 Chicken Coop Community Project

Stage 3 10 weeks

Science and Technology

Mathematics

English

Project idea

How can we create an environment for chickens that is aesthetically pleasing, environmentally conscious and sustainable?

Outcomes addressed

Science and Technology

* ST3-5WT – plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints
* ST3-11LW – describes some physical conditions of the environment and how these affect the growth and survival of living things
* ST3-16P – describes systems used to produce or manufacture products, and the social and environmental influences on product design
* ST3–13MW – describes how the properties of materials determine their use for specific purposes

[Science (incorporating Science and Technology K-6) K-10 Syllabus](http://syllabus.nesa.nsw.edu.au/science/science-k10/) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2012

Mathematics

* Working Mathematically
* Communicating – MA3-1WM – describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
* Problem Solving – MA3-2WM – selects and applies appropriate problem solving strategies, including the use of digital technologies, in undertaking
* Reasoning – MA3-3WM – gives a valid reason for supporting one possible solution over another
* MA3-5NA – selects and applies appropriate strategies for addition and subtraction with counting numbers of any size
* MA3-6NA – selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation
* MA3-9MG – selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length
* MA3-10MG – selects and uses the appropriate unit to calculate areas, including areas of squares, rectangles and triangles
* MA3-14MG – identifies three dimensional objects, including prisms and pyramids, on the basis of their properties, and visualises, sketches and constructs them given drawings of different views
* MA3-15 MG – manipulates, classifies and draws two-dimensional shapes, including equilateral, isosceles and scalene triangles, and describes their properties.
* MA3-16MG – measures and constructs angles, and applies angle relationships to find unknown angles
* MA3-17MG – locates and describes position on maps using a grid-reference system

[Mathematics K-10 Syllabus](http://syllabus.nesa.nsw.edu.au/mathematics/mathematics-k10/) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2012

English

* EN3-1A – communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features
* EN3-2A – composes, edits and presents well-structured and coherent texts
* EN3-3A – uses an integrated range of skills, strategies and knowledge to read, view and comprehend a wide range of texts in different media and technologies

Student:

* EN3-5B discusses how language is used to achieve a widening range of purposes for a widening range of audiences and contexts
* EN3-6B uses knowledge of sentence structure, grammar, punctuation and vocabulary to respond to and compose clear and cohesive texts in different media and technologies
* EN3-7C thinks imaginatively, creatively, interpretively and critically about information and ideas and identifies connections between texts when responding to and composing texts
* EN3-9E recognises, reflects on and assesses their strengths as a learner.

[English K-10 Syllabus](http://syllabus.nesa.nsw.edu.au/english/english-k10/) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2012

Major products and performances

Group –

* chicken care book
* design process including 2D and 3D sketches, 3D model and construction procedure
* presentation of design process

Individual –

* weekly feedback and reflection

Presentation audience

[ ]  class

[ ]  school peer class

[ ]  community

[ ]  other

Formative assessment

[ ]  journal/learning log

[ ]  checklists

Summative assessment

[ ]  written products with rubric – chicken care book and design process

[ ]  oral presentation with rubric – design process

[ ]  self-evaluation

Resources needed

Equipment/materials

* technology including BYOD devices, digital cameras, laptops, computers, printers.
* stationery
* construction materials as identified by individual groups to create their 3D model.

On-site people, facilities

* AHS staff to assist with science, technology, design and construction processes.
* computer lab

Reflection methods

[ ]  journal/learning log

[ ]  whole class discussion

Project assessment map – the APS Chook Farmers – 10 weeks

Driving question

How can we design and construct a chook shed suitable for APS?

Chicken Care Book

Weeks 1-4

Design process

Weeks 5-8

Design presentation

Weeks 9

Reflection and feedback

all term – ongoing

Timeline

Week 1

* Entry event – Tuesday 12pm – whole stage in hall, STEM teachers explain and introduce.
* Staff may like to display STEM timetable/unit overview in their classrooms.
* KWLHQ – students complete individually and then combine to make class version.
* KWLHQ sheet.
* AHS staff and students visit to APS to present information on the care of chickens. Students to use attached note taking sheet.

Assessment – feedback and reflection

To be completed after AHS visit. All feedback and reflection sheets to be kept for final assessment.

Week 2

English – text deconstruction

* Read and analyse L9 text Earthworms with class. The purpose of this activity is to highlight and discuss the features of a big book which students will need to focus on when creating their care book.
* analysis sheet
* earthworms
* Chicken Care Book –
	+ allocate students into groups. No more than 3 per group
	+ discuss ‘sound’ criteria for chicken care book using rubric
	+ STEM groups begin using scanned texts, high school PowerPoint’s and self – located resources read, highlight and re-write information they will need for their care book using the attached RUBRIC. Teachers may print sections of texts or allow students to refer to them on collaboration. Copies of resources are already in collaboration.

Science – Living world – objectives

* complete and stick in APS Chook Farmers title page
* label the external parts of a chicken
	+ completed sheet
	+ student sheet
* label the internal parts and organs of a chicken
	+ completed sheet
	+ student sheet
* match internal chicken organs to their definition. Students cut out and place definitions where they think they go. Before students stick this in, discuss as a group and allow students to make adjustments where necessary.
	+ matching sheet

Assessment – feedback and reflection

* Students add information to the ‘what I learned’ and ‘how I learned’ sections to their KWLHQ sheet. Students complete their week 2 feedback and reflection sheet.
* It is important to refer to this feedback and reflection sheet during the week so that students are clear on the learning intentions. You may like to get the students to fill this out at the week progresses.

Week 3

English – Science – Living world – chicken care book

Students work in groups to create a care book for K-2 students. Each student is responsible for one (or possibly 2) sections. This will be the English writing component. Students;

* continue to use scanned resources and/or information they have researched to use in their care book. Remember to use RUBRIC.
* create draft care book on paper including layout, design and sub headings.
* start to find relevant diagrams and photos for care book and save in a file.

Mathematics

Continue chicken care book.

Assessment – feedback and reflection

* Students add information to the ‘what I learned’ and ‘how I learned’ sections to their KWLHQ sheet.
* Students complete their week 3 feedback and reflection sheet. It is important to refer to this feedback and reflection sheet during the week so that students are clear on the learning intentions. You may like to get the students to fill this out at the week progresses.

Week 4

English – care book publishing

Groups will continue their care books this week. All groups should have their draft copy completed and approved by teacher for publishing. Ensure that all groups are using the assessment RUBRIC to inform their publishing and content included. Students may use their choice of software to publish their book.

Mathematics – Science – Living world – design process

Required elements

* Students investigate what chickens require to live happily, healthy and safely in a chicken coop.
* Students explore and define a task by –
	+ identifying the users' needs and wants using techniques, eg observations, surveys, interviews and market research
	+ developing a design brief individually and in collaboration with others
	+ developing design criteria that considers, where relevant, function, aesthetics, social and environmental considerations
	+ planning the process considering constraints where relevant, eg time, finance, resources and expertise
* Students complete research proforma.
* Students research a variety of chicken coop considering factors researched for chicken requirements.
	+ An image of a drafted chicken coop on chicken raising forum – <http://www.backyardchickens.com/forum/uploads/91056_img_0566.jpg>
* Teacher information for requirements of chickens.
	+ A website on how to build a chicken coop – <http://farmstyle.com.au/news/how-build-chicken-coop>
	+ A website on chicken coop requirements – <http://www.mypetchicken.com/backyard-chickens/chicken-care/chapter-5-chicken-coop-requirements.aspx>
* Each student designs their own 2D design to scale and labelled. See example attached.
	+ A step-by-step guide on how to build a chicken coop – <http://www.sbs.com.au/shows/costa/tab-listings/detail/i/1/article/6947/Chicken-Coop-Plans-and-Details>
* Each groups collaborates with all group members and chooses parts of each design that they would like in their group’s final design.
* As a group redesign your models reflecting on feedback from individual designs.

Using digital technologies

* identifying a range of appropriate materials for the task
* selecting and using techniques to investigate the suitability of materials
* applying established criteria to evaluate and modify ideas

Scaffold of design process

Week 5

Mathematics – Science – Living world – design process

Visiting expert to speak about:

* Building materials and
* Tech drawing

Design process:

* Students create draft 2D sketches of their model. Front, side and top. Needs to include scale, lengths and widths. Can use grid paper.

Students produce solutions by –

* testing the suitability of materials, considering whether the test was fair or not
* developing a plan and specifications to guide production
* using their plans and production sequence
* for a design project, selecting and safely using a range of tools, equipment and related techniques to cut, edit, join, manipulate and shape materials and/or information

Students use rubric to ensure that all relevent sections are included in plans.

Assessment

* Published and handed in by end of week. Refer to attached rubric for marking criteria.
* Feedback and Reflection.

Week 6 and week 7

Mathematics – Science – Living world – design process

* Students draft and publish 2D sketches of their model. Needs to include scale, lengths, widths and area. Can use grid paper.
* Students use recycled materials to create 3D model of their design
* Students create a sequential building process that includes materials and explicit steps that include written and visual information. Students have choice over presentation of their design process.
* Refer to rubric for marking criteria

Assessment

Feedback and reflection.

Week 8

English – design process

Students use English writing time to collate and publish all elements of their design process. They will then need to develop a presentation for the class. All members need to have a speaking role as they will be marked on this.

Assessment – design process

All elements collated, published and handed in by end of week. Refer to attached rubric for marking criteria.

Week 9

English – presentation – design process

* Groups present their design process to the class.
* Entries are voted on and winners present the following week to entire stage.

Assessment

Presentation of design process

Refer to attached rubric for marking criteria.

Peer Marking

Each STEM group will mark each other’s presentations using the following sheet.

Week 10

English – presentation – design process

Winning class entries present designs to stage 3 and voted on to determine winning entry.

Assessment

Feedback and reflection

Final reflection to be completed. Teachers use this sheet to mark English reflection outcome

Overall achievement

Teachers use following marking sheet to show overall marks for each individual. Take into account group marks for each assessment as well as individual work ethic, contributions and reflections.