#  Unit Plan Template

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| **Unit Author** |
| First and Last Name  | Alana Smith |
| School District |  |
| School Name |  |
| School City, State |  |
| **Unit Overview** |
| **Unit Title** |
| Eating Safely |
| **Unit Summary** |
| Through this mini unit students will research and design a piece of technology that assists in solving an ongoing problem at a school, this will lead to the students’ final assessment. The problem that has been identified for students to research and solve - *Students in a school have been noticing that the ice-bricks in their lunchbox are melting during the day and getting water all over the food making it soggy.* Student’s will examine the question; Does packaging food correctly in your lunchbox make a difference to the food’s we eat? Through technology students will explore different tools they would use to cut, make and store food safely in a lunchbox. Students will also investigate safety procedures when handling food that people will eat.Students through this unit will be taken through the design process in developing their final assessment piece. Student will identify the problem; gather information to know what is needed to solve the problem; research materials, tools and equipment that will assist in the design process; brainstorm ideas in a group environment; select the best approach for the design; design and build the prototype; test it and then present it to the class for evaluation.  |
| **Subject Area** |
| Technologies – Design and TechnologiesCross CurriculumScience – Planning and conducting |
| **Grade Level**  |
| 5 |
| **Approximate Time Needed**  |
| 6 Lessons – 1hour each |
| **Unit Foundation** |
| **Content Descriptions** |
| ***Design and Technologies******Design and Technologies Processes and Production Skills –*** *Assigned content description and new knowledge** *Select appropriate materials,* [*components*](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=components)*, tools,* [*equipment*](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=equipment) *and techniques and apply safe procedures to make designed solutions* [*(ACTDEP026)*](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDEP026)

*Elaborations:** *manipulating materials with appropriate tools, equipment and techniques, for example when preparing food, cultivating garden beds, constructing products*

***Design and Technologies Knowledge and Understanding –*** *complementary** *Investigate* [*characteristics*](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=characteristics) *and properties of a range of materials, systems,* [*components*](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=components)*, tools and* [*equipment*](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=equipment) *and evaluate the impact of their use* [*(ACTDEK023)*](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDEK023)

*Elaborations:** *Comparing tools, equipment and techniques to select those most appropriate for a given purpose.*

***Cross-Curriculum******Science – Planning and conducting**** *Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks* [*(ACSIS086)*](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSIS086)

Elaborations:* *explaining rules for safe processes and use of equipment*
* *considering different ways to approach problem solving, including researching, using trial and error, experimental testing and creating models*
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| **Student Objectives/Learning Outcomes** |
| Students will be able to:* Use higher order thinking skills to answer and examine the skills needed in this unit.
* Use the *Lunch Box Blitz* lessons to help students gather knew knowledge of safe handling skills of tools, materials and equipment used to develop their design technology tool.
* Gain a better understanding of the materials, tools, equipment and techniques used to create a safe working environment.
* Evaluate a lunchbox content and establish if safe handling procedures were used.
* Increase the awareness for other students at their school in reducing unhealthy lunchbox choices through offering creative ideas for creating their own healthier choices.
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| **Assessment Plan** |
| **Develop Assessment** |
| **Formative Assessment*** Observing and monitoring students’ responses through inquiry questions and ongoing work.
* Group work activities monitoring connection made with learning, than students selecting the right materials to achieve their outcomes.
* Written evidence of student’s ongoing understanding through activity sheets and visual observation of tasks.
* Observe students creating safe working environments.
 | **Summative Assessment*** Students will take all of their new understanding in design technologies and their ongoing learning in Science of healthy food choices.
* Student will have to create a solution to an ongoing problem; ‘how to stop water getting over everything in the lunchbox when the ice-brick starts to defrost’.
* The group will present their findings to the class in a presentation format.
* Students will work in groups of 3 to create their presentation.
* The presentation will be no longer than 2 minutes in length.
* Students will be given two lesson to research and prepare their presentation.
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| **Assessment Summary** |
| Lesson 1 – students will be presented with the melting ice-bricks in school lunchboxes problem and how over the next six lesson the students will identify the problem; understand what will be needed; research material and tools; brainstorm ideas in a group environment; select the best solution; design and build the prototype; test it and then present the groups finding to the class. Students should be able to identify safe food handling and safe handling procedures of tools, materials and equipment used when working with food and the storage of food. Student in lesson 1 will be presented with safe working and handling procedures and identify why or why not these procedure should be used.Lesson 2 and 3 will be a time for observing students connection between materials and their properties. Students will start to manipulate and select the correct packaging of materials for storing and preparing food in lunchboxes. Providing feedback in this section will be crucial for students to make connections between safe food handling procedures and preparation for selecting the right materials (from understanding their properties and how they work) in establishing their final summative assessment outcome.By the end of Year 6 students will create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities. They [suggest](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Suggest) criteria for success, including sustainability considerations, and use these to [evaluate](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Evaluate) their ideas and designed solutions (ACARA, 2016).The summative assessment will link directly to the content descriptions for Design and Technologies chosen for this unit.Students will Design a technology to the ongoing problem in the school lunchboxes; How to stop water getting onto the food in lunchboxes when ice-bricks melt. Students will then present their findings to the class in a group activity of no more than 3 students in each group.Students will be assessed on:1. Safe handling procedure of different tools and equipment, for example; hygiene and food safety when making food products.
2. Selecting the right tool, material for the procedure they are making and why?; waterproof.
3. If they solved the problem or not?
4. Design of a technology that will assist in solving the problem of ‘water getting onto food in lunchboxes because of the melting of the ice-brick?’
5. Explanation of how food guides impacted on the design solution for the technology used in the design.
6. Evaluate the materials used and their sustainability in the environment – are they biodegradable? Are they recyclable?
7. Presentation of the design to the audience – Engaging, all students engage well in the presentation and it meets the brief.
8. Presentation is no longer than 2 minutes and more than 1 minute.
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| **Unit Details** |
| **Prerequisite Skills** |
| Literacy – writing skillsGroup work understandingHealthy food choices |
| **Instructional Procedures** |
| **Lesson 1 – 60 minutes**Gaining background knowledge of safe food handling and techniques used.Follow this lesson plan for lesson 1 <http://www.lunchboxblitz.com/wp-content/uploads/PDF/LessonPlans/lbb_lesson_plan_upper_primary.pdf>* This link will provide you with the essential tools to teach lesson 1, on planning, preparing and storing food.

Introduce the unit by posing the Essential Question to students, Does packaging food correctly in your lunchbox make a difference to the food’s we eat? Have students answer this question in their journals, have students share their answers as a class. Discuss this question as a group.* Investigate the Safe Handling food guide posters, look at the techniques used in the guide.

In a think-pair-share activity have students:* Investigate using images of food that have gotten water in a lunchbox, investigate what the food looks like, would taste like and would it be eatable? Explore different foods and how they are effected by being exposed to water.
* Students can conduct an experiment and investigate: Activity sheet is on webpage.

The investigation is getting students asking questions about what exposure to water has on food and how can they go about protecting food from water in a lunchbox. * Give each student in a group an activity sheet ‘What happened to Me?”.

Materials to be investigated- \* Bread, apple, banana, biscuits, \* place some items in aluminum, plastic bags and paper bags for students to start investigating the effects of food exposed to water. \* have students do this activity in groups and return to as a class group to discuss outcomes. It will be ok to have different items amongst the groups as they will be sharing their findings as a class.Introduce final assessment criteria sheet.**Differentiation –*** Lots of visual understanding of different food choices.
* Create groups with different literacy abilities for assistance to those students who may struggle with reading and writing.
* Having the healthy lunch box poster and fact sheet poster printed in an A4 size for those students to have as a quick reference.

**Resources –** Lesson 1* Healthy school Lunch – Queensland Health – posters on healthy eating and safe handling of food.

<https://www.health.qld.gov.au/multicultural/public/ref_nut_resources/English/SSL_AS_English.pdf>**Lesson 2 and 3 –** both 60 minutes eachIn order for students to connect to the technology elements of this unit, students need to develop their understanding of how to select appropriate materials, [components](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=components), tools, [equipment](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=equipment) and techniques and apply safe procedures to make designed solutions [(ACTDEP026)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDEP026), as well as Investigate [characteristics](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=characteristics) and properties of a range of materials, systems, [components](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=components), tools and [equipment](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=equipment) and evaluate the impact of their use [(ACTDEK023)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDEK023). Students will do this through a lot of hands on activities of trial and error, finding the right materials to package their food correctly and the tools and equipment they need to choose to create a safe and clean working environment. Lesson 2 * Students need to develop an understanding of hygiene procedures when working with food, as this will affect the design of the technology they are working towards.
* The ‘Kitchen and Safety’ website below is a great resource for showing students how to work safely and cleanly.
* Develop with the students an instruction poster of hygiene procedures they must remember when working in a kitchen. Make another poster for safety procedures in a kitchen that have to be observed.
* Bring in the posters from Lesson 1 to develop deeper connections to students learning.
* Go over rubric and criteria sheet before commencement of lesson 3.

**Lesson 3**Have students investigate ice-bricks in the classroom with material that could help to keep them waterproof, for example: clad wrap, alfoil, zip lock bags, paper bags, plastic bags etc. Have students investigate with these materials in a group setting, have students identify their properties, and how the properties of these materials could help in their design solution? Have students identify the materials they are using, plastic, aluminium, strong plastic, week plastic. Please see activity sheet on webpage for observation of students understanding. Activity is called ‘Pick Me’.* Have student explore plastic and aluminium with cold items as well (use an ice pack) so students can identify their properties for keeping the cold in for foods that need to be stored cold.
* Have students evaluate the materials they will use in the design process and how they will impact on the environment. Is it biodegradable? Is it a recyclable product?

Show students the video **Kid-Friendly Eggnog Recipe with Elmo** – to present to students a demonstration of how to present information to an audience with more than 1 person. Connect students understanding of the YouTube with, talking slowly and be clear about instructions while having a little fun in their video. Make sure students understand to engage with each other in the presentationThis will lead onto their final presentation in three lessons time.**Differentiation –** Model as a class a couple of different materials, tools and equipment and gather students understanding of their properties and why we would use these objects or not to obtain a waterproof lunchbox. * For the presentation have students come and model how to talk slowly and confidently with reading a page from the book.
* Use this time to identify mistakes and positive styles students use.

**Resources Lesson 2 and 3 –** Lesson 2 – ‘Pick me’ activity sheetHave students bring in supplies to help with making connections.Being a hands on activity students will need a lot of different materials to work with, rubber gloves, cling wrap, plastic bags, alfoil, zip lock bags, paper bags. Materials for insulation, dish cloths (thick and thin), alfoil, sticky tape, rubber bands, wool. Scissors, * In this lesson students will be breaking down the tools and materials needed in their final assessment for creating their design.
* Use the activity sheet “Pick Me” to enable students to structure their investigation. Have students do this activity in their assessment groups, building their investigation to the final assessment.

**Differentiation*** Students who may need extra assistance take photos of the tools and materials they want to investigate and have them glue the images onto their page for referring back to and developing a clearer understanding.

Lesson 2 – Kitchen safety and hygiene website <http://www.freshchoicekitchens.ca/community-kitchen-resources/kitchen-safety-hygiene>YouTube video - **Kid-Friendly Eggnog Recipe with Elmo**<https://www.youtube.com/watch?v=04DaM5vbcS4>**Lesson 4 and 5 –** Start building assessment – 60 minutes each**Lesson 4** – start assessment.* Students can use these lesson to finalise their group’s technology design.
* Students will create a Solution to the lunchbox problem, using the tools and materials available to them.
* Give students access to laptops or IPads for research, show them a video of Elmo again just to establish connection to presenting a demonstration to an audience.
* Walk through the criteria sheet and rubric and establish a clear understanding of the assessment expectations.
* Establish a small timeline for the students of the next two lessons of when things should be finished.
* By the end of lesson 1 students should know general food items that get effect by coming in contact with water.
* Lesson 2 and 3 will have gained students the knowledge they need to identify materials and tools that would help in keeping the ice-brick waterproof, so as to protect food in the lunchbox.
* If students want to use food in their presentation have students bring the food they need from home, between the groups students should be able to gather what they need.

**Lesson 5** – * Is for students to test and evaluate the technology design product students have designed in their groups resulting from the lunchbox problem.

  - Use this lesson as an observation lesson go around checking students understanding of the design task.* If changes need to be made this is the last lesson it can be done.
* Still provide materials for students to create their technology tool.
* Students technology design must be built and tested by the end of this lesson.
* If student need more time possibly extend this lesson or make time available at lunchtime or before school.

**Resources for lesson 4 and 5 –** * YouTube video - Kid-Friendly Eggnog Recipe with Elmo

<https://www.youtube.com/watch?v=04DaM5vbcS4>* IPad
* Material, tools and equipment students need for presentation.
* Area of the classroom set up for the presentation.

**Final lesson – lesson 6*** This lesson is for the delivery of the final assessment.
* Each presentation is no longer than 2 minutes, therefore each group should be able to be covered in one lesson.
* Give feedback to each group after their presentation.
* If time allows or maybe time at the end of the lesson gather students’ final understanding and new knowledge that they have taken away from this mini unit.

**Resources for lesson 6 –*** IPad to video presentations
* Student picked to video tape
* Rubric for each member of the group.

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| **Accommodations for Differentiated Instruction**  |
|  | **Resource Student** | * Create a list of websites to gather information from for the research projects.
* Preview key vocabulary as a group prior to starting projects.
* Allow students to work with a partner.
* Allow the students to see examples and rubrics and to ask questions before starting the major tasks in the unit.
* Visual and verbal reinforcement whenever possible.
* Repeat and clarify directions and information whenever necessary.
* Allow adequate wait time for questions.
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| **Materials and Resources Required For Unit** |
| **Technology – Hardware** (Click boxes of all equipment needed)  |

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| [x]  Camera [x]  Computer(s) [ ]  Digital Camera [ ]  DVD Player[x]  Internet Connection  | [ ]  Laser Disk[x]  Printer [x]  Projection System [ ]  Scanner [x]  Television  | [ ]  VCR [ ]  Video Camera [ ]  Video Conferencing Equip.[x]  Other IPad |
| **Technology – Software** (Click boxes of all software needed.) |
| [ ]  Database/Spreadsheet [ ]  Desktop Publishing [ ]  E-mail Software[ ]  Encyclopedia on CD-ROM  | [ ]  Image Processing [x]  Internet Web Browser [ ]  Multimedia  | [ ]  Web Page Development [x]  Word Processing [x]  Other Power Point  |

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| **Background Resources for teachers** | * Lunch Box Blitz – Lesson plan and website

<http://www.lunchboxblitz.com/teacher-resources/> |

# References

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Greater Vancouver food bank. (2016). *Kitchen safety & hygiene.* Retrieved May 7, 2016, from <http://www.freshchoicekitchens.ca/community-kitchen-resources/kitchen-safety-hygiene>

Lagasse, E. (2013, December 14). Kid-Friendly eggnog recipe with Elmo – Emeril Lagasse. Video posted to <https://www.youtube.com/watch?v=04DaM5vbcS4>

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