

Eggs, The Inside Story - A Science Based Unit for Students aged 9-11 years

Science

Students develop knowledge of eggs through observing, experimenting, researching and recording. They investigate the lifecycle of chickens, egg production methods and the processing of eggs. They develop an understanding of the importance of eggs in our diet. The welfare of chickens and the issue of sustainability is addressed.

English

The context of chickens and egg production provides students with numerous opportunities for listening, reading, viewing, speaking, writing and creating. Students work with a variety of text types for recording, reporting, presenting and interpreting information.

Mathematics

Students make estimations and measure eggs. They make calculations on the cost of eggs and setting up a backyard chicken house. They analyse data in tables and present data in the form of graphs. Students help calculate the cost of equipment required for the school chicken pen proposal.



The focus of this integrated unit is for students to develop their knowledge and understanding about eggs, chickens and the egg production industry in Australia. The new Australian National Content Descriptors from the Australian Curriculum, Assessment and Reporting Authority have been used. Activities have been included that would be suitable for the World Poultry Science Association (WPSA) schools competition.



History

Students read about the history of egg production, appreciate why changes have occurred and create a timeline. They also learn that cultural aspects affect the development of our language by researching the meaning of some of our common sayings.

Creative Arts

A number of activities, using a variety of materials and processes have been provided for teachers to use.

PE and Health

Students understand the place of eggs in our diet and how diet is managed in egg production. Safety issues when cooking are identified. PE activities are included.

Assessment

A number of worksheets have been developed for this unit. Many activities and worksheets could be used for assessment purposes.

Technology

Activities provide opportunities for using digital technology in teaching, research, calculation and presentation.

Content Descriptions	Learning Experiences	Resources
<p>• Science With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (AC SIS064) Suggest ways to plan and conduct investigations to find answers to questions (AC SIS065)</p> <p>• English Use metalinguage to describe the effects of ideas, text structures and language features of literary texts (AC ELT1604) Create literary texts that explore students' own experiences and imagining (AC ELT1607) Understand, interpret and experiment with a range of devices and deliberate word play in poetry and other literary texts, for example nonsense words, spoonerisms, neologisms and puns (AC ELT1606)</p> <p>• Mathematics Use scaled instruments to measure and compare lengths, masses, capacities and temperatures (AC MMG084)</p> <p>• English Incorporate new vocabulary from a range of sources into students' own texts including vocabulary encountered in research (AC ELA1498)</p>	<p>Activity 1 Looking at eggs.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Students observe, discuss, and test their predictions about eggs. They read about birds and discuss their unique features, some of which have given rise to sayings that have been incorporated in our language. They measure eggs and do cost calculations.</p> </div> <p>Introductory lessons Science: Questions to ask the class Where do these eggs come from? Can you describe the eggs? How are they different? Can you list the different colours? Is colour significant in any way? Can you suggest reasons for the different sizes? <i>The Story of Eggs - p11</i> What shape are the eggs? Why? Describe the shell and learn about its features. <i>The Story of Eggs - p12</i> Discuss how you can tell if an egg is fresh. Why is this important? Test by putting an egg in a bowl of water. <i>The Story of Eggs - p49</i> Discuss how you can tell if an egg is boiled. Why is this important? Test if egg is boiled. Break some eggs into a saucer. Ask students to identify the parts and discuss observations. Complete the "Looking at Eggs" worksheet. Display and discuss a collection of images of poultry and eggs. <i>Poultry Agskills: A Practical Guide to Farm Skills p4, 7-11.</i></p> <p>Interesting website: http://en.wikipedia.org/wiki/File:Oeufs002b.jpg What other eggs can be eaten e.g. eggs of fish?</p> <p>English: Read "What makes a Bird a Bird" by M. Garelick Discuss the information, text structure and language features in the book. Use the list of chicken sayings to develop activities involving reading, researching, interpreting, illustrating, and oral presentation. Write a report about chicken eggs.</p> <p>Maths: Measure the dimensions and mass of eggs. Undertake calculations on the cost of eggs.</p> <p>Visual Arts: Choose one or more activities on the Visual Arts sheet.</p> <p>Library Research: There is a series of library research/information skill activities in the Library Research section that should be introduced with this activity.</p> <p>Spelling: There are word lists and activities to complement the class spelling program to be introduced with this activity.</p>	<ul style="list-style-type: none"> • Collect a variety of hen eggs. Include eggs that are small, medium, large, extra large, white, brown, pink and freckled -use fresh eggs if possible. • One old egg - required for the freshness test. • One hard-boiled egg - for boiled egg test. • "Looking at Eggs" worksheet. • A collection of images of poultry. • Book "Poultry Agskills: A Practical Guide to Farm Skills" by D Brouwer • Book "The Story of Eggs" The Workboot Series Kondinin Group • "Science Experiments 1" worksheet. • "Spelling Activities" worksheet. • Book "What makes a Bird a Bird" by May Garelick, illustrated Trish Hill. • "Bird Sayings" worksheet. • "Measuring Eggs" worksheet. • "Visual Arts" sheet <p style="text-align: center;">Additional Information</p> <p>Always wash your hands after you have been touching broken or uncooked eggs.</p> <p>Interesting Facts: Australian consumers prefer brown eggs while Americans prefer white eggs. Some consumers think brown eggs are healthier than other colours. This is not true.</p>

<ul style="list-style-type: none"> • Science Compare results with predictions, suggesting possible reasons for findings (AC SIS216) Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports (AC SIS071) • English Create literary texts that explore students' own experiences and imagining (AC ELT1607) • Visual Arts Experimenting with a variety of methods of decorating eggs, traditional and modern. Appreciating the history of decorated eggs in different cultures. 	<p>Activity 2 Experiments with eggs.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Students undertake experiments with eggs and discuss their findings. They write recounts of the experiments on worksheets. They undertake decorating egg activities in Visual Arts.</p> </div> <p>Science: Discuss experiment techniques. Collect resources for the experiments. Ask students to predict what will happen. Divide students into groups and provide each group with an experiment or do as a whole class. Report and discuss the results. Record findings on the Factual Recount worksheet. Experiments: Floating an Egg in Salt Water, Strength of an Egg, Bouncing Eggs and Egg in a Bottle. http://cocopreme.hubpages.com/hub/Egg-tremelyFunandEasyEggExperiments English: Writing activities - poetry writing about eggs. Suggestions – shape, colour, texture, potential for food or new life. - recount on each science experiment. Visual Arts: Colouring and decorating eggs. The CD “Eggs Resource Kit” file <i>WBS Egg Kit.pdf, p143-157</i> has a number of creative activities.</p>	<ul style="list-style-type: none"> • “Science Experiments 2” worksheet. • Materials for cleaning up. • “Factual Recount (Experiment)” worksheet • Book “The Story of Eggs” The Workboot Series Kondinin Group p55 • “Factual Recount (Experiment)” worksheet • Chicken Eggs, “Visual Arts” sheet • CD “Eggs Resource Kit” The Workboot Series, Kondinin Group, 2007. <p style="text-align: center;">Additional Information</p> <p>Remind students to wash their hands after handling eggs.</p>
<ul style="list-style-type: none"> • Science Living things have life cycles (AC SSU072) • English Create literary texts. Understand that social interactions influence the way people engage with ideas and respond to others for example when exploring and clarifying the ideas of others, summarising students' own views and reporting them to a larger group (AC ELA1488) 	<p>Activity 3 Looking at lifecycles of oviparous animals</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Students investigate the role of eggs in the lifecycle of chickens. They look at the basic anatomy of a chicken and graph time and temperature.</p> </div> <p>Science: Chickens belong to a group of animals that are oviparous. Introduce the lesson with the word oviparous and discuss briefly. Draw/display the lifecycle of a chicken and discuss the various stages. Provide the Lifecycle of a Chicken worksheet with pictures of eggs, hens, chickens, and roosters for Students to make a chicken lifecycle for their workbooks or to display. Display the egg diagram used in Activity 1. Discuss the parts in relation to the development of a chicken. <i>The Story of the Eggs – p10</i>. Incubating Eggs Discuss hatching, naturally and in an incubator. List the conditions required for eggs to hatch. (fertile eggs, broody hen or incubator, constant temperature, suitable humidity level and quiet area) http://www.poultryhub.org/bird-health-and-disease/raising-backyard-chicken/</p>	<ul style="list-style-type: none"> • Book “Poultry Ag Skills A Practical Guide to Farm Skills” • Lifecycle of a Chicken worksheet • DVD From Hatchery to Home – incubator section only • Temperature and Time worksheet • Chicken Anatomy worksheet • Visual Arts sheet

<ul style="list-style-type: none"> • Mathematics Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values (ACMSP096) • Visual Arts Represent the features of chickens using wool. 	<p>DVD From Hatchery to Home – incubator section only. (At this stage, the teacher could have the class hatch eggs using an incubator and fertilised eggs. <i>Poultry Ag Skills A Practical Guide to Farm Skills - p15 -18</i>. You will need a small incubator and some fertilised eggs to hatch some chickens in the classroom. Ask the parent body, a local high school or the local chicken breeders association, if you are interested. This is a worthwhile activity as it generates many educational experiences as well as enjoyment.)</p> <p>English: Write a joint class explanation of the lifecycle of a chicken.</p> <p>Maths: Use the Temperature and Time worksheet to graph the times involved in the chicken lifecycle and the temperatures involved in hatching.</p> <p>English: Label the various external features of a chicken on the Chicken Anatomy worksheet. Talking/Listening activity. Class debate “Which came first the chicken or the egg?” Students could collect and present six “Why the Chicken Crossed the Road” jokes.</p> <p>Visual Arts: Making chickens from woollen pompoms. See Visual Arts sheet.</p>	<p>Additional Information Note: ovoid - egg shaped solid. oviform - egg shaped, oval, ellipsoidal. Only unfertilised eggs are sold for eating.</p> <p>Many mathematical activities are available if you hatch eggs with an incubator e.g. recording the feed and water calculations after hatching, mass of chickens over a number of weeks.</p> <ul style="list-style-type: none"> • suitable for the World Poultry Science Association (WPSA) schools competition.
<ul style="list-style-type: none"> • Science With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (ACSIS064) • English Use comprehension strategies to build literal and inferred meaning to expand content knowledge, integrating and linking ideas and analysing and evaluating texts (ACELY1692) • Maths Construct suitable data displays, from given or collected data. (ACMSP096) 	<p>Activity 4 Methods of egg production</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Students investigate the three main methods of commercial egg production. They learn about the preparation of eggs for sale using a flowchart. They interpret and graph data.</p> </div> <p>Science: Production Where do people buy their eggs - supermarkets, farmers’ markets, friends, organic produce stores and others? Discuss. Display a collection of egg cartons obtained from a supermarket. For example, barn laid, cage, free-range, organic, omega 3, etc. What information do the cartons provide? Make a list of the different types of eggs available for sale. Use egg carton labels to assist. List the main types of egg production, (barn laid, free-range and cage) used by commercial and backyard producers. Watch the DVD, “It all starts with an Egg”, and fill in the Egg Production worksheet by listing the features of each method in the table and discuss the advantages and disadvantages. Discuss the issue of sustainability. What efforts do produces make to be sustainable?</p> <p>English: Appreciate the role of Maremma dogs in the production of free-range eggs.</p> <p>Maths: Analyse and graph data regarding egg production.</p> <p>Science: The steps in commercial egg preparation from farm to store Brainstorm the processes involved in preparing eggs for sale. Record ideas on the board. Complete the Commercial Egg Preparation Procedure worksheet. Compare the students’ efforts with their original ideas and confirm with the teachers copy in the Teachers Help folder.</p>	<ul style="list-style-type: none"> • A collection of egg cartons from a supermarket. • Book “The Story of Eggs” The Workboot Series Kondinin Group • DVD “It all starts with an Egg” • Egg production worksheet • Maremma Guard Dogs worksheet • Spreadsheet calculations worksheet • Preparing eggs for sale. The Story of Eggs - p34. • Commercial Egg PrepProc worksheet • DVD ‘Finding the Good Egg: Egg Candling-What to Look For’ • Processing Eggs. The Story of Eggs - p36-38. • Visual Arts sheet.

	<p>Create a class wall chart illustrating the processes. (Group students and allocate one stage to each group. Add computer-generated captions.) Watch the DVD ‘Finding the Good Egg: Egg Candling-What to Look For’ What happens to the eggs that are rejected during the above process? Make a class display of labels/products which use the rejected eggs from the candling process e.g. mayonnaise. Visual Arts: Activities from the Visual Arts sheet.</p>	<p>Additional Information Research the invention of modern egg cartons.</p>
<ul style="list-style-type: none"> • Science Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073) Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports (AC SIS071) • English Use comprehension strategies to build literal and inferred meaning to expand content knowledge (ACELY1692) • Maths Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies (ACMNA080) • History Sequence historical people and events (ACHHS081) • Visual Arts 	<p>Activity 5 Welfare of Chickens</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Students reflect on the responsibilities of caring for animals/chickens. They design and make a model chicken house incorporating safety and comfort requirements. They calculate the costs involved in backyard chicken raising. They appreciate the wide variety of chicken breeds and the developments in commercial egg production.</p> </div> <p>Display the Breeds poster and discuss the content. Students use the information on the poster to complete the Chicken Breeds worksheet. Brainstorm the basic requirements and responsibilities when caring for an animal. Develop a list for keeping chickens. <i>Poultry Agskills: A Practical Guide to Farm Skills, p 29-31.</i> Compile a list of people who care for chickens in the egg production industry. Complete the People Who Work in Egg Production worksheet. Consider environmental effects of egg production. <i>The Story of Eggs – p58-59.</i> Project: Read and explain the Design and Make worksheet. Have students design and make a model chicken house as outlined. Maths: Look at the dimensions of chicken pens and complete cost calculations for building a chicken house and pen. Reflect on the benefits and disadvantages of various production methods from Activity 4 English: Read about and discuss issues of animal welfare and what various government agencies are doing to ensure all animals are treated fairly. Read the Brief History of Egg Production worksheet and complete the questions and timeline. Research: Interview grandparents about their memories of chicken raising when they were young. Report findings and discuss differences. Visual Arts: Rooster painting activity from Visual Arts sheet.</p>	<ul style="list-style-type: none"> • Chicken Breeds in Australia poster • Book Poultry Agskills: A Practical Guide to Farm Skills, p 29-31 • Book “The Story of Eggs” The Workbook Series Kondinin Group p 58-61. • Chicken Breeds worksheet • People Who Work in Egg Production worksheet • Design and Make worksheet • Chicken House Mathematics worksheet • Brief History Egg Production worksheet • Visual Arts sheet <p>Additional Information</p> <ul style="list-style-type: none"> • Suitable for the World Poultry Science Association (WPSA) schools competition.
<ul style="list-style-type: none"> • Science Natural and processed materials have a range of physical properties; These properties can influence their use 	<p>Activity 6 Eggs in our diet</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Students investigate the nutritional value of eggs. They perform calculations involved in buying eggs.</p> </div> <p>Science: Nutrition</p>	<ul style="list-style-type: none"> • Food Triangle poster • Book “The Story of Eggs” The Workbook Series Kondinin Group p 42-44, 50-51.

Poultry Industry Teaching Resource

<p>(ACSSU074)</p> <ul style="list-style-type: none"> • Maths Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies (ACMNA080) • English Understand how texts vary in complexity and technicality depending on the approach to the topic, the purpose and the intended audience (ACELA1490) 	<p>Display a Food Triangle poster. Explain the purpose of the poster. Place words from the Display Card sheet around the room as a stimulus for discussion. Explain why eggs are such an important part of our diet? <i>The Story of Eggs – p42-44.</i> Look at how often eggs are eaten. Complete the table in the Eggs in Food worksheet and discuss the findings. Survey the class for favourite egg based food. Tally and create picture graph of the results. Discuss egg allergies in some people and people on a vegan diet. English: Complete the worksheet “Why Eggs are Good for Us” Science: Cooking What properties do eggs have that are useful in cooking? <i>The Story of Eggs – p50-51.</i> Can you boil an egg? Conduct a survey of parents for different boiling egg methods. Look at variations and test results in a class cook off. Make a list of accidents that could occur when cooking eggs e.g. burns, scalds. Compile a list of precautions to be taken. English: Look at recipe format/procedural text using pikelets as an example. Maths: Perform calculations involved in buying eggs.</p>	<ul style="list-style-type: none"> • Eggs in Food worksheet • Why Eggs are Good for Us worksheet • Display Card words • Pikelets worksheet • Supermarket Eggs worksheet <p>Additional Information</p> <p>Safety issue Care to be taken when cooking in the classroom – suggest parent helper be considered.</p>
<p>Sustainability Priority OL.9 Products and built systems and environments can be designed and/or managed to improve both people’s wellbeing and environmental sustainability.</p> <ul style="list-style-type: none"> • Science Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073) • English Plan, draft and publish imaginative, informative and persuasive texts containing key information and supporting details for a widening range of audiences, demonstrating increasing control over text structures and language features (ACELY1694) 	<p>Activity 7 Proposal for a School Chicken Pen</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Students prepare a submission, proposing a school chicken pen and egg production project with a vegetable garden and could involve the parent community, the local community, the school canteen, students and teachers.</p> </div> <p>Research: Look on your local council website for their regulations on keeping poultry in your local area. Discuss the reasons for these regulations and why they have become necessary. Brainstorm: List the advantages and disadvantages of setting up a school chicken pen. The issue of sustainability should be considered. Decide on a design and site with consideration for water and security. Investigate the, materials required, costs, suitable breeds, suppliers, a care routine (consider weekends and school holidays), and what to do with the eggs, manure and used straw. Consider planting suitable vegetation around the fence for screening and inside the chicken pen. Space for the storage of food and equipment is also necessary. Develop a vegetable garden where waste products from the chicken pen can be used. Produce can be used in school cooking activities or sold in the canteen or school market. Invite parents to be involved. Talk to local people who have backyard chickens for more information. Written Submission: Construct and present a submission (exposition) to the school principal or school council explaining why a chicken pen would be good for the school. This may be an exercise or a genuine request.</p>	<ul style="list-style-type: none"> • Poultry CRC www.poultryhub.org/ • Chicken Breeds in Australia poster • Book “The Story of Eggs” The Workboot Series Kondinin Group p 58-61. <p>Additional Information</p> <ul style="list-style-type: none"> • Suitable for the World Poultry Science Association (WPSA) schools competition.