discuss farmers, the industry and industry initiatives and how they are taking steps to limit greenhouse gases from their activities, and design sustainable production systems to produce beef and lamb. In many activities, it is suggested the teachers ‘reflect aloud’ and thereby model to students the kinds of questions, language and thinking associated with this task.

Based on Australian Curriculum, Assessment and Reporting Authority (ACARA) materials downloaded from the Australian Curriculum website in February 2015. ACARA does not endorse any changes that have been made to the Australian Curriculum.

Australian Curriculum content descriptions

Design and Technologies

Strand: Design and Technologies knowledge and understanding

Analyse how food and fibre are produced when designing managed environments and how these can become more sustainable [ACTDEK032](#)

Digital Technologies

Strand: Digital Technologies: Processes and production skills

Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness [ACTDIP025](#)

Plan and manage projects, including tasks, time and other resources required, considering safety and sustainability [ACTDIP033](#)

Cross Curriculum Priorities

Sustainability

- OI.2:** All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.
- OI.3:** Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.
- OI.7:** Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.
- OI.8:** Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website on February 2015.

Implementing the unit and activities in the classroom

Using the unit

The unit can be used in a number of ways. It will be of most benefit to teachers who wish to implement a sustained sequence of activities following the inquiry stages identified in the **About the approach** section of this unit and content descriptions in Years 7 and 8 in Design and Digital Technologies as stated in the Australian Curriculum.

Selecting activities

At each stage several activities are suggested from which you are encouraged to select the most appropriate for your purposes. Not all activities in each stage of the unit need to be used. Alternatively, you may add to or complement the suggested activities with ideas of your own.

It is suggested that teachers create a hyperlinked unit. Organise the digital resources for your class's use on a website or wiki or provide them on your interactive whiteboard.

Resourcing the unit

The resources suggested are on the whole, general rather than specific. Schools and the contexts in which they exist vary widely as does the availability of some resources – particularly in remote areas. There is a strong emphasis in the unit on gathering information and data; research and observations also feature strongly as these methods develop important skills and ensure that the exploration of the topics are grounded in a relevant context.




Some YouTube and online videos in addition to Internet based resources are suggested in the unit. You will need to investigate what is available in your school.

Adapting the unit

The unit is targeted at Year 7 and 8 students. This is a suggested age range only and teachers are encouraged to modify activities to suit the needs of the students with whom they are working.

The unit's topics are based on content descriptions of the Australian Curriculum and on the key cross curriculum priority of sustainability. They embrace content that we believe is of relevance and significance to all students. We encourage you to explore ways in which the content can be adjusted to the context in which you are working.

Many of the activities contain the following icons offering a suggestion on how many students should be involved:

-  Suggested for individuals
-  Suggested for pairs or small groups
-  Suggested for larger groups or entire classes

Resource sheets are provided for some activities. Most are for photocopying and distribution to students. They are identified within units in bold italic: **Resource 1.2**.

The resource sheets are designed to assist teachers to facilitate learning without having to access a range of other resources.

What about assessment?

Rather than being a task carried out at the end of the unit, assessment is viewed as integral to the entire unit sequence. Each activity should be regarded as a context for assessment of student learning.

When planning and implementing the unit of work make clear decisions on what you will focus on in assessing learning. The unit provides an opportunity for a range of skills and understandings to be observed. We encourage you to devise an assessment plan or assessment rubric that features areas to be assessed over subsequent lessons.

In planning for assessment, student learning in the following areas can be considered:

- Understandings about the topic.
- Development of skills.
- Exploration and clarification of values.
- Use of language in relation to content.
- Ability to use and critically analyse a range of texts.
- Ability to analyse and solve problems.
- Ability to interpret information, perceive its meaning and significance, and use it to complete real-world tasks.
- Ability to work cooperatively with others.
- Approach to learning (independence, confidence, participation and enthusiasm).

For this unit, the following understandings are provided to assist teachers in planning for assessment.

Assessment strategies

Each stage in the inquiry sequence provides information about student learning. There are, however, two stages in the unit that are central to assessment: the Engage stage and the Evaluate stage. Work that is undertaken in these stages can assist teachers to monitor growth and observe concrete examples of the way student ideas have been refined or have changed through the unit sequence. Work samples should be retained for this purpose.

The unit contains a 'Student Task' which is well suited for assessment, as it is the summation of the work undertaken in the unit.

Some questions and possible answers

Should I do all the activities?

At each stage of a unit, a number of activities are listed. You would not be expected to do them all. Instead, the unit is designed so that a selection of activities can be made at each stage. You should select the activities according to the needs and interests of your students and the time, relevance to the existing school curriculum and resources available to you.

While you are encouraged to follow the suggested inquiry sequence for each unit, it is quite possible to pick and choose from the range of activity ideas throughout the unit. It may also be used in conjunction with other programs you use.

How do these units fit into my weekly program?

Although the unit integrates a range of key subject areas, it is not designed to be a total program. It is assumed that regular routines that operate in your classroom will continue to run alongside your unit of work. For example, you may have regular times for use of the library, for maths, physical education etc. These things don't change – although student's writing topics or choice of topics to research in the library or in Information and Communication Technology classes may be influenced by this unit.

How long should the unit run?

This will of course depend on your particular circumstances but generally, a few weeks to a term are suggested.

I don't know much about cattle and sheep production myself – will I be able to teach it effectively?

Yes! The unit is designed in such a way that you, as the teacher are a co-learner, and you are therefore provided with teacher notes, plus readily available resources that are mainly web-based. Most importantly, you will find that you learn with the students and make discoveries with them.

Fast facts about Australia's cattle and sheep industries

Australia's Beef Industry

Australia is the world's third largest exporter of beef

Around 200,000 people are employed in the red meat industry.

This page provides basic information that may be helpful when you interact with the school students.

- Australia is one of the world's most efficient producers of cattle and the world's third largest exporter of beef. The off-farm meat value of the Australian beef and cattle industry is \$12.3 billion (consumer expenditure plus export value).
- Herd facts and figures:
 - 77,164 properties with cattle (*ABS Agricultural Commodities 2011-12*).
 - 28.5 million cattle and calves (*ABS Agricultural Commodities 2011-12*).
 - The cattle industry involves 57 percent of all farms with agricultural activity.
- People in the industry:
 - Around 200,000 people are employed in the red meat industry, including on-farm production, processing and retail.
- How much is produced?
 - In 2012-13, Australia produced approximately 2.2 million tonnes of beef and veal (*Australian Bureau of Statistics*).
- What is the value of production?
 - The gross value of Australian cattle and calf production (including live cattle exports) is estimated at \$7.4 billion (*ABARES 2012-13*).
 - Cattle contributed 16 percent of the total farm value of \$47.3 billion in 2011-12 (*ABARES Agricultural Commodities June 2013*).
 - The direct contribution of beef and live cattle to Australia's gross domestic product was approximately 1 percent in 2012-13.
- Domestic value and consumption:
 - Domestic expenditure on beef was approximately \$6.6 billion in 2012-13 (*Meat & Livestock Australia estimate*).
 - Australians ate around 32.5 kilograms of beef per person in 2012-13 (*Meat & Livestock Australia estimate*).
 - Around 94 percent of Australian fresh meat buyers purchased beef in 2012-13 (*AC Nielsen Homescan*).
 - In volume terms, beef is the second most popular fresh meat consumed through the foodservice industry after chicken (*BIS Shrapnel*).
- Export value and volume:
 - In 2012-13, Australia exported 67 percent of its total beef and veal production to over 100 countries (*Australian Government Department of Agriculture/Australian Bureau of Statistics*).
 - The value of total beef and veal exports in 2012-13 was \$5.06 billion (*ABS*).
 - Australian live cattle exports were valued at \$590 million in 2012-13 (*ABS*).
 - The beef industry (including live cattle) contributes 13 percent to the total farm export value of \$40 billion (Freight On Board) (*ABARES Agricultural Commodities June 2013*).
- Australia's place in the world:
 - Australia has 3 percent of the world cattle inventory, with India, Brazil and China taking the top three places (*United States Department of Agriculture 2012*).
 - Australia produces 4 percent of the world's beef supply, and is the third largest beef exporter in the world (*United States Department of Agriculture 2012*).
 - Australian farmers are environmental stewards, owning, managing and caring for 49 percent of Australia's land mass. (*Australian Government Department of Agriculture, At a Glance, 2012.*)

Source: *Meat and Livestock Australia*

<http://www.mla.com.au/Cattle-sheep-and-goat-industries/Industry-overview/Cattle>

Australia's Sheepmeat Industry

Australia's is the world's largest exporter of mutton and the second largest exporter of lamb.

The sheepmeat industry accounts for 32% of all farms with agricultural activity.

Australia is one of the world's leading producers of lamb and mutton, the world's largest exporter of mutton and the second largest exporter of lamb. The off-farm meat value of the Australian sheepmeat industry is \$3.9 billion (consumer expenditure plus export value).

- Flock facts and figures:
 - 43,760 properties with sheep and lambs (*Australian Bureau of Statistics Agricultural Commodities 2011-12*).
 - There were 44.9 million breeding ewes, one-year and older, as at 30 June 2012. (*Australian Bureau of Statistics Agricultural Commodities 2011-12*).
 - Prime lamb producers are predominately located in the Riverina, the wheat-sheep zone of New South Wales; the Victorian and New South Wales Murray regions; and the high rainfall areas in south-west Victoria and eastern South Australia.
 - Sheep are primarily located in south-west Western Australia, the south western part of Victoria and the southern part of New South Wales.
 - The sheepmeat industry accounts for 32 percent of all farms with agricultural activity. (*Australian Bureau of Statistics Agricultural Commodities 2011-12*)
 - The total area operated by farms with beef cattle and lambs and sheep is around 47 percent of Australia's land mass.
- People in the industry:
 - Around 200,000 people are employed in the red meat industry, including on-farm production, processing and retail.
- How much is produced?
 - In 2012-13, Australia produced 456,997 tonnes of lamb and 183,157 tonnes of mutton. (*Australian Bureau of Statistics*)
- What is the value of production?
 - The gross value of Australian sheep, lamb and live sheep production is estimated at \$2.3 billion. (*ABARES Agricultural Commodities June 2013*)
 - Lambs and sheep contributed 5 percent of the total farm value of \$47.3 billion in 2012-13. (*ABARES Agricultural Commodities June 2013*)
- Export value and volume:
 - In 2012-13, Australia exported 51 percent of total Australian lamb production and 96 percent of total Australian mutton production. (*Australian Government Department of Agriculture/Australian Bureau of Statistics*)
 - The value of total lamb exports in 2012-13 was \$1.1 billion and for mutton exports was \$511 million. (*Australian Bureau of Statistics*)
 - Australian live sheep exports were valued at \$201 million in 2012-13. (*Australian Bureau of Statistics*)
 - The lamb and sheep industry (including live sheep) contributed around 5 percent to total farm export value of \$37 billion (Freight On Board) in 2012-13. (*ABARES Agricultural Commodities June 2013*)
- Australia's place in the world:
 - Australia produced approximately 6 percent of the world's lamb and mutton supply in 2011. (*Food and Agriculture Organisation of the United Nations*)
 - Australia is second to New Zealand in world lamb exports and is the largest mutton exporter.
 - Australia is the world's second largest live sheep exporter. (*Food and Agriculture Organisation of the United Nations 2011*)

Source: Meat & Livestock Australia <http://www.mla.com.au/Cattle-sheep-and-goat-industries/Industry-overview/Sheep>



Step 1: Engage with the topic

Getting started

Purpose

To provide students with opportunities to:

- engage students in the topic of food, healthy eating, where food comes from
- gather information about their prior knowledge of food production, in particular cattle and sheep farming
- pool ideas and share with others
- organise the ideas they have about cattle and sheep farming
- develop skills in making connections between ideas
- set directions for an investigation
- collate data for assessment purposes.

Many people eat beef and lamb – nutrient-dense foods that provide protein; iron; zinc; and vitamin B12.

Eating foods

Each week many people eat beef and lamb – nutrient-dense foods that provide protein; iron; zinc; and vitamin B12 which is essential for red blood cell production, the good health of the nervous system, as well as childhood growth and development.

Become familiar with the Australian nutritional guidelines and **REVIEW** the types of foods suggested that are healthy to eat.

See page 4 of the *Australian Dietary Guidelines Summary* booklet at:

https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55a_australian_dietary_guidelines_summary_131014.pdf



Invite students to **CONSIDER** their favourite meal and list all the foods that are included in it. **ANALYSE** the meal in terms of the Australian healthy eating guidelines and decide whether the meal is deficient in some of the suggested food groups.

Think, pair, share



Ask students to make a **LIST** of the types of meat that they consume and then **SHARE** this with a partner. As a class list all the different types of meat and **CATEGORISE** words into groups.

EXPLAIN to the students that in this unit they will be investigating how and where beef and lamb is produced in Australia; the systems that are used; how it goes from a paddock to our plates; how and where it is exported; and also how beef and lamb is processed for people to eat.

One story



VIEW a TED Talks by Jamie Oliver, titled 'Teach every child about food' at:

http://www.ted.com/talks/jamie_oliver

https://www.youtube.com/watch?v=go_QQzc79Uc



TALK as a class about why it is important that this unit cover topics like:

- Where our food comes from
- How food is produced
- How food is sometimes processed
- Healthy eating
- Fresh food standards
- Cooking as a life skill
- Food preparation
- The importance of learning about food at school



Talk with the students about what they would like to learn about beef and lamb production in this unit. **RECORD** all ideas and ensure that these are covered in the unit.



Much of the food and materials our community rely on, started their journey as some form of agriculture.



EXPLORE facts and information about beef and lamb production as is currently understood.



Check out YouTube videos about where our red meat comes from and how cattle and sheep farmers are sustainably producing beef and lamb.

See: <http://www.youtube.com/user/Target100AUS>
<http://www.youtube.com/watch?v=1KAPep35VmQ> and
<http://www.youtube.com/watch?v=8bPc8zLVaH0>

Check out a virtual farm too.

See: <http://virtualfarm.mla.com.au/>

Brainstorm 



BRAINSTORM what is known about cattle and sheep farming, and primary industries. **CONSIDER** questions like:

- ‘What do we understand about cattle and sheep farming and beef and lamb production?’
- ‘Are cattle and sheep farming considered to be primary industries?’
- ‘What have we heard about cattle and sheep farming in the media or from scientists, friends or family members?’

DISPLAY brainstorm lists around the classroom. If questions emerge from this activity, record these and display them for reference throughout the unit.

In the news 



ASK students to bring in news clippings, YouTube videos, podcasts or notes from news broadcasts that mention cattle or sheep farming.

Ask them what they understand about the story, including what aspects of farming it discusses, its effects, and future consequences, with respect to themselves and globally.



LIST their ideas on a chart or whiteboard and invite students to **TALK** about the collection of news features found. Ask students if they think their news stories are accurate.

DISCUSS whether the language used is positive or negative? Encourage students to think, reflect and share ideas with others.



Rate the resources 

During the unit, the students will ask many questions. Answers can be found in many different places.



DISCUSS the types of people who might present a good understanding of cattle and sheep farming issues. They might include industry representatives, government officers, farmers, teachers, librarians, researchers, parents and authors of books or websites about cattle and sheep farming. Of course, each of these people would have different sources for their own information. Sources could include magazines, science journals, websites, TED Talks, Apps, personal experiences (anecdotes), newspaper articles, internet sites and television programs.



Step 1: Engage with the topic



DISCUSS how the students could evaluate their sources. They might ask:

- Who is the source’s author?
- Where did they get their information from?
- Why might they be writing this source?
- What language are they using (for example, emotional or informative)?

INTRODUCE students to a number of Australian sources that will be used throughout the unit. Ask students to produce a rating system, such as a 1 to 5 star rating, to describe how reliable or useful the sources found at:

<http://www.mla.com.au/Cattle-sheep-and-goat-industries> are.

Other sources include:

<http://virtualfarm.mla.com.au/>

<http://www.target100.com.au/Farmer-stories>

<http://www.target100.com.au/The-Issues>

Questions, questions...

Use the following ‘Question Grid’ to encourage students to **DEVISE** additional questions during this unit.

| | | | | | |
|-------------|-------------------|--------------|------------|------------|------------|
| What is? | Where/when is? | Which is? | Who is? | Why is? | How is? |
| What did? | Where/when did? | Which did? | Who did? | Why did? | How did? |
| What can? | Where/when can? | Which can? | Who can? | Why can? | How can? |
| What would? | Where/when could? | Which could? | Who would? | Why would? | How would? |
| What will? | Where/when will? | Which will? | Who will? | Why will? | How will? |
| What might? | Where/when might? | Which might? | Who might? | Why might? | How might? |

For example:

- Who is researching cattle and sheep farming in Australia?
- Why is knowing about how cattle and sheep are farmed important?
- How is what we know about cattle and sheep farming changing?
- What did scientists and/or the industry most recently report on regarding the cattle and sheep industries?

At the end of the activities make a list of students’ comments and questions using a table like the one below:

| What we know | What we’re not sure about | What we want to know |
|--------------|---------------------------|----------------------|
| | | |
| | | |
| | | |
| | | |



Physical conditions of the farm environment, and farm management practices used might impact on the production of beef or lamb.

Setting the task 

Note: This is a suggested assessment task.

Explain to the class that they will be using a range of activities and websites about cattle or sheep farms to develop an understanding of:

- Where cattle or sheep are farmed.
- Where our beef and lamb comes from.
- How Australian farmers produce cattle or sheep in different ways.
- How different production designs, systems and technologies are used to farm cattle or sheep.
- How the physical conditions of the farm environment, and farm management practices used might impact on the production of beef or lamb.
- How environmental factors such as climate, soil, water and landforms can support higher yields of cattle and sheep.
- How sustainable farming initiatives impact on farming systems.



Explain to the class that their task is to work in small groups to **COLLECT** and **RECORD** information about either Australian cattle or sheep farms; the production systems used to ensure a quality product; factors that influence the design of the production processes; the system used to move the product from the farm to our plates; and an outline of the range of technologies used to manage the farms; and the farm management practices used.



Explain to the class that their task includes **PRODUCING** and **CREATING** either a 10 minute documentary presentation; **WRITING** and **PERFORMING** an original song; or **DESIGNING** a poster or a brochure incorporating these topics. High, low and no tech options are available to the students – see the options listed below.

Documentary production options:

High Tech: Students can film and edit the video digitally using film equipment and editing software.

Low Tech: Students can make a recording of the script as an audio presentation.

No Tech: Students can perform the script orally using photographs or illustrations for emphasis.

Song production options:

High Tech: Students can write and produce a digital song using software such as GarageBand, accompanied by digital animations to illustrate key points.

Low Tech: Students can record an original song using standard recording equipment, and collect photos and illustrations for a slideshow.

No Tech: Students can perform the song live, and create graphics and illustrations using art materials.



Step 1: Engage with the topic

Poster production options:

High Tech: Students can use block-poster software to transfer high-resolution graphics and pictures to a wall-sized image.

Low Tech: Students can use graphics and photo-editing software to produce a large poster.

No Tech: Students can draw graphics and paste images from the Internet on poster board.

Brochure production options:

High Tech: Students can use software to transfer high-resolution graphics and pictures to a brochure-sized page.

Low Tech: Students can use graphics and photo-editing software to produce a brochure.

No Tech: Students can draw graphics and paste images from the Internet on paper.

THE SCENARIO

There is an array of amazing farmers, farm families and farming communities in Australia with inspiring stories to share about their work that feeds us and many others.

Your team will be gathering and analysing information about such farmers, the production systems they use to grow and produce a quality product; factors that influence the design of the production processes; the system used to move the product from the farm to our plates; an outline of the range of technologies used to manage the farms; and their farm management practices. You will be gathering your information through watching videos, reading, writing, photographing, and possibly interviewing.

Your finished piece of work (a documentary, song, poster or brochure) requires the use of digital technologies. For example, you might use a digital device or make a digitally produced work sample using presentation software, photos and video clips. You are required to include the work sample and researched script or notes on the group's chosen industry. Involvement and ownership of tasks by all team members involved in the production of the work sample is encouraged.

Source: Adapted from Literacy is not enough. 21st Century Fluencies for the Digital Age, page 188.

See **Resource 1.1**.

There is an array of amazing farmers, farm families and farming communities in Australia with inspiring stories to share about their work that feeds us and many others.



Step 2: Explore how cattle and sheep are produced

Explore different media used to communicate the industries

Purpose

To provide students with opportunities to develop their understanding of:

- different samples of documentaries, songs, posters and brochures, and styles used to communicate the cattle and sheep industries
- where cattle and sheep are farmed
- how Australian farmers raise and produce their animals in different ways
- how different production designs, systems and technologies are used to raise cattle and sheep
- how the physical conditions of the farm environment and farm management practices used might impact on the production of beef and lamb
- what they have been asked to do
- a focus for the forthcoming experiences in the 'Explain' stage of the inquiry.

Visit farms



Where possible, coordinate a visit to local cattle or sheep farm to directly **FIND OUT** more about the running of the farm, the systems used, and the opportunities and challenges that are faced. If interested contact the Primary Industries Education Foundation and email:

info@primaryindustrieseducation.com.au

Explore media



Introduce students to a range of documentary style videos, songs, posters and brochures about farming. Ask students to **VIEW** the samples and **CONSIDER** what was compelling or off-putting about the style or format.



Ask students to use a critical eye to look at how the video, song, poster and brochure was styled by the film maker, writer or designer. Begin the task by asking students to choose the industry - cattle or sheep - that they will explore.

Video examples:

Title: Young Farming Champions

Abstract: This interactive digital learning object on young Australian farming champions uses digital information, photos, videos, and case studies/blogs to engage students on the importance of primary industries.

Link: <http://archibullprize.com.au/yfc/ourteam.html>

Title: Farmer Stories

Abstract: This website contains a collection of stories on Australian cattle and sheep farmers who are committed to sustainable production and farm management.

Link: <http://www.target100.com.au/Farmer-stories>

Title: Target 100 YouTube Channel

Abstract: This YouTube Channel contains videos about sustainable sheep and cattle farming.

Link: <http://www.youtube.com/Target100AUS>

Title: Industry Initiatives

Abstract: This website contains research and development projects commissioned by the cattle and sheep industry, and undertaken by Australian universities and research organisations, to improve the sustainability of the beef and lamb industry across the supply chain. The 100 initiatives tackle the issues of water, energy, climate variability, waste, pest and weeds, economics, animal welfare, soil and groundcover, biodiversity and reducing emissions, to ensure Australia continues to lead the way in sustainably producing some of the world's best beef and lamb.

Link: <http://www.target100.com.au/Initiatives>



Step 2: Explore how cattle and sheep are produced

Title: ABC Rural Roundup

Abstract: This website contains a collection of rural news stories.

Link: <http://www.abc.net.au/news/rural/>

Title: Landline

Abstract: This website contains summaries of stories presented by ABC Rural News.

Link: <http://www.abc.net.au/landline/>

Download and listen to songs:

Invite students interested in writing and performing an original song to **SAMPLE** songs that include information about Australian farmers and how they produce food.

Posters and brochures:

SOURCE a number of ideas for posters and brochures from:

<http://www.target100.com.au/>

Explore more about the art of making a documentary

Invite students to **LEARN** more about making a documentary, if needed. See:

- The Five Elements of Documentary
<http://www.dvworkshops.com/newsletters/fiveelements.html>
- How to write a documentary script
http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/programme_doc_documentary_script.pdf

Defining the challenge

Ask students to **SUBMIT** a written outline of the task they are to undertake, thereby clarifying their understanding of what they have been asked to do. Ask students to include the industry they will be exploring.

Visualising a work sample



Invite students to begin visualising their own work sample. **BRAINSTORM** the Web 2.0 tools available that could assist in creating the documentary, song, poster and brochure. Check out:

- Flickr www.flickr.com a database for images and videos.
- PicArtia <http://www.makeuseof.com/tag/picartia/> where you can create photo mosaics.
- Google Earth <http://earth.google.com> where you can locate places.
- Google Maps <http://maps.google.com> where you can find places of interest.
- SketchUp <http://www.sketchup.com/> download a 3D modelling software.
- Glogster www.glogster.com where you can mash up media.
- Voice Thread <http://voicethread.com> where you can upload video, record audio, add still images and create a digital story.

Where possible, coordinate a visit to local cattle or sheep farm to directly find out more about the running of the farm, the systems used, and the opportunities and challenges that are faced.



Step 2: Explore how cattle and sheep are produced

Revisit what actions, methods or processes farmers were using to manage the land/soil/pasture, pests and weeds; water; biodiversity; waste; and reduce energy use and emissions.

Read for information

LEARN more about the sheep and cattle industries.

See: <http://www.target100.com.au/The-Issues>

See **Resource 1.1** to support student investigations.

Scoping the task



Invite students in pairs to initiate their research and **COLLECT** information on how farmers produce cattle or sheep and the systems they use. Ask students to **RECORD** information about each source used, together with research notes.

See **Resource 1.1** to support student investigations.

Framing next steps

Encourage the students to **REFINE** their next steps and **CLARIFY** how their investigations will be conducted. For example:

In pairs, formulate possible lines of inquiry or investigation by:

- **LISTING** and **CATEGORISING** all information related to their investigation under headings.
- **DRAFTING** a storyboard to draft ideas on.
- **PREPARING** a table to outline information that needs to be gathered, who is responsible, and where they will **SEEK** information, how it will be **GATHERED**.

Explore sustainable farming systems



TALK with students about the word 'sustainable' and **BRAINSTORM** understandings.

Ask students to **DEFINE** the terms 'sustainable farming', 'sustainable farm management' and 'sustainable land management'.



REFLECT on some of the stories that they might have read about, listened to or watched and **REVISIT** what actions, methods or processes farmers were using to manage the land/soil/pasture, pests and weeds; water; biodiversity; waste; and reduce energy use and emissions.

See **Resource 1.1** to support student record keeping.



Step 2: Explore how cattle and sheep are produced

Explore changing conditions

TALK with students about how the climate determines the growing conditions for all types of agriculture, and **EXPLAIN** how climatologists predict that Australia’s climate will continue to become warmer, with changes to rainfall patterns, less snow, more extreme weather events and more fires.



PLAY for the class:

- the video clip at: <http://www.csiro.au/multimedia/climate-adaptation-video.html>
- the podcast <http://www.csiro.au/multimedia/adaptation-plan-for-agriculture.html>
- the podcast <http://www.csiro.au/multimedia/Adapting-agriculture-to-climate-change-how-to>



Ask the students to **LIST** the variety of adaptation responses needed in the cattle and sheep industries, and **RESEARCH** whether are being implemented or invested in. Adaptation responses could include:



- Protecting stock from sun and heat.
- Better water management including preparing the soil to catch every drop of water, drip irrigation systems instead of overhead systems, and controlling weeds and pests that take moisture out of the soil.
- Early warning systems for notifying farmers of impending heat stress conditions with an email or phone text alert system.
- Growing valuable stock under shade-cloth.

See: <http://www.target100.com.au/100-Initiatives>
<http://www.target100.com.au/Farmer-stories>
<http://www.target100.com.au/The-Issues>
<https://www.youtube.com/watch?v=Ghw6uufvxNY>



Ask students to **RECORD** these ideas for future reference.

See **Resource 1.1** to support student record keeping.

Climatologists predict that Australia’s climate will continue to become warmer, with changes to rainfall patterns, less snow, more extreme weather events and more fires.

Step 3: Explain different production systems and their effects

Purpose

To provide students with opportunities to:

- describe existing methods and technologies used on Australian cattle and sheep farms to produce food
- explore a range of questions about decisions and choices farmers make relating to their farming systems
- develop the skills of discussion, negotiation, critical thinking and analysis of multimedia material
- think about changing conditions that are altering farming practices
- construct a storyboard for their documentary.

Environmental, social, economic and political factors influence the various ways that global beef and lamb needs are met now and into the future.

Approaches to producing beef and lamb

Introduce the compass rose as a simple tool that enables thinking about complex issues according to different contexts.

As a class, talk about each axis and what each compass point represents.

DISCUSS the diagonal 'in between' points and the types of questions these imply.

TALK about the environmental, social, economic and political factors that influence the various ways that global beef and lamb needs are met now and into the future. Discuss how farmers, the industry, and industry initiatives are taking steps to limit greenhouse gases from their activities, and design sustainable production systems. This can result in a impacts, such as:

- Saves money that would otherwise have been spent on excess water, energy, fertilisers, pesticides etc.
- Costs to implement the new practice or system.
- Public recognition.
- Reduces carbon emissions to the atmosphere.
- Reduces environmental impacts.
- Offsets carbon in carbon trading schemes.

Refer to the compass rose in **Resource 1.2**.



EXPLAIN each context involves different priorities and needs.

For example, while sustainable farming practices and greenhouse gas emissions are highly significant for the environment and farmers, they might not be as important as costs for the economy. Politicians and industry might be primarily concerned about delivering exports to other countries, while farmers and social groups would have the animal's welfare as a high priority.



OFFER the statement "Producing beef and lamb sustainably".

BRAINSTORM a list of systems and practices which have encouraged or enabled farmers to produce these foods.



INVESTIGATE any influence the system or practices may have had on the environmental, social, economic and political dimensions of farming.

IDENTIFY key questions and system or practice prompts for each of the compass rose points and the diagonal points (North East, South East, North West and South West).

See **Resource 1.3** for an example.



Step 3: Explain different production systems and their effects

Decide on what to present and how to do so

Re-state the purposes of the investigation and ask students to **CONSIDER** how they are going to bring their information together and present it so that the main points come across clearly. **MODEL** the construction of the storyboard genre. Students now use the information they have gathered to **CONSTRUCT** a storyboard for the research being undertaken.

See: <http://www.slideshare.net/slayas/storyboard-genre-ideas> for ideas.

Bringing it all together

Focus student's attention on:

- What we know.
- What we want to find out.
- What the class now knows.
- What other things we would like to find out.



Use 'What we know' as a source for class or small group discussion.

Use the other prompts in the list above to plan the way forward.

See: <http://office.microsoft.com/en-au/templates/kwlh-chart-TC101887896.aspx>

Discuss how farmers, the industry, and industry initiatives are taking steps to limit greenhouse gases from their activities, and design sustainable production systems.



Step 4: Elaborate on concepts and ideas

Presentation planning

Purpose

To provide students with opportunities to:

- explore actions cattle and sheep farmers are taking in their production systems, to sustainably managing resources, and adapt to climate change
- apply what they have learned
- plan their documentary, song, poster or brochure presentation about their chosen sector
- share investigation findings.

Animal welfare and sustainable resource management were seen to demand improvements in cattle and sheep farmer’s current production systems.

Changing farming practices and methods

Animal welfare and sustainable resource management were seen to demand improvements in cattle and sheep farmer’s current production systems. Climate change too, may be a consideration as the intensity and frequency of extreme weather events have been predicted to challenge the ways that cattle and sheep are farmed in Australia.



Ask students to **REFLECT** on the Target 100 stories at: <http://www.target100.com.au/100-Initiatives> and <http://www.target100.com.au/Farmer-stories> and **REFLECT** on how increases in scientific knowledge and developments in technology changed the farmers’ methods and production systems.



Use a *Plus, Minus, Interesting* technique to **IDENTIFY** different directions that students’ conclusions could be taken. Ask them to **DISCUSS** their key findings in terms of the benefits they could provide, the costs or risks involved, and any new questions that the conclusions have given rise to.

The *Plus, Minus, Interesting* chart is a useful way of exploring an issue in terms of its positive and negative aspects and those which provoke deeper thought. See **Resource 1.4** for a *Plus, Minus, Interesting* chart template.

| PLUS | MINUS | INTERESTING |
|------|-------|-------------|
| | | |
| | | |
| | | |

Designing the documentary, song, poster or brochure



Encourage students to **THINK** creatively and to **WRITE** about their topic. Invite them to **OUTLINE** and **DEVELOP** their projects using what they have learned. They film their footage; record interviews; take pictures; re-enact the processes and practices in a role play, podcast or video; create original illustrations; or communicate the practices using an interview format. They will also outline the scripts and go through the editing and revision steps as required.



For more detailed video production lessons, have a **LOOK** at this website below, which includes storyboards, scripting, shooting, editing and assessing.

See: <http://kidsvid.4teachers.org/index.shtml>

Talk with students about responsible digital citizenship in online environments. Work with students to have them understand appropriate use. Emphasise the principles:

- Respect themselves
- Protect themselves



Step 4: Elaborate on concepts and ideas

- Respect others
- Protect others
- Respect intellectual property
- Protect intellectual property.

Source: Crockett, L. Jukes, I. & Churches, A. *Literacy is not enough*, page 81.

Going further with the planning of the documentary presentation

Invite students to **CONFIRM** the idea planned for their documentary presentation.

Ask students to create a final plan for completing the documentary, song, poster or brochure. Students may need to **DOCUMENT** their key messages, **CREATE** an image bank and collate references and acknowledgements for their work sample. Invite them to **SUMMARISE** these and the learning achieved in a journal log or reflection.

Review and submit

Invite students to **REVISE** and fine-tune their presentation and schedule presentations of the documentaries, songs, posters or brochures to the class.

Invite students to critique and **ASSESS** the presentations, taking into consideration the following points:

- How well have the students used their chosen medium?
- How much do they know about their chosen subject matter?
- What concepts about the subject matter have they chosen to emphasise?
- What kinds of components do they use (for example: photography, illustration, interviews, animations)?
- What is unique and attention grabbing about their presentation?

Debrief



As a class, **DISCUSS** what students have learned about cattle and sheep farming; the production processes used, the farming practices undertaken and all sustainable actions.

Talk about what individual consumers of beef and lamb can do to build on actions farmers are taking to produce a quality meat product.

See: <http://www.target100.com.au/Tips-resources/Tips-around-the-home>



Step 5: Evaluating

Think back and evaluate

Purpose

To provide students with opportunities to:

- reflect on their own learning
- collate data for assessment.

To provide teachers with:

- insights into students' understanding and attitudes, as well as their perceptions of their own strengths and weaknesses.

Reflection

Begin by modelling reflective writing through a whole class learning log. Alternatively, you could model your own entry – 'thinking aloud' – as you write.

Provide students with a set of focus questions for their writing:

- Write about something new that you learnt in this unit in relation to how farmers care for their animals, produce them ethically and sustainably, manage resources sustainably and reduce their impact on the environment.
- What is one thing I have learned about my own values when it comes to sustainable farming?
- How can I help others learn about how the cattle and sheep industries are reducing their impacts for the benefit of their animals and the environment?
- What have I learned about innovation and sustainable practices?
- What have I learned about the increases in scientific knowledge and developments in technology in cattle and sheep production?
- What would I still like to find out about cattle and sheep farming?
- How well did I/we participate in any group/team learning activities?
- What questions do you have about the topic at the moment?
- What piece of work am I most satisfied with?

References

- Australian Academy of Science. (2005) *Primary Connections*, Canberra, Australia.
- Cecil, N. (1995) *The Art of Inquiry: questioning strategies for K-6 classrooms*, Peguis, Canada.
- Crockett, L., Jukes, I. and Churches, A. (2011) *Literacy is not enough. 21st Century Fluencies for the Digital Age*. 21st Century Fluency Project Inc.
- Cross, J. (1994) *Long Ago and Far Away: Activities for using stories for history and geography at Key Stage 1*, Development Education Centre, Birmingham.
- De Bono, E. (1992) *Six Thinking Hats for Schools*, Books 1 & 2, Hawker Brownlow Educational.
- Gardner, H. (1985) *Frames of Mind: the theory of multiple intelligences*, Basic Books, New York.
- Hamston, J. and Murdock, K. (1996) *Integrating Socially: units of work for social education*, Eleanor Curtin, Melbourne.
- Hill, S. and Hill, T. (1990) *The Collaborative Classroom*, Eleanor Curtin, Melbourne.
- Stokes, C. and Howden, M. (2010) *Adapting Agriculture to Climate Change*. CSIRO Publishing, Victoria.
- Wilks, S. (1992) *Critical and Creative Thinking: strategies for classroom enquiry*, Eleanor Curtin, Melbourne.

Websites (viewed February 2015)

This is a list of websites used in this unit for teacher use. As content of the websites used in this unit is updated or moved, hyperlinks may not always function.

Australian Broadcasting Corporation

ABC News - Landline <http://www.abc.net.au/landline/>

ABC Rural <http://www.abc.net.au/news/rural/>

The Archibull Prize. The Young Farming Champions Team

<http://archibullprize.com.au/yfc/ourteam.html>

Australian Curriculum, Assessment and Reporting Authority. Australian Curriculum

<http://www.australiancurriculum.edu.au>

Australian Government National Health and Medical Research Council

<https://www.nhmrc.gov.au/guidelines/publications/n55>

Commonwealth of Australia Global Education Website

http://www.globaleducation.edu.au/verve/_resources/bibliography_frame.pdf

CSIRO

<http://www.csiro.au/multimedia/climate-adaptation-video>

<http://www.csiro.au/multimedia/adaptation-plan-for-agriculture>

<http://www.csiro.au/multimedia/Adapting-agriculture-to-climate-change-how-to>

Digital Video Workshops - The Five Elements of Documentary

<http://www.dvworkshops.com/newsletters/fiveelements.html>

Flickr

<https://www.flickr.com/>

Glogster

<http://www.glogster.com/>

Google Earth

<http://www.google.com/earth/>

Google Maps

<https://maps.google.com.au>

Kids' Vid

<http://kidsvid.4teachers.org/index.shtml>

Meat and Livestock Australia

<http://www.mla.com.au/Cattle-sheep-and-goat-industries>

<http://virtualfarm.mla.com.au/>

Microsoft Office

<http://office.microsoft.com/en-au/templates/kwlh-chart-TC101887896.aspx>

PicArtia

www.makeuseof.com/dir/picartia

References

Primary Connections

<http://www.primaryconnections.org.au/about/teaching>

SketchUp

<http://www.sketchup.com/>

Slide Share

<http://www.slideshare.net/slayas/storyboard-genre-ideas>

Target 100

<http://www.target100.com.au/>

<http://www.target100.com.au/Environment>

<http://www.target100.com.au/Initiatives>

<http://www.target100.com.au/Farmer-stories>

<http://www.target100.com.au/Tips-resources/Tips-around-the-home>

TED Talks

http://www.ted.com/talks/jamie_oliver

UNESCO

http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/programme_doc_documentary_script.pdf

VoiceThread

<http://voicethread.com/>

YouTube videos:

Australian Lot Feeders' Association. Cattle heat stress management technology and Australian feedlots

<https://www.youtube.com/watch?v=Ghw6uufvxNY>

New South Wales Department of Primary Industries - Where does our food come from? Beef

<https://www.youtube.com/watch?v=1KAPep35VmQ>

New South Wales Department of Primary Industries - Where does our food come from? Lamb

<https://www.youtube.com/watch?v=8bPc8zLVaH0>

Target 100 channel <http://www.youtube.com/Target100AUS>

TED Talks. Jamie Oliver's TED Prize wish: teach every child about food https://www.youtube.com/watch?v=go_QOzc79Uc

Resource 1.1

Task sheet

Objectives:

On conclusion of this research task, you should have demonstrated an understanding of:

- Where cattle and sheep are farmed.
- Where our beef and lamb comes from.
- How Australian producers farm their cattle and sheep in different ways.
- How different production designs, systems and technologies are used to produce cattle and sheep.
- How the physical conditions of the farm environment and farm management practices used might impact on the production of beef and lamb.
- How sustainable farming initiatives impact on cattle and sheep farming systems.

Overview:

Use the websites listed below to research, collect and record information about either Australian cattle or sheep production, including farming practices and systems; the production systems used to raise a product of quality; factors that influence the design of the production processes; the system used to move the product from the farm to our plates; and an outline of the range of technologies used to manage the farms; and their farm management practices.

You are to:

- **RESEARCH** and **COLLECT** information.
- **OUTLINE** and draft a script, song, poster or brochure for an original work sample.
- **CREATE** a digital production or present it in person to the class.
- Include the researched and written script, song, poster, or brochure and associated research notes.
- Include sources of all photographs, original footage or interviews.

Websites:

<http://www.mla.com.au/Cattle-sheep-and-goat-industries>

<http://archibullprize.com.au/yfc/ourteam.html>

<http://www.target100.com.au/Farmer-stories>

<http://www.youtube.com/Target100AUS>

<http://www.target100.com.au/Initiatives>

<http://www.abc.net.au/landline/>

<http://www.abc.net.au/news/rural/>

Part 4: Changing times



Climate determines the growing conditions for all agriculture. Using the information gained so far, **CONSIDER** how a changing climate might impact on cattle or sheep farming systems. It might involve changes to animal housing to protect stock from sun and heat, climate-controlled production sheds, utilising water-based cooling mechanisms such as misting, redesigning buildings with passive heating and cooling or generating power onsite.

SUGGEST different practices, designs and systems that you think need to adapt to changing times.

You could:



- **SKETCH** and label a design



- **DRAFT** an idea for improved sustainability and reduced greenhouse gas emissions

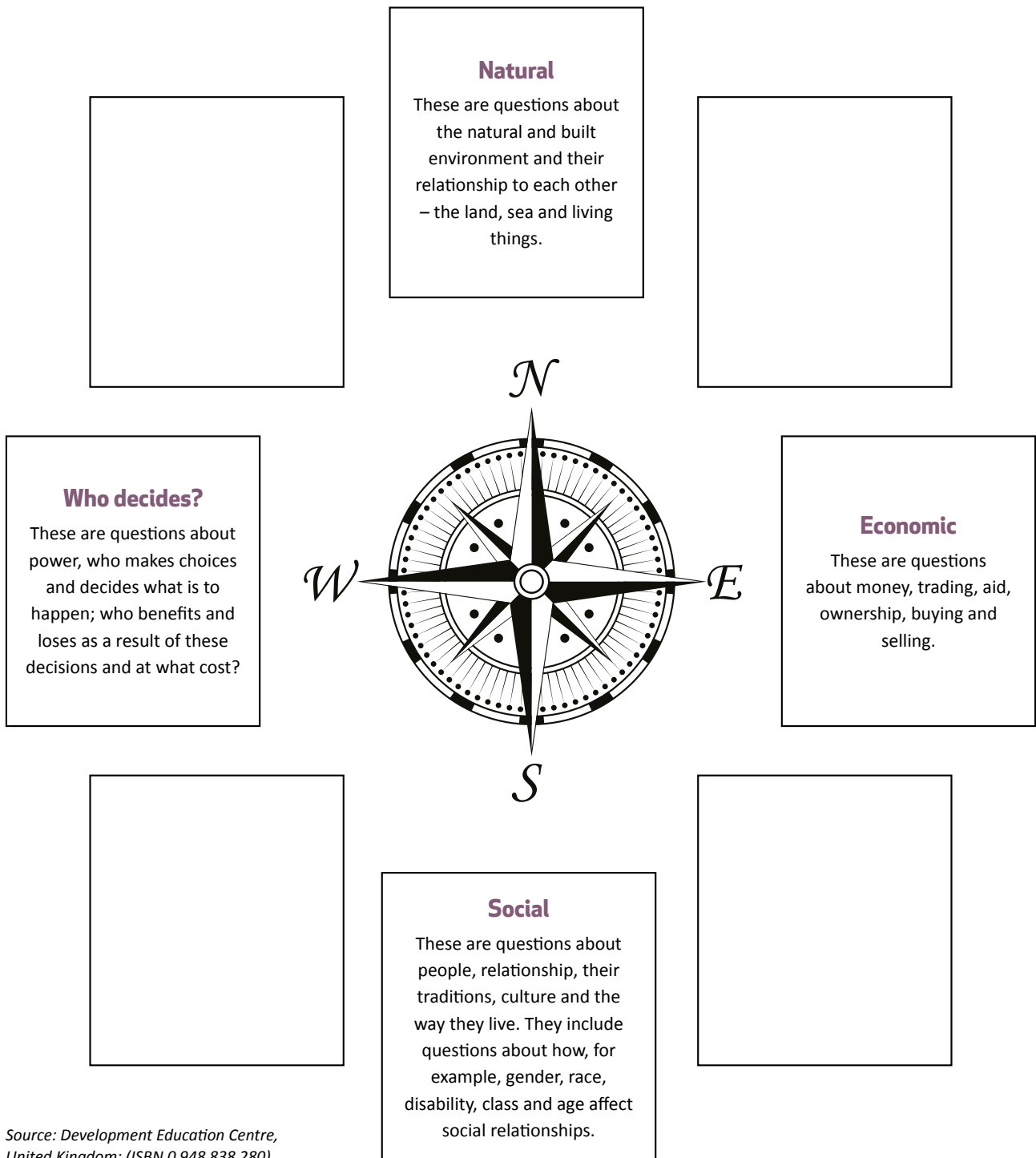
- **TEST** that idea and **RECORD** your results.

Resource 1.2

Compass rose

Use a compass rose to consider the physical, social, economic and political factors that influence decisions related to how food is produced on cattle and sheep farms.

The compass rose is a framework that encourages a range of questions to be asked about issues in any place or situation. It can be used to help enquire about any locality, its issues and their relationship to environment, social, economic and political issues.



Source: Development Education Centre, United Kingdom: (ISBN 0 948 838 280)

The four main compass points represent:

- **N**atural/ecological questions
- **S**ocial and cultural questions
- **E**conomic questions
- **W**ho decides? Who benefits? i.e. political questions.

Diagonal points represent relationships between the four main points. For example, **N**orth **E**ast highlights questions about how economic activity impacts on the natural environment; **S**outh **E**ast highlights questions about the economic activity and people's lives.

Issues based learning, investigations into positions, considerations, problem solving, values analysis and education can all be undertaken using the compass rose.

The compass rose is a simple tool that enables thinking about issues in a different way. One which offers the opportunity for insights into the complexity of issues and the different viewpoints which influence them.



- **EXPLORE** the meaning of "Producing beef and lamb sustainably".
BRAINSTORM a list of systems and practices which have encouraged or enabled farmers to produce these foods. **INVESTIGATE** any influence the system or practices may have had on the environmental, social, economic and political dimensions of farming. **IDENTIFY** key questions and system or practice prompts for each of the compass rose points and the diagonal points (North East, South East, South West, North West).



- **REDRAW** a compass rose and place key questions around it.
- **SHARE** questions as a class.

Resource 1.3

Compass rose questions

- Will our plants and animals be protected for future generations?
- What will be the impact on the environment?
- Will the same animals and plants be available to future generations?

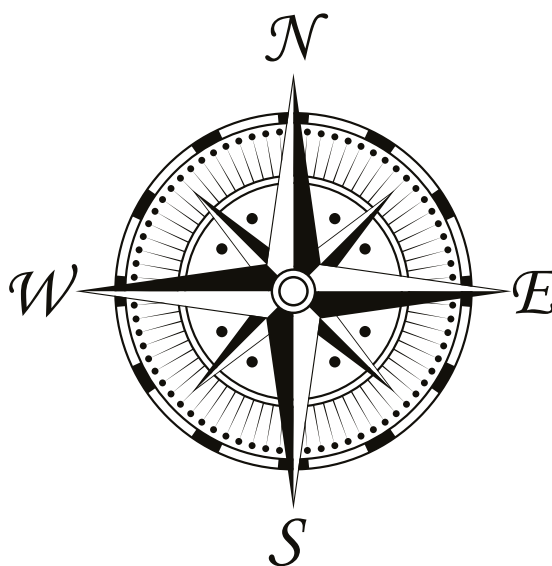
Natural

- What natural resources does the farm have?
- How do using different water resources impact on various ecosystems?
- Why is the environment important to farmers producing cattle and sheep?

- How does our export industry impact on the world's use of cattle and sheep resources?
- Are the economic activities sustainable?

Who decides?

- Who has access to decision-making?
- Who decides and by using what criteria?
- What is the local policy on decision-making?
- Who has an interest in the decision-making?
- Why are decision-making structures likely to become more important?
- How can I influence decisions?



Economic

- Is funding for low emission technologies and alternative farming likely to become more important to the economy in future years? Why?
- What investment opportunities are there in low emission technologies & alternative farming systems?
- How effective are current incentives to encourage 'sustainable' farming practices?
- Can most farmers afford to adopt new farm management practices as a part of their budget?

- What are the political implications of sustainable farming practices?
- How can the industry and the community influence its leaders to make better choices?

Social

- How are the various voices in industry and the community heard?
- What attitudes do industry and people have towards this environment?
- In what ways are industry and people organising to influence change?
- What motivates industry and people in choosing their beef and lamb meat sources?
- What influences industry and people's attitude on free range, pasture fed and intensively produced meat?

- Are economic opportunities accessible to all farmers?
- Given a choice between farming conventionally or investing in alternative farming practices, which do most industries choose?



primezone
The place for all your primary industry resources
www.primetimezone.edu.au