

A young person with short blonde hair, wearing a plaid shirt, is shown in profile, looking down at a white egg they are holding in their right hand. They are standing in a supermarket aisle, with shelves of various products visible in the background. The image is in grayscale, with a yellow horizontal band across the top and bottom.

# **An Educational Unit for Junior Secondary Schools**

**Title: How do you like your eggs?**

**Level: Years 7 and 8**

**Curriculum areas: Technologies**

**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 their students with whom they are working.**

**AUSTRALIAN EGG**  
CORPORATION LIMITED



## Acknowledgements

This educational resource was produced for the Australian Egg Corporation Limited (AECL).

The resource is designed to introduce young people to egg production in Australia. Whilst not an exhaustive educational resource, it is intended to raise the awareness of school-aged students about the systems and practices used in egg production in Australia, and it supports investigations of the past and present and includes investigating a range of futures for the poultry industry.

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The materials in this educational resource have been developed by Angela Colliver from Angela Colliver Consulting Services Pty Ltd and Greg Mills from Food Integrity Solutions.

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Users should be aware that the figures for the number of companies and egg farms producing and supplying eggs to the Australian market may become out of date over time, as these figures change in line with market conditions.

Similarly, as contents of the websites used in this resource are updated or moved, hyperlinks may not always function.

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## Introduction

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### Rationale

This resource material aims to help teachers and students in junior secondary schools to explore egg production systems in Australia.

Students are given an insight into ways Australian egg farmers are raising their hens and producing eggs, using industry principles, science knowledge and best practice resource management.

The objectives of the educational resources are to:

- Expand awareness about the egg industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community.
- Engage and inform teachers and students about the role and importance of Australia's egg industry, and increase community understanding about best practice egg production.
- Provide resources which help build leadership skills amongst teachers and students so they can communicate about egg production and the industry in Australia.
- Increase knowledge and understanding about the complexity of Australia's egg industry.
- Provide practical teaching advice that supports teachers to educate their students about egg production and the egg industry.
- Educate school students on ways hens are raised and grown.
- Develop engaging learning programs using an inquiry process aligned with the Australian Curriculum.
- Facilitate school communities to develop integrated food production and science education programs which emphasise the relationship between the egg industry, scientists, individuals, communities and the environment.

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## Updates and Support

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Please register your contact details at [www.eggs.education/rego](http://www.eggs.education/rego) so that we can keep in touch and send you unit updates and supporting information as it becomes available.

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## The Learning Process in this Unit

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This educational resource is a unit of work that uses an inquiry-based and integrated approach to learning.

The unit uses Project Based Learning (PBL) as a way to engage students in secondary schools to learn about the Australian egg industry and explore different production systems used by egg farmers in Australia to raise and house hens that produce eggs.

It uses a teaching and learning model based on the current philosophy that scientific knowledge is a social construction, highlighting how people's ideas and explanations create new knowledge. The teaching and learning model is also based on the idea that learning is a process of personal construction and reconstruction of ideas, rather than the absorption of a hierarchy of taught facts and concepts.

In practical terms, this means that teachers are not seeking to instil in students a selection of understandings, but are teaching and supporting them to experience and use creative ways of thinking to develop understandings of things around them.

Throughout this educational resource, the emphasis is on providing teachers with suggestions and possibilities. The interactive teaching and learning approach uses the *solution fluency* through six phases: **Define; Discover; Dream; Design; Deliver** and **Debrief**. The phases of the model are based on based on the 21<sup>st</sup> Century Fluencies created by Crockett et al. (2011).

The 21<sup>st</sup> Century Fluencies are outlined extensively in the book '*Literacy Is Not Enough*' by Crockett et al. (2011). See <https://globaldigitalcitizen.org> and on the new Solution Fluency Planner at <http://www.solutionfluency.com>

These fluencies are:

- **Define:** The 'Define' phase begins with lessons that mentally engage students with a challenge, problem, question and task. This phase captures their interest, provides an opportunity for them to express what they know about the topic, share understandings being developed, and helps them to make connections between what they know and the new ideas.
- **Discover:** The 'Discover' phase includes activities in which they can explore, investigate, research, read, discuss, gather, organise and compare knowledge and data. They grapple with the challenge, problem, question or phenomenon and describe it in their own words. This phase provides a context and enables students to acquire a common set of experiences that they can use to help each other make sense of the new knowledge or understandings.
- **Dream:** The 'Dream' phase enables students to imagine and develop possible solutions and explanations for the challenge, problem, question and task they have experienced. The significant aspect of this phase is that the students' explanations follow substantive conversations and higher order thinking experiences.
- **Design:** The 'Design' phase provides opportunities for students to apply what they have learned to new situations, to map production processes and so develop a

deeper understanding of the challenge, problem, question or phenomenon. It is important for students to extend explanations and understandings using and integrating different modes such as diagrammatic images, written language and media.

- **Deliver:** The 'Deliver' phase has two stages – production and publication or presentation. In the production phase the task comes to life – this is the doing phase. At the end of this phase, the student task should be completed. Next, they present or publish their work sample to an audience.
- **Debrief:** The 'Debrief' phase provides an opportunity for students to revisit, review and reflect on their own learning and new understanding and skills. This is also when students provide evidence for changes to their understanding, beliefs and skills.

Source: *Solution Fluency* <https://globaldigitalcitizen.org>

Throughout this educational resource the emphasis is on providing teachers with ideas and activities that enable them to:

- Provide a supportive classroom environment by valuing what students already know; meeting individual and collective needs; providing scaffolding and supporting all students to be successful.
- Be a resource person by collecting resources and materials; and suggesting strategies for investigation.
- Be a fellow investigator by advising on appropriate investigations; modelling ways of learning and identifying learning opportunities.
- Challenge students' ideas and learning strategies by encouraging further inquiry; providing the stimulus for investigating real life situations, alternative viewpoints and empowering students to investigate and respond to a challenge, task or project (commonly called 'Project-Based Learning').
- Co-evaluate what students know, can do and understand; using a range of assessment strategies including self-assessment and peer assessment; negotiated assessment tasks, learning logs, observation and conferencing. (Note: The unit of work contains a 'Student Task' which is well suited for assessment, as it is the summation of the work undertaken by the students in the unit of work).

The unit of work can has been designed as a sustained sequence of activities based on the content descriptions of the Australian Curriculum identified in Year 7 and Year 8 in Technologies.

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## Teacher Notes

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### Resource description

This unit encourages students to investigate and learn more about the Australian egg industry and the three main production systems used by egg farmers in Australia, such as cage systems, barn systems and free range systems. Teachers and student may also wish to extend studies to included furnish cages which have been used increasingly in countries such as Europe and New Zealand.

In this unit, students investigate the use, development and impact of technologies and design ideas in the production processes used by Australian egg farmers.

They also gain insights into ways Australian farmers raise their chickens, manage resources, improve sustainability in farm practices, and produce affordable, safe and nutritious food products.

Students in groups are tasked with completing an analysis of the egg production systems used by farmers with a specific emphasis on hen health and well-being; the environment; social perceptions and values about the egg production processes; sustainability; and practical and economic considerations.

As the unit progresses students are tasked with producing a documentary that is informed by their analysis about main production systems used by egg farmers in Australia.

**Year levels:** Year 7 and 8



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# Australian Curriculum Content Descriptions

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## Technologies

### Design Technologies

#### Year 7 & 8

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

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures [ACTDEK029](#)

#### Digital Technologies

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

Analyse and visualise data using a range of software to create information, and use structured data to model objects or events [ACTDIP026](#)

Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account including tasks, time and other resources required, considering safety and sustainability [ACTDIP032](#)

#### 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.

#### General Capabilities

##### Literacy

Comprehending texts through listening, reading and viewing; Composing texts through speaking, writing and creating; Text Knowledge; Word Knowledge; Visual Knowledge.



## **Numeracy**

Calculating and estimating; Using spatial reasoning; and Interpreting and drawing conclusions from statistical information.

## **ICT Capability**

Applying social and ethical protocols and practices when using ICT; Investigating with ICT; Creating with ICT; Communicating with ICT; and Managing and operating ICT.

## **Critical and Creative Thinking**

Inquiring – identifying, exploring and clarifying information; Generating innovative ideas and possibilities; Reflecting on thinking, actions and processes; Analysing and synthesising and evaluating information.

## **Personal and Social Capability**

Self-awareness; Self-Management; Social Awareness; and Social Management.

## **Ethical Behaviour**

Understanding ethical concepts and issues; Reflecting on personal ethics in experiences and decision making; and exploring values, rights and ethical principles.

*Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website in April 2016.*

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## Implementing the unit and activities in the classroom

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### 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 in Years 7 and 8 in Technologies.

### Selecting activities

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

Teachers may like to consider creating a hyperlinked unit by organising the digital resources for use by the class on a shared website, Moodle or Wiki.

### 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, and research and observations 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. 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 their students with whom they are working.

The unit's topics are based on content descriptions of the Australian Curriculum, on the key cross curriculum priority of sustainability and a number of 'General capabilities' as defined in the Australian Curriculum. Teachers are encouraged to explore ways in which the content can be adjusted to suit the context in which they are working.

Resource sheets are provided for some activities. Most are for photocopying or making available on a whiteboard, shared website, Moodle or Wiki for students.

They are identified within units by the following label: **Resource 1.1**, **Resource 1.2** etc.

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## Assessment

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The assessment rubrics provided in this resource, for Year 7 and Year 8 students are the summation of the student tasks. The rubrics provide:

- A common language for discussing student achievement in relation to the tasks undertaken, and
- A means of engaging with, and communicating student achievement, to the student and his/her parents or caregivers.

### **The rubric columns: levels**

Each of the rubrics is divided into four levels.

Level 1: Unacceptable

Level 2: Acceptable

Level 3: Very Good

Level 4: Excellent

### **The rubric rows: aspects of the task**

Each of the rubrics is divided into rows, with each row representing critical aspects of the student task.

In this learning sequence the Year 7 – Year 8 students are asked to:

Gather and analyse information about the production systems and management techniques used by egg farmers in Australia, and designing a 5-8 minute documentary to develop other people's understanding about:

- How egg farmers raise and house chickens to produce eggs;
- How each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and
- How the production systems and management techniques used can become more sustainable.

Students are required to include the performed and researched script of their group's findings and all group members need to be involved in the research, analysis of findings and production of the documentary.

## OVERALL PROJECT RUBRIC:

This rubric is designed to specifically evaluate what has been asked of the students from the scenario presented to the class.

| Level 4  | Level 3  | Level 2  | Level 1   |
|--|--|--|---|
| A 5-8 minute documentary has been created that shows evidence of extensive research of the subject matter.   | A 5-8 minute documentary has been created that shows evidence of research of the subject matter.   | A 5-8 minute documentary has been created that shows evidence of some research on the subject matter.  | A 5-8 minute documentary has been created that shows evidence of little research of the subject matter.   |
| The content showed clear evidence of research and analysis of different production systems and management techniques used by egg farmers in Australia; how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. | The content showed some evidence of research and analysis of different production systems and management techniques used by egg farmers in Australia; how egg farmers raise and house chickens to produce eggs how each production system has advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. | The content showed limited evidence of research and analysis of different production systems and management techniques used by egg farmers in Australia; how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. | The content showed little research and analysis of different production systems and management techniques used by egg farmers in Australia; how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. |
| The overall project flowed well and was structured well.   | The overall project flowed and was structured well.  | The overall project struggled in its flow and structure.   | The overall project lacked flow and was loosely structured.   |
| The documentary script was well written and illustrated the subject.   | The documentary script was mostly well written and illustrated the subject.  | The documentary script was acceptably written and briefly illustrated the subject.   | The documentary script was poorly written and vaguely illustrated the subject.  |
| The group answered all questions clearly and accurately.   | The group answered most questions clearly and accurately.  | The group answered some questions clearly and accurately.  | The group answered a few questions clearly and accurately.  |

## LEARNING PROCESS RUBRIC

Each of the learning progressions in the learning sequence has a prerequisite for progression – a list of what the student needs to accomplish in order to proceed to the next step in the process. The text from those areas is duplicated in this rubric and can be used with students to guide their progress with feedback, in a mini-debrief, helping them to refine their process and product at critical points throughout the learning sequence.

| Level 4  | Level 3  | Level 2  | Level 1   |
|--|--|--|---|
| A clear definition of the task was provided.   | A somewhat clear definition of the task was provided.  | A rather ordinary definition of the task was provided.   | A definition of the task could not be provided.   |
| Research and analysis was completed with no prompting. Six or more ideas were included in the documentary about the production system's advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. | Research and analysis was completed with minimal prompting. Four ideas were included in the documentary about the production system's advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. | Research and analysis was completed with some prompting. Two ideas were included in the documentary about the production system's advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. | Research and analysis was completed with significant prompting. One idea was included in the documentary about the production system's advantages and disadvantages; and how the production systems and management techniques used can become more sustainable. |
| A clear visualisation of the documentary was provided.   | A mostly clear visualisation of the documentary was provided.  | A somewhat clear visualisation of the documentary was provided.  | No clear visualisation of the documentary was provided.   |
| An extremely clear plan of what the documentary will contain was provided.   | A very clear plan of what the documentary will contain was provided.   | A mostly clear plan of what the documentary will contain was provided.   | A somewhat unclear plan of what the documentary will contain was provided.  |
| The 5-8 minute documentary was produced with a logical flow with a clearly written script in a voiceover format.   | The 5-8 minute documentary was produced with a mostly logical flow with a mostly clearly written script in a voiceover format.   | The 5-8 minute documentary was partially produced with a somewhat logical flow and a somewhat logical script in a voiceover format.  | The 5-8 minute documentary was produced with little logic and a minimal script in a voiceover format.   |

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## Questions and Answers

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*Should I do all the activities?*

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

While teachers are encouraged to follow the suggested inquiry sequence for the 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 teachers use.

*How long should the unit run?*

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

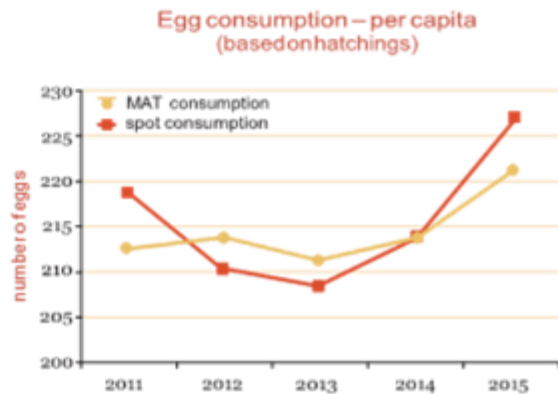
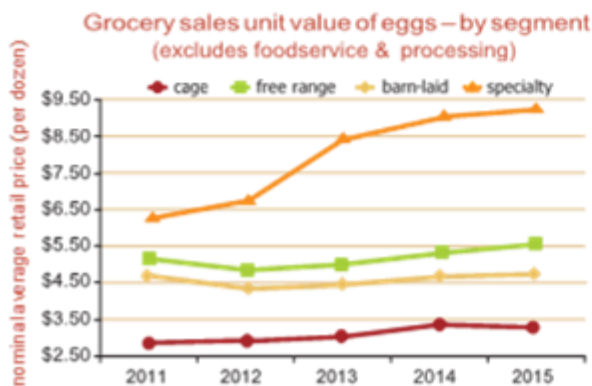
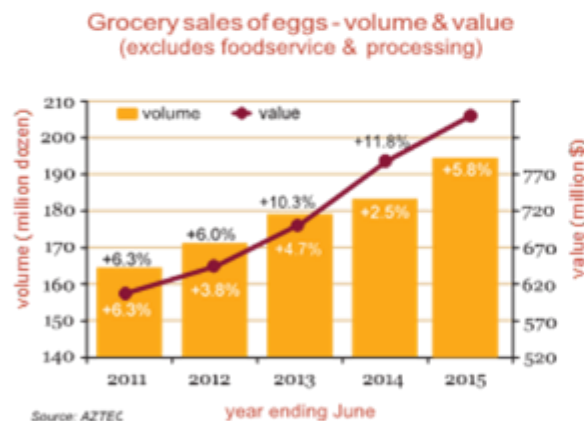
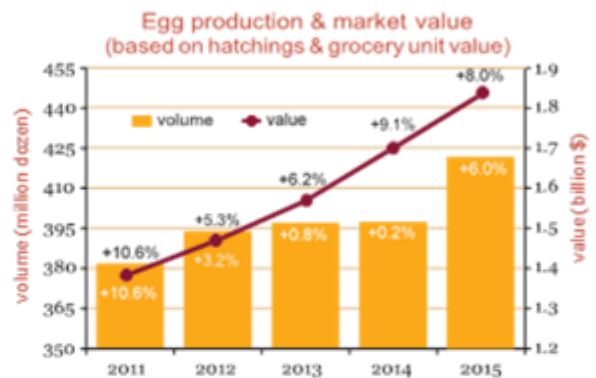
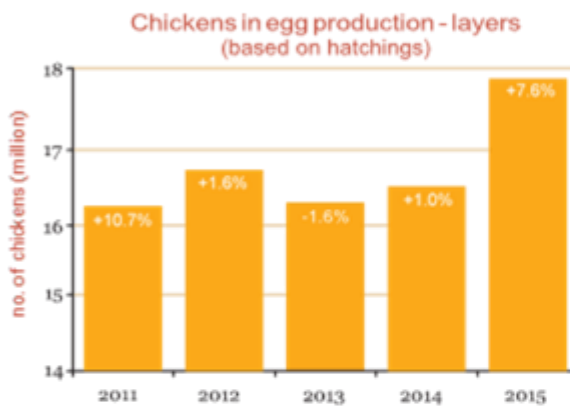
*I don't know much about Australia's egg industry myself – will I be able to teach it effectively?*

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

## Teacher Notes: Egg Industry Profile (as at 30 June 2015)

|   |   |                               |              |
|---|---|-------------------------------|--------------|
| Egg production—Australia: (Source: AECL)  | 421.3m dozen eggs – 2014/15 FY  |                               |              |
| Flock size:<br>(Source: AECL)   | 23.935m (pullets & layers) – as at June, 2015<br>17.820m (layers) – as at June, 2015        |                               |              |
| State flock percentage as at June 2014:<br>(Source: ABS, cat. no. 7121)               | NSW/ACT:  | 31%                           | WA: 8%       |
|   | Queensland:   | 29%                           | SA/NT: 8%    |
|   | Victoria:   | 24%                           | Tasmania: 2% |
| Number of egg farms: (Source: ABS)  | 277 – as at June, 2013  |                               |              |
| Gross value of egg production (farm gate equivalent):<br>(Source: ABS, cat. no. 7503) | \$625.5m – 2013/14 FY   |                               |              |
| Gross value of egg production (wholesale equivalent):<br>(Source: ABS, cat. no. 7503) | \$709.6m – 2013/14 FY   |                               |              |
| Gross value of egg production (grocery equivalent):<br>(Source: AECL)                 | \$1.836b – 2014/15 FY   |                               |              |
| Egg consumption:<br>(Source: AECL)  | 221.3 eggs per capita (MAT) – 2014/15 FY<br>226.8 eggs per capita (spot) – as at June, 2015 |                               |              |
| Grocery egg sales value: (Source: AZTEC)  | \$846.1m – 2014/15 FY   |                               |              |
| Grocery egg sales volume: (Source: AZTEC)   | 194.2m dozen – 2014/15 FY   |                               |              |
| Grocery egg price (average):<br>(Source: AZTEC)                                       | Cage eggs:  | \$3.31 per dozen – 2014/15 FY |              |
|   | Free Range eggs:  | \$5.49 per dozen – 2014/15 FY |              |
|   | Barn-Laid eggs:   | \$4.81 per dozen – 2014/15 FY |              |
|   | Specialty eggs:   | \$9.22 per dozen – 2014/15 FY |              |
| Grocery sales farming system market share:<br>2014/15 FY<br>(Source: AZTEC)           |   | Volume                        | Value        |
|   | Cage eggs   | 51%                           | 39%          |
|   | Free Range eggs   | 39%                           | 49%          |
|   | Barn-Laid eggs  | 8%                            | 9%           |
|   | Specialty eggs  | 1%                            | 3%           |
| Grocery sales branding market share:<br>2014/15 FY<br>(Source: AZTEC)                 |   | Volume                        | Value        |
|   | Private-label/generic labels  | 33%                           | 28%          |
|   | Proprietary labels  | 67%                           | 72%          |
| Grocery sales pack size market share:<br>2014/15 FY<br>(Source: AZTEC)                |   | Volume                        | Value        |
|   | 6 (half dozen) pack   | 6%                            | 9%           |
|   | 10 pack   | 2%                            | 3%           |
|   | 12 (dozen) pack   | 83%                           | 79%          |
|   | 15 pack   | 2%                            | 2%           |
|   | 18 pack   | 5%                            | 6%           |
|   | 30 (tray) pack  | 3%                            | 2%           |
| Grocery sales pack weight market share:<br>2014/15 FY<br>(Source: AZTEC)              |   | Volume                        | Value        |
|   | <= 350g   | 5%                            | 8%           |
|   | 351g – 600g   | 22%                           | 21%          |
|   | 601g – 700g   | 58%                           | 54%          |
|   | 701g – 800g   | 6%                            | 7%           |
|   | >= 801g   | 10%                           | 10%          |
| Egg Product exports:<br>(FOB equivalent)<br>2014/15 FY<br>(Source: ABS)               |   | Volume                        | Value        |
|   | Shell eggs  | 168mt                         | A\$0.588m    |
|   | Egg pulp/liquid   | 140mt                         | A\$0.398m    |
|   | Egg powder  | 3mt                           | A\$0.048m    |
| Egg Product imports:<br>(CIF equivalent)<br>2014/15 FY<br>(Source: ABS)               |   | Volume                        | Value        |
|   | Eggs preserved/cooked   | 233mt                         | A\$0.725m    |
|   | Egg pulp/liquid   | 485mt                         | A\$1.958m    |
|   | Egg powder  | 1,087mt                       | A\$10.630m   |





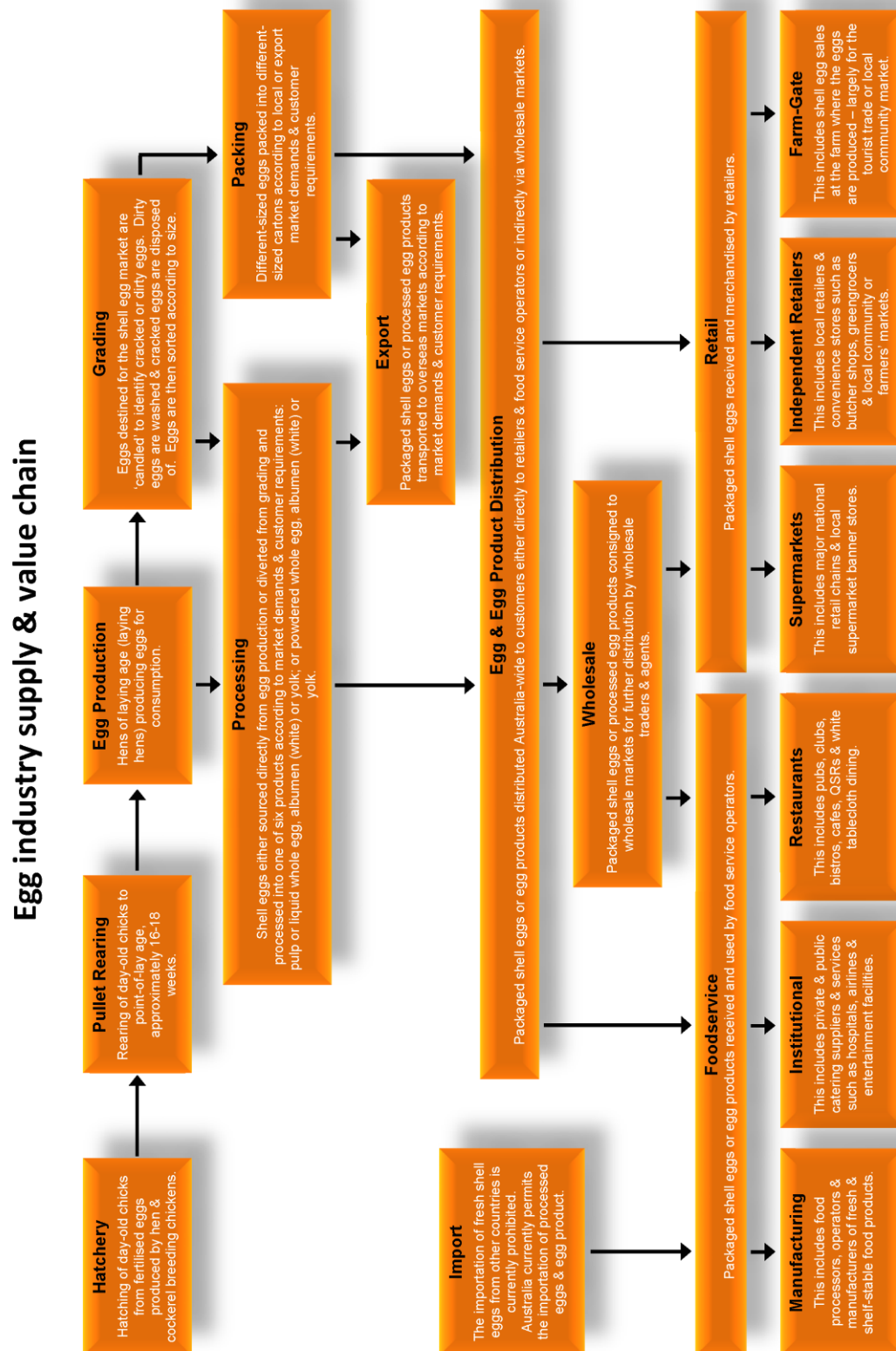
CY = Calendar Year (Jan to Dec)  
FY = Fiscal Year (Jul to Jun)  
b = billion

MAT = Moving Annual Total  
p = preliminary  
A\$ = Australian dollars

FOB = Free On Board  
CIF = Cost Insurance Freight  
g = grams

m = million  
mt = metric tonne  
% = percent

# Teacher Notes: Egg Industry Supply & Values Chain



Source: AECL <https://www.aecl.org/dmsdocument/468>

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## Step 1: The essential question and scenario

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This learning sequence is underpinned by the work of Lee Crockett. It uses the *solution fluency* through six phases: Define; Discover; Dream; Design; Deliver and Debrief. The phases of the model are based on the 21<sup>st</sup> Century Fluencies created by Crockett *et al.* (2011).

The 21<sup>st</sup> Century Fluencies are outlined extensively in the book '*Literacy Is Not Enough*' by Crockett *et al.* (2011). See <https://globaldigitalcitizen.org/> and <https://www.youtube.com/watch?v=N8DEeR1sraA>

### The essential question:

How could exploring and analysing the main production systems and management techniques used by egg farmers in Australia, help clarify the issues surrounding how best to keep poultry?

### The scenario:

Australian egg farmers are searching for schools to probe into some of the production systems and management techniques used by egg farmers in Australia.

This industry is made up of dedicated and specialised farmers who all have the same concerns as the community when it comes to taking care of their chickens; housing them appropriately; maintaining their health and well-being and managing the environment and its resources sustainably.

Currently there are three main production systems used by egg farmers in Australia and these are termed cage, barn-laid and free range.

In addition, eggs are produced from numerous 'backyard' flocks housed in various backyard systems.

The egg industry has changed over the years from one characterised by many smaller family businesses to one that is now dominated by larger vertically integrated farms. These farms now raise pullets, mix feed, and produce, package, market and distribute their eggs. In the early 1900s, many farmers had chickens and collected eggs for their own use or for sale to friends, neighbours and the local grocer. Today, there are fewer but larger farms that produce eggs for Australian consumers and some export markets.

Many years ago, farmers moved to housing chickens in cages, as this provided many benefits to the management, welfare and productivity as their flock sizes grew. More recently, there has been a decline in building new caged housing systems and new farms are often free-range or barn systems due to consumer perceptions relating to hen welfare, hen health and environmental management.

You're tasked with gathering and analysing information about the production systems and management techniques used by egg farmers in Australia, analysing them with a specific

emphasis on hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations.

You are then tasked with designing a 5-8 minute documentary to develop other people's understanding about:

- How egg farmers raise and house chickens to produce eggs;
- How each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and
- How the production systems and management techniques used can become more sustainable.

You are required to include the performed and researched script of your group's findings and all group members need to be involved in the research, analysis of findings and production of the documentary.

High, low and no tech options are available.

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

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

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

Short video clips and images for use in your documentary can be found in the educational resources section of [www.csef.org.au](http://www.csef.org.au)

What kind of researcher will you be? What research can assist you develop deep understandings about how egg farmers raise and house chickens to produce eggs? What research can inform you about the advantages and disadvantages of each production system? What investigations can you undertake to discover more about how the production systems and management techniques used can become more sustainable?

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## Step 2: Define understandings

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**Objective:** Have students illustrate their understanding of the challenges set out in the scenario by providing an oral definition of the task.

**Capture students' interest** and view a sample of documentaries that cover various egg industry and production related topics.

**Check out** the National Film and Sound Archive's video about how Australian eggs were produced in the 1930s and note the free range and intensive housing systems and how they are described at <http://eggs.education/1934Eggs>

**View** the documentary and note the reporting style used by the Australian Cinema Branch for the Department of Commerce in 1934 and compare it to the styles used in documentaries today.

**Uncover** the presentation style used by the various presenters in the 'Keeping Poultry in Schools' series at <http://eggs.education/CRCSchools>

**Discuss** what students feel was compelling (or even off putting) about the presentation styles used in the documentaries.

**Talk about** the use of original photography, video footage and interviews for effect.

**Discover** additional documentaries about egg production as told by Landline at <http://eggs.education/Landline2015>

**Watch** a documentary produced in the 'Agriculture in Education' initiative that talks about a small scale free range production system at <http://eggs.education/SmScFR>

**Create a Y-Chart** and record ideas about what an interesting and informative documentary or digital story with a sound structure and logical flow sounds like, looks like and feels like. Consider how it incorporates images, sound, music, words and narration in a way that creates a sense of connection between the creator and the viewer.

**Ask** students to direct a critical eye at how each documentary was styled by the film maker and write a reflection about the art and science behind making a documentary.

**Talk** with students about responsible digital citizenship in online environments. Work with students to have them understand that during this unit they will using a range of websites, gathering a range of opinions, so students need to continuously check that the research is correct by using reliable sites. Similarly discuss the use of free and open sources for images, music and videos and the need to request the use of software and media others produce.

**Remind** students that there are high-tech; low-tech and no-tech options that they can consider when designing and creating their documentary about the production systems used by egg farmers in Australia.

**Invite** students to recall the focus of the task that the Australian egg farmers have invited them to undertake. See **Resource 1.1**

**Ask students** what they might need to know more about, in order to undertake the task set by the Australian egg farmers. Might they need to know something about how egg farmers raise and house chickens to produce eggs? Might they need to know something about the different production systems used by egg farmers? Might they need to know more about how each production system presents advantages and disadvantages? Might they need to research and evaluate the reasons for scientists, researchers and farmers making claims about these advantages and disadvantages? Might they need to know something about the production systems and management techniques used and can these become more sustainable? Might they need to know where to find information about the main production systems used by egg farmers in Australia? Might they need to know where to find information about each system's advantages and disadvantages? Might they need to understand something about consumer perceptions relating to hen welfare and hen health and environmental management? What might they have to do to draft a script for a 5-8 minute documentary on the production systems used by egg farmers in Australia? What tools, equipment and procedures might be needed? How might they evaluate their documentary, its design and the information it communicates?

*Prerequisite for progression:*

Ask students to articulate their understanding of the task/challenge through oral conversation and if appropriate a written (scribed) statement. See Resource 1.2

Note: The Prerequisite for Progression are the checkpoints that occur at the end of each stage of the learning sequence. This is the time at which formative feedback is given to the students about what they have accomplished in that stage. It describes what the students must complete before they move onto the next phase of the unit. (Crockett, et, al, 2011)

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## Step 3: Discover

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Objective: Have students research, read, view, listen to, discuss, gather, organise ideas about how egg farmers raise and house chickens to produce eggs; how three main production systems are used by Australian egg farmers; how each production system has advantages and disadvantages; and how the production systems and management techniques used can become more sustainable.

**Ask students** to consider the questions ‘What do all hens need to be productive?’; ‘How might egg farmers raise and house chickens to produce eggs?’; ‘What might the three main production systems used by Australian egg farmers include?’; ‘How might each production system have advantages and disadvantages?’ ‘What might the advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations be?’, and ‘How might the production systems and management techniques used become more sustainable?’

**Capture student interest** and find out what they know about what every hen needs in order to produce eggs. For example, all hens need to be of the appropriate age; adequate food, adequate water, adequate ventilation, stable social groups, and be free of pests and diseases etc.

**Encourage** students to think of a number of hens they might hypothetically like to raise and to use the internet or resources locally and locate one design of a hen house that caters for all the things they think a hen needs to produce eggs. Teachers may wish students to consider how the eggs their family buys are produced and encourage students to consider the challenges face by Australian egg farmers and select a flock size consistent with egg in their fridge at home. If their family buys from a Farmers Market the flock size may be 500-2,000 hens. If their family buys egg at a supermarket the flock size is likely to be 5,000 to 20,000 for free range/barn or 10,000-50,000 for cage eggs.

**Share designs** and talk about whether the designs provide:

- Enough room for the hens noting that there are ‘Minimum standards’ that are set out by the Department of Primary Industries in each state and territory
- Protection from draughts, cold, wind and rain
- Protection from predators like foxes, dogs, feral cats and eagles
- Enough feeders and waterers for the number of hens in their flock
- Ventilation holes, preferably ones that can be opened and closed depending on outside temperatures
- Any type of insulation and climate control systems to protect birds against the cold and heat
- A suitable spot to lay eggs
- Enough nests for egg laying for all hens if nest are provided



- Enough perches for the hens for all hens if perches are provided
- If birds have access to a range area doors/flaps (known as “popholes”) for the hens to enter and exit through, preferably one that can be locked at night to stop predators entering
- Access points for humans so the house can be cleaned, and inspected regularly
- If birds are free range or in furnished cages a foraging area where hens can scratch and forage for food and have a supply of ‘grit’ provided to aid their digestion.

**Share the minimum standards** that pertain to raising and housing hens in your state/territory with the students.

**Re-visit the designs** that students have found, display these and discuss their pluses and minuses in relation to the standards.

**Talk** about the Australian egg industry, its farmers, consumers, markets, the production systems it uses to raise and farm hens, and talk about the differences between keeping chickens and producing eggs commercially and in backyards.

**Create a classroom display** about what is now known about egg production.

**Explore** the principles of raising and managing hens as described by the Poultry Cooperative Research Centre (CRC) at <http://eggs.education/CRCHusbandry> and create a concept map documenting new understandings. Add these to the classroom display.

**If you keep poultry at school, discover** the fundamentals of keeping chickens in schools. Learn about how one school in New South Wales raises and houses its hens to produce eggs. View videos on the dedicated ‘Poultry in Schools’ website at <http://eggs.education/CRCSchVids> that includes information about:

- Housing requirements
- Feeding and watering
- Routine management
- Bird health and behaviour

**Immerse** students in the landscapes where egg farmers farm and house hens and produce eggs at

[https://www.google.com.au/search?q=%27Images+of+egg+production+systems%27&rlz=1C2WPDB\\_enAU504AU525&biw=1366&bih=643&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwiK6KaQyMHJAhUh4qYKHWHS CSAQsAQIGg](https://www.google.com.au/search?q=%27Images+of+egg+production+systems%27&rlz=1C2WPDB_enAU504AU525&biw=1366&bih=643&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwiK6KaQyMHJAhUh4qYKHWHS CSAQsAQIGg)

**Locate images** of different housing types and begin an ‘image bank’ for later use when designing and creating the documentary.

**Talk** with students about locating images of caged, barn laid and free range systems.

**View these landscapes** and discover more information by viewing videos about the production systems used by farmers in Australia.

**Discover** information about the cage and free range systems at <http://eggs.education/CageFR>. Record notes from the video using **Resource 1.3** and use the Plus, Minus, Interesting chart in **Resource 1.3** to identify the advantages, disadvantages and interesting aspects of the way eggs are produced in both cage and free range systems.

**Hear** from a South Australian egg farmer and discover how he farms 1,500 hens per hectare. Consider his views about stocking densities of hens and sustainable production systems at <http://eggs.education/FR1500> and add additional ideas about production system he uses on **Resource 1.3**.

**Analyse** this production system for 1,500 hens per acre using the PMI Chart in **Resource 1.3**.

**Discover** more about the features of a free range production system that stocks 10,000 hens per hectare and analyse the advantages, disadvantages and interesting aspects of this system in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations at <http://eggs.education/FR10000>

**Record** ideas about this production system for 10,000 hens per hectare and repeat the PMI analysis using **Resource 1.3**.

**Delve deeper** into the options for housing and managing hens and read information about housing and managing hens sustainably at <http://eggs.education/CRCHousEnv>

**Use Resource 1.3** to record new information.

**Ask** students to read for information using fact sheets located at <http://csef.org.au/> and record information about the three main production systems used (cage, barn-laid and free range); the associated advantages and disadvantages in terms of hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations. Use **Resource 1.3** and record information these points. Locate fact sheets about:

- Barn and Aviary Housing
- Free Range
- Furnished Cages
- Conventional Cages
- Hen Welfare

**Talk** with the students about the need to sort information they find into topics that require further exploration so that they can be used later when planning the documentary. For example:

- How egg farmers raise and house chickens to produce eggs;
- How each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and
- How the production systems and management techniques used can become more sustainable.

**Talk** with the students about the types of resources used by farmers in their production processes. For example; soil for foraging areas, water to wash down the sheds, electricity to power the automated machines, water for the hens, feeding systems for the hens, etc.

**Ask questions** about what it might mean to use these resources 'sustainably'? Check students' understanding of terms like 'sustainable use', 'sustainable resource management', 'sustainable water use', 'water conservation', 'sustainable energy use', 'energy conservation', 'waste management', 'natural vegetation replenishment', 'restoration of vegetation cover', preventing pollution etc.

**Brainstorm** the known 'natural resources' used by egg farmers. For example: sunlight, soil, minerals, water, air, vegetation/plants...

**As a class** identify and define terms that students are uncertain of. Once defined, ask students to explain the meanings of the terms to someone else.

**Talk about** the word 'sustainability.' As a class consider the differences between 'environmental sustainability', 'economic sustainability' and 'social sustainability'.

*For example: When a farmer thinks of being economically sustainable, they might ask themselves a question like 'Are we sustainably profitable?' or 'What do we need to do to make sure that the farm provides a living for our family into the future?'*

*When a farmer thinks of being socially sustainable, they might ask themselves a question like 'Are we behaving in a way that the community supports us into the future?' or 'How should we be involved in our community motivating the community in supporting us into the future?'*

*When a farmer thinks of being environmentally sustainable, they might ask themselves a question like 'Are we maintaining our farms and their natural assets for future generations?' or 'How can we observe and enhance the farm's natural habitat so that future farmers can succeed on it?'*

**Expand** the topic and talk about sustainable practices used on farms that produce eggs. Consider irrigation practices, waste management, water re-use, resource recovery, planting trees and shrubs to provide shade. Ask students to visualise what might sustainable egg production and farming look like, sound like and feel like?

**Think about** issues such as the farm's environmental footprint, sustainable management practices to conserve soils, limit chemical usage, improve water use efficiency, reduce and re-use waste, recycle effluent and minimise energy usage.

**Ask** students to develop criteria describing the standards they feel describe 'sustainable' egg production and farming. Share these as a class and display ideas for future reference.

**As a class, build understanding** by sharing ideas and record things that the class would like to know more about how an egg producer might address sustainable farming on their farm and in their business.

**Encourage** students to find examples of what actual egg farmers/farmers are doing to address sustainable farming and bring their findings back to class. Share these to build a bigger picture of what is happening in the industry.

**Ask students** to picture themselves as egg farmers for whom hen welfare and sustainable management practices are paramount whilst meeting demand and supplies of eggs to their markets and ask the question 'How might my production system implement something new to become more sustainable (environmentally, economically and socially)?

**Talk about** the impacts of a changing climate on egg production systems. Introduce recent findings shared by the Climate Council in their recent report '*Feeding a Hungry Nation: Climate Change, Food and Farming in Australia*' that states "climate change is making weather patterns more extreme and unpredictable, with serious consequences for Australia's agricultural production". See Finding 1 at <https://www.climatecouncil.org.au/foodsecurityreport2015>

**Explore** the low carbon footprint of egg production and discover recent findings in a study that demonstrated its low impact on the environment at <http://eggs.education/Footprint>

**Brainstorm** and list ways egg farmers might adapt or change aspects or features of their production systems to accommodate cyclonic winds, sub-zero temperatures, intense rainfall, lightning, snow, rising waters or water scarcity. For example: housing needs to be waterproof; have a relocation plan with back-up housing options; build coops with cross ventilation and the use of shade trees; install fan systems to create air circulation and mist and fogging systems for evaporative cooling of the house and hens etc.

**Discuss the challenges** that could be faced by the two egg farmers featured in the Australian Egg Corporation videos that produce eggs in South Australia. South Australia is in a warm temperate climate zone that generally experiences dry, hot summers and wet, cold winters. Talk about what responses might the producer need to consider when adapting their production systems to a changing climate.

**Introduce the compass rose** in **Resource 1.3.1** 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 types of questions these imply.

**Talk about the environmental, social, economic and political factors** that might influence the various ways that eggs are or can be produced sustainably. See **Resource 1.3.2**

**After using the 'Compass Rose', discuss** current production systems used by egg farmers in Australia; and how the production methods, processes and the technologies they use may impact the environment, society, economy and decision-making at local and national levels.

**Focus on** community perceptions and values. View the video 'Your Eggs, Your Choice- Consumers have their say' at <http://eggs.education/Choices>

**Talk** about the principal issues raised by consumers and as a class voice what has been learned throughout the unit that may have influenced student's perceptions about egg production systems and the types of eggs they would choose to purchase.

**Focus on** community perceptions about how eggs are produced noting that there are advantages and disadvantages associated with each type of production system.

**Develop consequence wheels** that describe what happens when research tells us that there are advantages and disadvantages associated with each type of egg production system used by egg farmers in Australia'. See **Resource 1.3.3**

**Ask each student** to share what their research has told them and what they still have to accomplish within the task with their peers, the teacher and family.

*Prerequisite for progression:*

Students have worked as a class, individually and in their groups and collected research on how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

Websites, videos, images and stories are used to contextualise understanding. Students will share their ideas with peers, the teacher and family.

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## Step 4: Dream

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Objective: Have students imagine how they are going to create a documentary about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

**Ask students** to form into their groups and visualise and discuss how they want to represent the material they have gathered from a visual and expository writing perspective. See **Resource 1.4**

**Ask questions** to stimulate the possible ways of designing and creating their documentary and accompanying script. For example:

So what do you want to make the documentary about?

How will the group bring the topic alive for viewers?

How will you grab their attention?

What is it about this topic that you want everyone to know?

How will you use your ideas?

How will you approach writing your script?

How will your script inform, entertain, inspire thought and perhaps action?

This is your chance to make a truly great and memorable documentary!

**Develop possible solutions** by brainstorming all possible solutions.

**Review** what the State Library of Queensland suggests is involved in designing and creating a good digital story at <http://www.slq.qld.gov.au/resources/queensland-stories/digital-storytelling-manual>

**Explore the steps** involved in making a documentary at:

- 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\\_dokumentary\\_script.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/programme_doc_dokumentary_script.pdf)

**Invite** students to begin visualising their own work sample.

**Brainstorm the Web 2.0 tools** available today that might assist in creating the documentary. Check out:

- Flickr [www.flickr.com](http://www.flickr.com) a database for images and videos
- PicArtia [www.makeuseof.com/dir/picartia](http://www.makeuseof.com/dir/picartia) where they can create photo mosaics
- Glogster [www.glogster.com](http://www.glogster.com) where they can mash up media
- Voice Thread <http://voicethread.com> where they can upload video, record audio, add still images and create a digital story

**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
- Producing a storyboard to draft ideas on
- Preparing a table to outline information that needs to be gathered, who is responsible, where they will seek information, and how it will be gathered.

**Challenge students** to think about the materials, tools, and equipment they will need to design and create the documentary and accompanying script. Will they use digital or non-digital equipment and tools? How might they work safely and cooperatively? How might they appropriately source their images and information that are used to create the documentary and accompanying script?

**Ask students** how they might evaluate whether their ideas for the documentary and accompanying script meet the original criteria of their task?

*Prerequisite for Learning:*

The students in their groups have chosen their topics for their documentary. They have visualised and discussed how they want to represent the material from a visual and written perspective; and have answered the questions posed in the dream phase.



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## Step 5: Design

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**Objective:** Have students explain, prepare and action how they are going to design a documentary and accompanying script about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

**Ask students** to decide on the type of documentary and the topics they will bring to the forefront of the viewer's attention.

**Invite students** to think about developing a project plan outlining the planning and production steps required to produce their documentary and accompanying script. See **Resource 1.5**

**Talk** about the importance of a clear layout and design that makes it easy for an audience to understand and interpret the information given.

**Talk** about the importance of sourcing digital photos and information correctly.

**Talk about** ethical and respectful behaviour when using digital media and in an online environment.

**Work with** students to help them understand appropriate digital citizenship and online behaviour and seek commitments to respecting themselves, others and intellectual property.

**Ask students** to draft the steps involved in making their chosen digital or non-digital work samples.

**Ask students** to gather the materials, tools, and equipment needed and then plan each step involved in creating the digital and/or non-digital work samples.

**Invite students to start creating** the documentary and accompanying script.

**Talk** with students about how they might share and present their documentary and accompanying script to an audience?

**Ask students** to explain how they plan to finalise and create their work samples to another peer in the class and seek feedback on their ideas.

### Prerequisite for Learning:

Students are able to document in oral or written/digital forms how this project is to occur. The understanding is demonstrated by the students explaining their thinking to a peer in the class.

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## Step 6: Deliver - produce

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**Objective:** Have students deliver their documentary and accompanying script about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

The Delivery phase has two stages – production and publication. In the production stage the project comes to life – this is the doing phase. At the end of this phase the publication/presentation of the documentary and accompanying script about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable should be completed.

**Ask students to design and create** their documentary and accompanying script about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

In the Publish phase, students get to showcase all of their thinking and planning. This is the time when students deliver their documentary and accompanying narrative to each other or an audience. This is a good time for peer or self-assessment.

**Ask students to share their** documentary and accompanying script about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable to others for critique and assessment.

The following are suggested points to consider in each presentation:

- How much do the students know about the subject matter?
- How well have they used their chosen medium?
- What is unique or eye catching about their visual style?
- What concepts about the subject matter have they chosen to emphasize?
- Have they missed anything out?

**View** presentations of the students' documentaries and enjoy a day of showcasing what has been discovered about the main production systems used by egg farmers in Australia to produce eggs.

*Prerequisite for Learning:*

Each student group has produced a documentary and accompanying script about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

They have presented it to the class and have been given feedback.

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## Step 7: Debrief

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Objective: Assess the results of the research undertaken to produce the documentaries and accompanying scripts about how egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

Ask students to:

**Reflect** on their learning and all aspects involved in making the documentary and writing the accompanying script. Since documentaries are largely made to inform and instruct, ask students to reflect on their project. How do they feel they represented their research?

**Identify and describe** what the most surprising thing they learned about the main production systems used by egg farmers in Australia to produce eggs was.

**Evaluate** their documentary and accompanying script and write about whether their work:

- matched the definition of the task
- used a clear layout and design, and
- provided others with an analysis of the advantages and disadvantages associated with the three main production systems used by egg farmers in Australia to produce eggs

**Ask questions** like “what would you do differently next time?”

**Write** about the quality of their planning, their finished documentary and accompanying script and whether they enjoyed the task.

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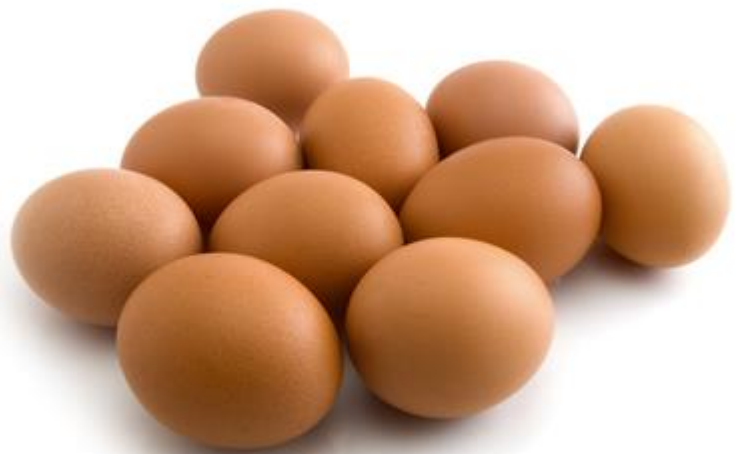
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## Resource Pages for Students

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## Resource 1.1. Student Task Sheet

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### The essential question:

How could exploring and analysing the main production systems and management techniques used by egg farmers in Australia, help clarify the issues surrounding how best to keep poultry?

### The scenario:

Australian egg farmers are searching for schools to probe into some of the production systems and management techniques used by egg farmers in Australia.

This industry is made up of dedicated and specialised farmers who all have the same concerns as the community when it comes to taking care of their chickens; housing them appropriately; maintaining their health and well-being and managing the environment and its resources sustainably.

Currently there are three main production systems used by egg farmers in Australia and these are termed cage, barn-laid and free range.

In addition, eggs are produced from numerous 'backyard' flocks housed in various backyard systems.

The egg industry has changed over the years from one characterised by many smaller family businesses to one that is now dominated by larger vertically integrated farms. These farms now raise pullets, mix feed, and produce, package, market and distribute their eggs. In the early 1900s, many farmers had chickens and collected eggs for their own use or for sale to friends, neighbours and the local grocer. Today, there are fewer but larger farms that produce eggs for Australian consumers and some export markets.

Many years ago, farmers moved to housing chickens in cages, as this provided many benefits to the management, welfare and productivity as their flock sizes grew. More recently, there has been a decline in building new caged housing systems and new farms are often free-range or barn systems due to consumer perceptions relating to hen welfare, hen health and environmental management.

You're tasked with gathering and analysing information about the production systems and management techniques used by egg farmers in Australia, analysing them with a specific emphasis on hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations.

You are then tasked with designing a 5-8 minute documentary to develop other people's understanding about:

- How egg farmers raise and house chickens to produce eggs;
- How each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and
- How the production systems and management techniques used can become more sustainable.

You are required to include the performed and researched script of your group's findings and all group members need to be involved in the research, analysis of findings and production of the documentary.

High, low and no tech options are available.

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

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

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

Short video clips and images for use in your documentary can be found in the educational resources section of [www.csef.org.au](http://www.csef.org.au)

What kind of researcher will you be? What research can assist you develop deep understandings about how egg farmers raise and house chickens to produce eggs? What research can inform you about the advantages and disadvantages of each production system? What investigations can you undertake to discover more about how the production systems and management techniques used can become more sustainable?

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## Resource 1.2. Define

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Submit a written definition of the challenges you are to undertake.

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# Resource 1.3. Discover

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In your groups, begin your research about the production systems and management techniques used by egg farmers in Australia.

Collect and record information and resources about:

- How egg farmers raise and house chickens to produce eggs;
- How each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and
- How the production systems and management techniques used can become more sustainable.

**My notes:**

**Example 1: Egg Corporation YouTube Channel**

Cage eggs or free range? <http://eggs.education/CageFR>

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## Plus, minus, interesting

What do you think is really important about the way eggs are produced in this video? Use the Pluses, Minuses and Interesting (PMI) chart to evaluate any of their claims. In the Pluses column enter all the advantages of the egg production system portrayed in the video, in the Minuses column enter all the problems associate with the egg production system and in the third column enter the what you thought was most interesting or any other questions you would like to have answered.

Remember to analyse the egg production system in relation to:

- Hen health and well-being
- The environment
- Social perceptions and values about egg production
- Sustainability
- Practical and economic considerations

| Plus – or advantages | Minus – or negatives | Interesting – what you think is interesting |
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**My notes:**

Example 2: Australian egg farmer profile: John Rohde <http://eggs.education/FR1500>

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| Plus – or advantages | Minus – or negatives | Interesting – what you think is interesting |
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**My notes:**

**Example3: Australian egg farmer profile: Dion Andary** <http://eggs.education/FR10000>

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| Plus – or advantages | Minus – or negatives | Interesting – what you think is interesting |
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**My notes:**

**Resource 4: Poultry CRC <http://eggs.education/CRCHousEnv>**

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**Resource 5: Council For Sustainable Egg Farming <http://csef.org.au/>**

Barn and Aviary Housing:

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Free Range:

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Furnished cages or Modified Cages:

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Conventional cages:

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Defining Hen Welfare:

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## Resource 1.3.1. Discover a Compass Rose

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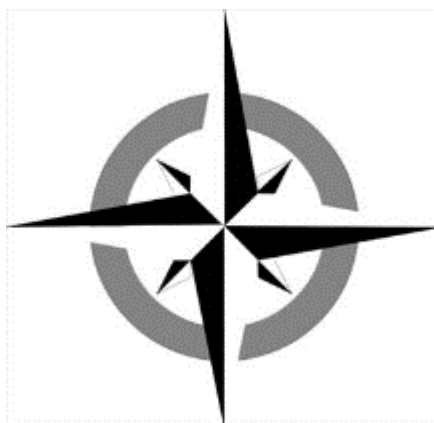
The compass rose is a framework that encourages a range of questions to be asked about issues in any place or situation. It can be used to help enquiry about any locality, its issues and their relationship to environment, social, economic and political issues.

### NATURAL

These are questions about the natural and built environment and their relationship to each other - the land, sea and living things.

### WHO DECIDES?

These are questions about power, which makes choices and decides what is to happen; who benefits



### ECONOMIC

These are questions about money, trading, aid, ownership, buying & selling.

### SOCIAL

These are questions about people, relationship, their traditions, culture and the way they live. They include questions about how, for example, gender, race,

*Source: Development Education Centre, UK: (ISBN 0 948 838 280)*

The four main compass points represent:

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

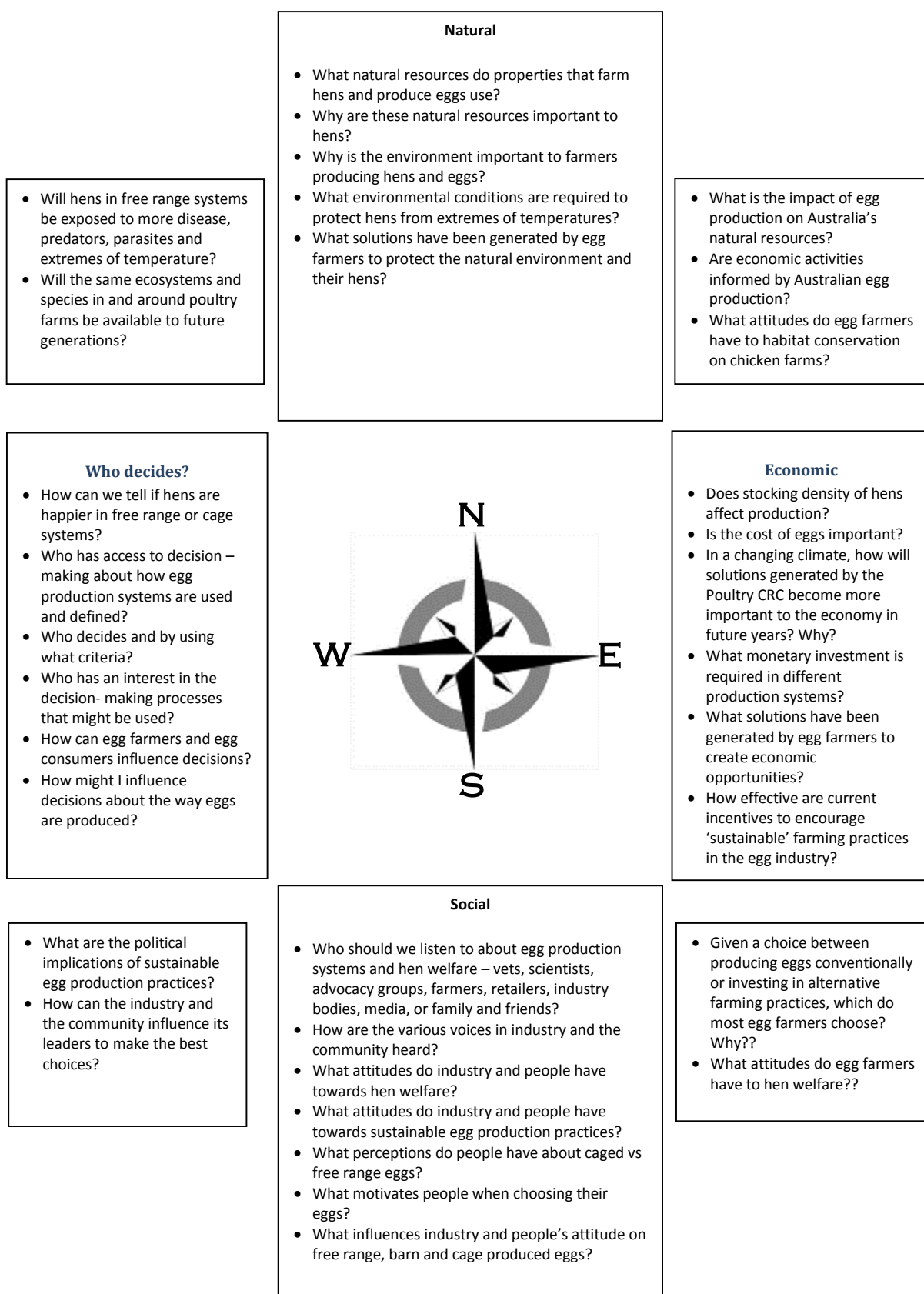
Diagonal points represent relationships between the four main points. For example, NE highlights questions about how economic activity impacts on the natural environment; SE highlights questions about the economic activity and people's lives.

Use the 'Compass Rose' and the questions it can pose on the following page to discover and research more about how the egg farmers are producing eggs sustainably; and how these farming methods and production processes may impact the environment, society, economy and decision-making at local and national levels.

Record new understandings you now have about how egg farmers can produce eggs sustainably; and how these farming methods and production processes may influence the environment, society, economy and decision-making at local and national levels.

Start thinking about how you will incorporate these into your documentary!

## Resource 1.3.2 Compass Rose Questions

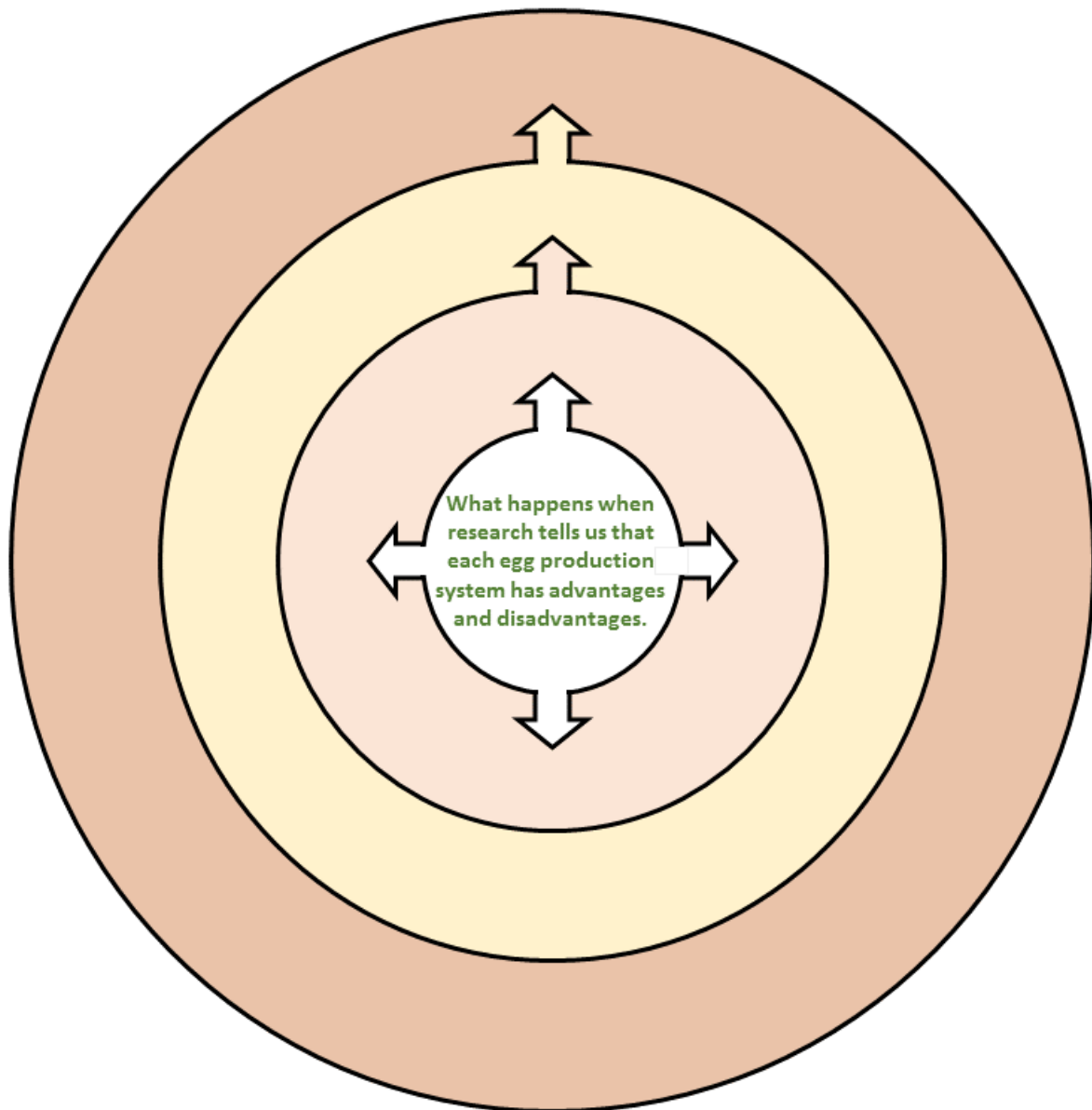


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### Resource 1.3.3. Discover Consequence Wheels

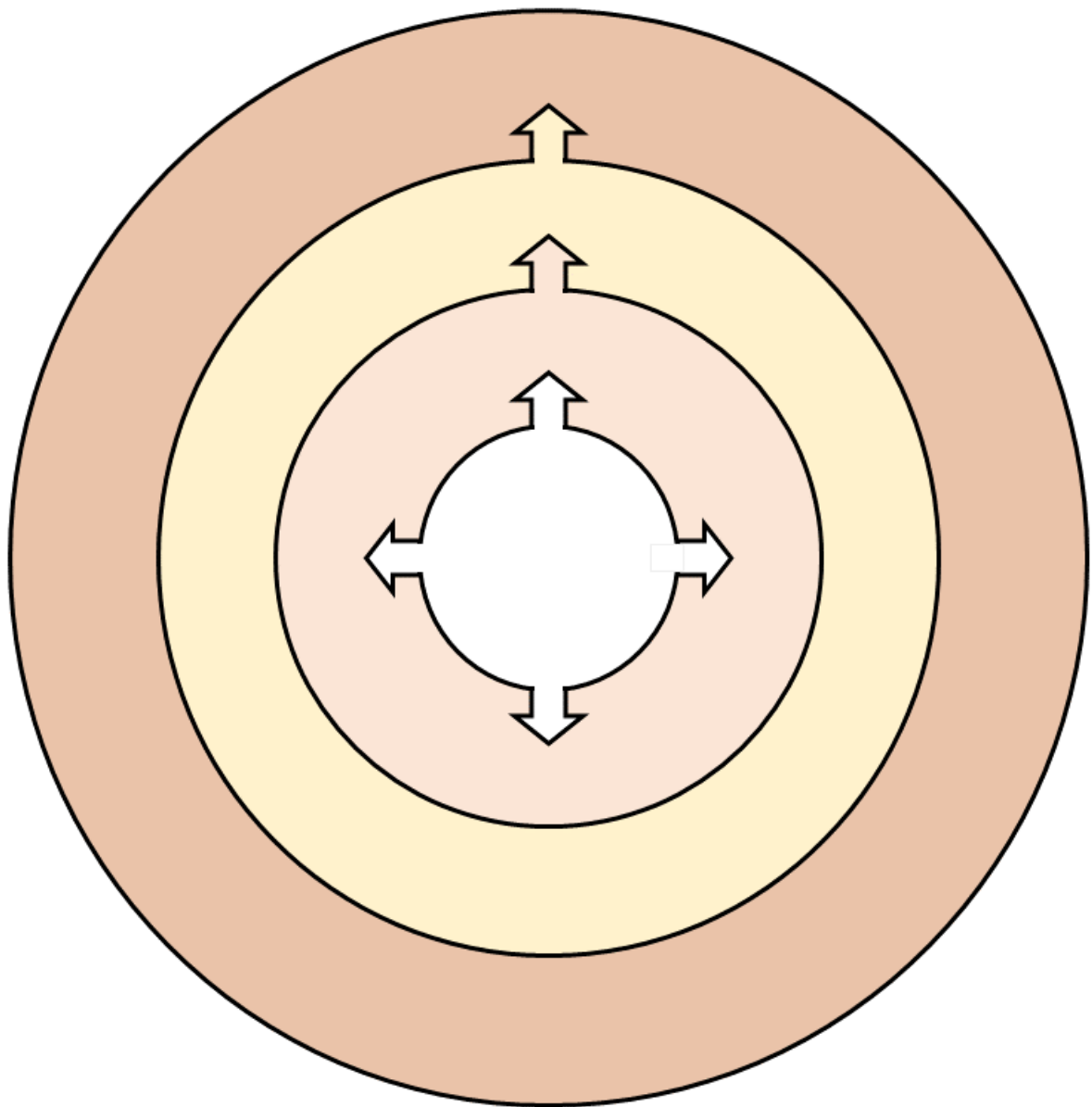
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Consequence wheels are used to explore wide ranging consequences that can follow from actions, issues or trends in the present. Look at the example below and write the immediate consequences in the inner ring around the main idea. Link each consequence to the main idea with a single line. This indicates that they are first order consequences. Continue exploring second, third and fourth order consequences using the outer circles.



## Discover Consequence Wheels

Decide on additional topics that relate to the production systems used in egg farming. Place a related question in the centre circle. Then write the immediate consequences in the inner ring around the main idea. Link each consequence to the main idea with a single line. This indicates that they are first order consequences. Continue exploring second, third and fourth order consequences using the outer circles.



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## Resource 1.4. Dream

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Consider the many possible ways egg farmers raise and house chickens to produce eggs; how each production system has advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations; and how the production systems and management techniques used can become more sustainable.

What will you make your documentary about?

How will the group bring the topic alive for viewers?

How will you grab their attention?

What is it about this topic that you want everyone to know?

How will you use your ideas?

How will you approach writing your script?

How will your script inform, entertain, inspire thought and perhaps action?

This is your chance to make a truly great and memorable documentary!

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## Resource 1.5. Design

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Preparing a project plan to outline information that needs to be gathered, who is responsible, and where they will seek information, how it will be gathered and how long will the task take. The plan should also include identifying the materials, tools and equipment and planning and production steps required for making the documentary and associated script. For example:

| What do we need to do?   | Who is going to do it and how?  | How will we gather the information?   | How can our products and processes be improved? |
|--|---|---|---|
| Create a 5-8 minute documentary and associated script to develop other people's understanding about different production systems and management techniques used by egg farmers in Australia; how each production system has advantages and disadvantages; and how the production systems and management techniques used can become more sustainable.           | Go to the library and read for information  | Will we keep a wiki?<br><br>Will we keep a learning log?<br><br>Will we record all information?<br><br>Will we meet twice a week to share what we have found? | Meet and discuss<br><br>Set up a blog           |
| Analyse each production system and describe the advantages and disadvantages in relation to hen health and well-being; the environment; social perceptions and values about egg production; sustainability; and practical and economic considerations.<br><br>Record information and sources/references<br><br>Describe ideas about how production systems and | Web search<br><br>PMI describing pluses, minuses and interesting points<br><br>Keep a list of sources |   |   |



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| management techniques used can become more sustainable. |                                    |  |  |
| Decide on what tools to use to create our documentary.  | Research how to make a documentary |  |  |
| Draft the script and storyboard.                        |                                    |  |  |
| Edit the script and storyboard.                         |                                    |  |  |
| Present the documentary and script.                     |                                    |  |  |