

Class: 2C
Teachers: G. Callachor

Status: 18/05/16 - 29/05/16 Duration: 6 weeks
Type: Class

Unit Outline

In this unit students apply a variety of technological concepts in real-life and lifelike concepts.

Through the Design and Technology strands – Knowledge and Understanding and Processes and Production skills, students have opportunities to develop understandings of:

- **Knowledge and Understanding:**
 - Explore the **characteristics** and **properties** of **materials** and **components** that are used to produce **designed solutions** (ACTDEK004)
- Elaborations:**
 - Explore materials, components, tools and equipment through play to discover potential uses when making products or modeling services and environments, for example when designing and making clothes, toys and shelters
- **Processes and Production skills:**
 - Use **materials, components, tools, equipment** and techniques to safely make **designed solutions** (ACTDEP007)
- Elaborations:**
 - Use, play and plan with everyday materials in new ways to explore different kinds of materials and/or re-use discarded materials, design, make, and/or model a constructed environment or product with a specific purpose.

Misunderstandings and common misconceptions that students may have in this unit include:

- Materials are fabrics
- Students think of the object other than what it is made of
- Design means making something 'pretty'
- Design is clothing
- Equipment is only used in sports
- Tools belong in the shed
- Tools are only used to fix things

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Curriculum Priorities	Teaching Sequence	Resources
<ul style="list-style-type: none"> • Australian Curriculum • Cross Curriculum and General Capabilities approaches 	<p>Week 1: Introduce the concept of materials and their traits</p> <p>Week 2: Understanding the similarities and differences of housing and shelter using natural resources from Aboriginal histories in comparison to the materials used in the <i>Three Little Pigs</i>. Students examine properties of recyclable and non recyclable materials</p> <p>Week 3: Students explore and examine materials and begin planning a design of sustainable housing for the pigs. The design plan is measured as a summative assessment</p>	<p>Three Little Pigs</p> <p>Sheet: My House</p> <p>Characteristics of materials</p> <p>Aboriginal Industry Part 3</p>

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	<p>Week 4: Students provide reasoning for choice of materials to develop the pigs house and begin construction</p> <p>Week 5/6: Students products are assessed through summative assessment and individually reflected and reported on</p>	<p>Ben's Model of Aboriginal housing</p> <p>Rotations: Straws, marsh mellows, Lego, cardboard, sugar cubes, bundle of sticks, bundle of straws, paddle pop sticks, cardboard boxes, toilet paper rolls, scissors, PVA glue, sticky tape</p> <p>Sheet: Sustainable Materials</p> <p>Sheet: Design Our House</p> <p>Sheet: Was it Sustainable?</p>
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<p>Australian Curriculum</p>
<p>Technology- Year 2</p>
<p>Year 2 Level Description</p> <p>Learning in Design and Technologies builds on concepts, skills and processes developed in the Early Years Learning Framework, revisiting, strengthening and extending these as needed.</p> <p>By the end of Year 2 students will have had the opportunity to create designed solutions at least once in each of the following technologies contexts: Engineering principles and systems; Food and fibre production and Food specialisations; and Materials and technologies specialisations. Students should have opportunities to experience designing and producing products, services and environments. This may occur through integrated learning.</p> <p>In Foundation to Year 2 students explore and investigate technologies – materials, systems, components, tools and equipment – including their purpose and how they meet personal and social needs within local settings. Students develop an understanding of how society and environmental sustainability factors influence design and technologies decisions. Students evaluate designed solutions using questions such as 'How does it work?', 'What purpose does it meet?', 'Who will use it?', 'What do I like about it?' or 'How can it be improved?' They begin to consider the impact of their decisions and of technologies on others and the environment including in relation to preferred futures. They reflect on their participation in a design process. This involves students developing new perspectives, and engaging in different forms of evaluating and critiquing products, services and environments based on personal preferences.</p> <p>Using a range of technologies including a variety of graphical representation techniques to communicate, students draw, model and explain design ideas; label drawings; draw</p>

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objects as two-dimensional images from different views; draw products and simple environments and verbalise design ideas.
 They plan (with teacher support) simple steps and follow directions to complete their own or group design ideas or projects, and manage their own role within team projects.
 Students are aware of others around them and the need to work safely and collaboratively when making designed solutions

Curriculum Priorities - Pedagogy

Dimensions of teaching and learning

<p>Curriculum intent</p> <p>What do my students need to learn?</p> <p>Curriculum is the planned learning that school offers and enacts</p> <p>Curriculum intent is what we want students to learn from the mandated curriculum</p> <p>Teachers decide how to best plan and deliver the curriculum to ensure all students have opportunities to engage in meaningful learning.</p>	<p>Content descriptors: This unit provides opportunities for students to engage in the above Australian Curriculum Content Descriptors</p> <p>General capabilities:</p> <p>Literacy:</p> <ul style="list-style-type: none"> • Comprehending texts through listening, reading and viewing (text knowledge, word knowledge, visual knowledge) • Composing texts through speaking, writing and creating (visual knowledge, word knowledge) <p>Numeracy:</p> <ul style="list-style-type: none"> • Recognising patterns, relationships and similarities <p>Critical and Creative thinking:</p> <ul style="list-style-type: none"> • Inquiring - identifying, exploring and organising information and ideas • Generating ideas, possibilities and course of action • Reflecting on thinking and processes • Analysing, synthesising and evaluating reasoning and procedures <p>Information and communication technology (ICT) capabilities:</p> <ul style="list-style-type: none"> • Creating with ICT <p>Personal and social capabilities:</p> <ul style="list-style-type: none"> • Self-management • Social awareness • Social management <p>Cross-curriculum priorities: Aboriginal and Torres Strait Islander histories and cultures Students will develop a knowledge, understanding and respect</p>
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	<p>for Aboriginal peoples' and Torres Strait Islander peoples' history and culture and build an awareness that their histories are part of a shared history belonging to all Australians. Acknowledging the embedding of Aboriginal peoples' and Torres Strait Islander peoples' histories and cultures into the curriculum can be a challenging task. Within this unit plan, such cultures can be addressed by:</p> <ul style="list-style-type: none"> • Developing an understanding of how houses and shelters were created throughout Australian history • Considering what/how sustainable materials were sourced and constructed to develop forms of housing and/or shelters • Would these methods of construction still be suitable today, how, why? <p>Sustainability:</p> <ul style="list-style-type: none"> • Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of housing/shelters • Designing action for sustainability requires an evaluation of past practices
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Feedback	Supportive learning environment: differentiation
<p>What do my students already know? What do my students need to learn?</p> <p>How do I teach it?</p> <p>Feedback is information and advice provided by a teacher, peer, parent or self about aspects of someone's performance. The aim of feedback is to improve learning and is used to plan what to teach next and how to teach it.</p> <p>Teachers and students use feedback to close the gap between where students are and where they aim to be. Teachers use self-feedback to guide and improve their teaching practice.</p>	<p>What do your students already know and what do your students need to learn? Consider the individual needs of your students - including EAL/D, gifted and talented and students requiring additional support.</p> <p>Start where students are at and differentiate teaching and learning to support the learning needs of all students. Plan and document how you will cater for individual learning needs.</p> <p>The learning experiences within this unit can be differentiated by increasing:</p> <ul style="list-style-type: none"> • The frequency of exposure for some students • The intensity of teaching by adjusting the group size • The duration needed to complete tasks and assessment. <p>For guided and/or independent practice tasks:</p> <ul style="list-style-type: none"> • Student groupings will offer tasks with a range of complexities to cater for individual learning needs • Rotational groupings allow for more or less scaffolding of student learning. <p>Feedback to students:</p> <ul style="list-style-type: none"> • Establish active feedback partnerships between students, teachers and parents to find out:

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	<ul style="list-style-type: none"> • What each student already knows and can do • How each student is going • Where each student needs to go next. <p>Ensure feedback is timely, ongoing, instructive and purposeful.</p> <p>Feedback in this unit this may include:</p> <ul style="list-style-type: none"> • Exploring features, similarities and textures of materials <p>Sketching and designing sustainable structures Developing real-life and lifelike connections and comparisons Analysing how and if recyclable sources are sustainable Constructing sustainable models Solving simple problems through identifying cause and effect (why house was blown away) Understand how to improve future solutions for sustainable housing</p> <p>Use feedback to inform future teaching and learning.</p> <p>Reflection on the unit plan Identify what worked well during and at the end of the unit for future planning. Reflection may include:</p> <ul style="list-style-type: none"> • Activities that worked well and why • Activities that could be improved and how • Monitoring and assessment that worked well and why • Monitoring and assessment that could be improved and how • Common student misconceptions that need, or needed, to be clarified <p>Differentiation and future student learning needs.</p>
<p>Assessment</p> <p>What do my students understand and can do? How well do they know and do it?</p> <p>Assessment is the purposeful, systematic and ongoing collection of information as evidence for use in making judgments about student learning.</p>	<p>Assessment and monitoring student learning</p> <p>Student learning should be monitored throughout the teaching and learning process to determine student progress and learning needs.</p> <p>Each lesson provides opportunities to gather evidence about how students are progressing and what they need to learn next.</p> <p>Formative assessment: Specific monitoring opportunities in this unit may include:</p>

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<p>Principals, teachers and students use assessment information to support improving student learning. Feedback from evaluation of assessment data helps to determine strengths and weaknesses in students' understanding.</p>	<p>Observation Collect information about students' ability to:</p> <ul style="list-style-type: none"> Identify the issues regarding the structure of housing/shelter within <i>The Three Little Pigs</i>, respond with possible explanations Explain the purpose of materials through analysing their traits Explore and manipulate materials for intent of sustainability <p>Consultation Consult with students about their ability to:</p> <ul style="list-style-type: none"> Describe the features recyclable and sustainable materials Compare building materials Describe difference in materials Identify why materials were or were not appropriate Explain what would be done in the future to improve model outcomes <p>Samples of student work Check student understanding using:</p> <ul style="list-style-type: none"> Samples that show student attempts to design sustainable solutions <p>Summative assessment:</p> <ul style="list-style-type: none"> Students design (draw) a sustainable house that can withstand the blow of the big bad wolf Students develop a sustainable house that can withstand the blow of the big bad wolf using provided materials through the use of recyclable and non-recyclable resources materials and tools. Students assess the sustainability of their item and report on their findings by explaining why/how this could be improved OR explain why their house is deemed as sustainable.
<p>Making Judgments</p> <p>How do I know how well my students have learned?</p> <p>Teachers and students use standards to judge the quality of learning based on the available evidence. The process of judging and evaluating the quality of performance and depth of learning is important to promoting learning.</p>	<p>Year 2 achievement standard</p> <p>By the end of Year 2, students describe the purpose of familiar products, services and environments and how they meet the needs of users and affect others and environments. They identify the features and uses of some technologies for each of the prescribed technologies contexts.</p> <p>With guidance students create designed solutions for each of the prescribed technologies contexts. They describe given needs or opportunities. Students create and evaluate their ideas and designed solutions based on personal preferences. They communicate design ideas for their designed products, services and environments using modeling and simple drawings. Following sequenced steps students demonstrate safe use of tools and equipment when producing designed</p>

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Teachers identify the task-specific assessable elements to make judgments against specified standards on evidence.

solutions.

Teaching/lesson sequence	Differentiation	Resources
<p>Week 1: Introduce KWL chart (What I know, What I want to know, How can I find out, What I learned) Introduce the Unit task sheet</p> <ul style="list-style-type: none"> Brief think-pair-share on what materials are. Affirm and redirect student understanding through providing definition. <p>Introduce the story of the <i>Three Little Pigs</i></p> <ul style="list-style-type: none"> Students watch the story of the <i>Three Little Pigs</i> through multimodal text Generate class discussion of the story reflecting 'K' of KWL, what we know about materials Discuss what materials the the houses made of, using necessary language Using the IWB, display and play Characteristics of materials (explain terminology e.g. flexible) Think-Pair-Share: What their houses look like, what is their house made of and how it keeps them warm and safe. Individual: Students complete <i>My House</i> and draw pictures of their own houses explaining what they are made out of and describe how it keeps them safe and warm. <p>Week 2: Introduce the 'W' of KWL: Explain the term sustainable, We want to know how we can build sustainable houses that won't be blown over by the Big Bad Wolf.</p> <ul style="list-style-type: none"> Review the kinds of houses we live in now, in comparison to the historical shelters Aboriginal peoples used to live in. <ul style="list-style-type: none"> Watch 60 seconds of Aboriginal Industry Part 3 How were their houses sustainable (make list using mini whiteboards) 	<p>Content is customised to students through multimodal content, enabling kinesthetic, visual, spatial learners to develop context through tangible modes of engagement</p> <p>Visual and manipulative learning experiences encourage students to develop understanding of content on a larger scale</p> <p>Whole-class instruction caters for guided and explicit review of understanding, modeling of practices and real-time feedback where student responses are wholly affirmed or redirected</p> <p>Small group work encourages students to participate at their own pace whilst learning how to take responsibility for levels of learning, enabling students to develop greater levels of comprehension before participating in summative assessments at an individual level</p>	<p>Sheet: Unit Task and Rubric</p> <p>Three Little Pigs</p> <p>Sheet: My House</p> <p>Characteristics of materials</p> <p>Aboriginal Industry Part 3</p> <p>Ben's model of Aboriginal housing</p> <p>Rotations: Straws, marsh mellow, Lego, cardboard, sugar cubes, bundle of sticks, bundle of straws, paddle pop sticks, cardboard boxes, toilet paper rolls, scissors, PVA glue, sticky tape, blue tack, string</p> <p>Sheet: Sustainable Materials</p> <p>Sheet: Design Our House</p> <p>Sheet: Was it Sustainable?</p>

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<ul style="list-style-type: none"> ○ Share answers with a partner, one partner shares responses with class ○ Watch Bens Model of Aboriginal housing, would it be sustainable? <ul style="list-style-type: none"> • Teacher provides students 2 way venn-diagram of similarities and differences, complete through guided instruction <p>Week 3: Review prior lesson through 5 W's game (Who, what, when, where, why, how). Students respond to each question in small groups. Each group will be responsible for sharing one of the 5W's with the class. Once all groups have discussed 'who' group one will share their thoughts. Repeat until all 5 W's have been discussed and explained by each group to the class.</p> <ul style="list-style-type: none"> • Separate students into groups of 4 for rotations, students work together to assign roles: <ul style="list-style-type: none"> ○ Group manager; makes sure everyone contributes ○ Checker; makes sure everything is neatly presented ○ Materials manager; collects and distributes worksheets and organises materials for activity ○ Recorder; begins discussion to assist in recording observations about materials • Teacher will discuss materials in each rotation where students can use scissors (where necessary), glues, and sticky tape to create sustainable structures. After each rotation, provide students a few short minutes to complete the sheet <i>Sustainable Materials</i>. Students will tick the correct trait and document notes on what it might feel or look like. <ul style="list-style-type: none"> ○ Students participate in rotations of creating houses, each rotation will have: <ul style="list-style-type: none"> • Straws and marshmallows • Lego (used for wall corners) and cardboard sheets for walls • Sugar cubes • Bundles of sticks, paddle pops sticks, • Old boxes and toilet rolls <p>Teacher will provide a demonstration of a structure that could be made at one of the rotations and fill out the <i>Sustainable Materials</i>, filling in relevant information about the materials.</p>	<p>Working at an individual level enables the teacher to assess the students level of understanding</p>	
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<p>Week 3:</p> <ul style="list-style-type: none"> Continue rotations, ensuring all students have worked with materials and completed the material characteristics activity. <p>Continue exploring the 'W' of KWL – You will design a house for one of the pigs, using materials you found sustainable when participating in the rotations. Each group must use more than one material.</p> <ul style="list-style-type: none"> Teacher instructs: (Using <i>Design Our House</i>) students begin planning (drawing) their sustainable house for the pigs, choosing and labeling on their plan any of the materials that they found to have the necessary qualities to withstand the blow of the Big Bad Wolf. <ul style="list-style-type: none"> All students will complete this activity individually to assess their understanding of sustainable materials Teacher will review and provide feedback to students based on house plans <p>Week 4:</p> <ul style="list-style-type: none"> Within groups, students share house plans from <i>Design Our House</i> and choose one of their group members plans that they think is the most sustainable (Assesses student judgement) Provide student groups with the remainder of the lesson to begin constructing their sustainable house for one of the pigs. Ensure students have fair and equal amounts of materials based on their designs <p>Week 5 and 6: Review the 'L' of KWL – what have you/we learnt?</p> <ul style="list-style-type: none"> Assess the sustainability of the house by applying the blow of the blow-dryer onto the house (Big Bad Wolf) Teacher explains how students will report the outcomes after having their house blown on by the big Bad Wolf using assessment <i>Was it Sustainable?</i> Individually: Students develop a final report on the outcomes of their built houses. Students will explain why it was or was not sustainable and how they could improve outcomes. (<i>Was it Sustainable?</i>) 		
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