

UNIT PLAN

Unit title - Flying into the future	Stage- 3, year 5
Term - 2	Strand – Built Environments
Duration - 10 lesson (60-90min lessons)	Sub-strand- - Systems in built environments are designed to meet the needs of people. - Social and environmental factors influence the design of built environments.

Rationale

This unit 'Flying into the future' will allow students to explore different concepts of the built environment including social and environmental factors influencing design. In response to the Australian Curriculum for Science and Technology (2014), this unit reflects a constructivist teaching and learning approach which is highlighted through inquiry based and hands-on activities. This unit also uses a social-constructivist approach where they are engaged in social interactions through group work and whole class activities applying their existing knowledge to construct new understandings. Teachers encourage students to question themselves, their strategies and assess how the various activities are enriching their understanding (Board of studies , (n.d))

The first stage of the unit begins with engaging the students into the concept as well as assessment of students' prior knowledge. The pre-assessment helps determine whether the students have grasped the concepts of Built Environments in Stage 2 before moving on to the social and environmental factors that influence design (Stage 3). Pre assessment was designed to assist teachers in developing students' prior knowledge further while also catering for student with behavioural and learning problems so they are able to remain in the mainstream classroom (Myles, Ormsbee, & Simpson, 2010).

The science classroom will be set up in small groups in accordance to the amount of group work throughout the unit. This helps students learn social skills, support each other's learning process and value each other's opinion and input. According to Vygotsky by interacting socially students negotiate mixed ideas and prior knowledge to gain new ideas and knowledge by working within the zone of proximal development where students collaborate among mixed ability groups (Jaramillo, 1996)

This unit follows an inquiry based learning method by giving students the freedom to explore topics where they research and design a built environment

which is relevant to their everyday lives leading to intrinsic motivation. Murdoch explains that inquiry based “teaching and learning both fosters and requires independence in student learning”(2008, pp. 63). Students work through the process challenging and accessing appropriate resources, sorting through the information they gain, synthesizing it, reflecting and acting on their understandings. This is to ultimately develop students to think and learn independently to finally inquire for themselves. Because of this it is a powerful method for curriculum planning and classroom practices (Wilson & Murdoch, 2008, pp. 63).

Throughout the unit of work students will have the opportunity to engage with a range of information communication technology (ICT). These include, internet, Ipads, interactive whiteboards and digital cameras. Hackling , Peer and Prain (2007) encourage student interaction with ICT in science activities as it enhances science learning.

During this unit of work students will propose a new airport design as the final product of their built environments study. Students compare built environments from past and present, determine design process steps, ask questions, collect and record data and evaluate their findings through a persuasive presentation.

Students will follow a guided investigation process to select and create an efficient airport design, which links directly to a study and understanding of the concept of built environments and the needs that influence them. Through this process the students develop an understanding of the problem solving skills required to resolve the experience they will encounter in their everyday life.

The study of built environments, 'Flying into the Future' links directly with the following KLAS;

- **Mathematics** – Uses spatial awareness and scale when designing their airport while using their problem solving skills and understanding of 2D and 3D shapes.
- **English**- Students listening, communicating, extending scientific vocabulary, and uses engaging and persuasive writing and oral language.
- **HSIE**- the changes that have occurred to the built environment of time.
- **Creative Arts**- Design and create a new airport with some connecting likeness to existing airports.

'Flying into the Future' integrates the 5E instructional model to intrinsically motivate students. The unit develop progressive through the five phases of the 5E model; engage, explore, explain, elaborate and evaluate (Bybee, 1989).

- **Engage**- A variety of activities throughout the unit engage the students and expose prior knowledge to provide a guide for direction when moving from stage 2, to stage 3. – Pre assessment
- **Explore**- The teacher provides the students with hands on activities to develop foundation skills for their conceptual understanding for built environments.
- **Explain**- Explanations are used to help students build on their scientific knowledge and language through interacting, researching and collating information with their group members.

- **Elaborate-** Students make connections with new concepts through further investigations. This extends students problem solving skills and ability to apply creative and critical thinking.
- **Evaluate-** Students bring together what they have learned over the duration of the unit to present their findings and understanding of built environments using persuasive language to argue their ideas and design.

'Flying into the Future' is a unit of work, which enables students to interact with real life experiences and events as they engage in the process of a built environment project of today Architectural world.




Goals

KLA – Science and technology

Outcomes and performance indicators-

ST3-14BE - describes systems in built environments and how social and environmental factors influence their design

Systems in built environments are designed to meet the needs of people.



- Identify elements that work together as a system to serve and support built environments and how they are designed to meet the needs of people, eg transport systems that provide access for people to get to work or systems that provide electricity to sites 
- Draw a plan of, or model, a built environment that includes a range of systems to meet the needs and wants of a specific group of users. Social and environmental factors influence the design of built environments.
- Consider ways that the design or use of places and spaces have changed over time and the social and/or environmental factors that have influenced these changes 
- Generate and develop ideas about how built environments might be designed and constructed in the future to incorporate sustainable environmental practices, eg the use of recycled materials, natural lighting and solar energy 
- Develop designs and solutions to meet specific social or environmental needs of users, eg an energy-efficient building or high-traffic airport terminal/train station

ST3-1VA- Shows interest in and enthusiasm for science and technology, responding to their curiosity, questions and perceived needs, wants and opportunities.

ST3-2VA- Demonstrates a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping sustainable futures.

ST3-3VA- Develops informed attitudes about the current and future use and influence of science and technology based on reason.

ST3-4WS- Investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and

develop explanations.	
<p>KLA- Mathematics Outcomes and performance indicators MA3-9MG- Selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length</p> <ul style="list-style-type: none"> Identify, visualize and quantify measures and the attributes of shapes and objects, and explore measurement concepts and geometric relationships, applying formulas, strategies and geometric reasoning in the solution of problems <p>MA3-3WM- Gives a valid reason for supporting one possible solution over another.</p> <p>MA3-14MG- Identifies 3 dimensional objects and visualises, sketches and constructs them given drawings of different views.</p>	<p>KLA- English Outcomes and performance Indicators EN3-1A- Communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features</p> <ul style="list-style-type: none"> Use and describe language forms and features of spoken texts appropriate to a range of purposes, audiences and contexts Plan, rehearse and deliver presentations, selecting and sequencing appropriate content and multimodal elements for defined audiences and purposes, making appropriate choices for modality and emphasis  <p>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</p> <ul style="list-style-type: none"> Navigate and read texts for specific purposes applying appropriate text processing strategies, for example predicting  and confirming, monitoring meaning, skimming and scanning <p>EN3-7C- Thinks imaginatively, creatively, interpretively and critically about information and ideas and identifies connections between texts when responding to and composing texts</p> <ul style="list-style-type: none"> Explain own preferences for a particular interpretation of a text, referring to text details and own knowledge and experience Think critically about aspects of texts such as ideas and events
<p>KLA- HSIE Outcomes and performance indicators HT3-3- Identifies change and continuity and describes the causes and</p>	<p>KLA- Creative art Outcomes and performance Indicators VAS3.1 - Investigates subject matter in an attempt to represent</p>

<p>effects of change on Australian society HTS-5- Applies a variety of skills of historical inquiry and communication.</p>	<p>likenesses of things in the world</p>
<p>Assessment – Pre assessment Lessons one and two elicit prior knowledge of students conceptual understanding of built environments and informs future teacher planning and direction.</p> <ul style="list-style-type: none"> • Lesson one – A mind map and tour around the school courtyard is used as a formal means of establishing student’s prior knowledge, conceptions, experiences and interests in the topic ‘built environments.’ • Lesson two – Recalling on the students prior knowledge on built environments by having the students identify changes that they have observed in their neighbourhood and observing them sharing their stories with others (8 ways of learning – story sharing) <p>Assessment – formative Formative assessment will occur throughout each of the ten lessons. This will mainly consist of observation guided with a formative rubric. This informs the teacher of each group’s progression (see appendix 2).</p> <ul style="list-style-type: none"> • Lessons four, five, six, seven, eight and nine – Teacher observes students progressive development in; <ul style="list-style-type: none"> ▪ Understanding of Aesthetic, environmental, service and public needs. ▪ Working collaboratively in their groups ▪ Creative thinking ▪ Use of scientific terminology ▪ Explanation design ideas using critical thinking ○ The formative rubric (Appendix 2) will be used along side continuous observations. The rubric will be recorded for teacher information during every second lesson (four, six and eight). ○ Students use their science journals to record their own findings, ideas and thoughts throughout the unit. Teachers use this to gain information of students’ progress. <p>Assessment – Summative Students will bring together what they have learned over the duration of the unit to present their findings and understanding of built environments.</p> <ul style="list-style-type: none"> • Lesson ten- <ul style="list-style-type: none"> ○ The students present to the ‘council board’ their final design proposal (students are to use persuasive language) ○ Peer assessment is undertaken as students question the presenting group to gain greater understanding of their design proposal. ○ Students present their ideas in a persuasive way using design aids e.g. airport model, sustainability poster, television advertisement 	

- Reflecting on what they have learned since lesson one
 - Environmental needs
 - People needs
 - Services needs
 - Aesthetic needs
- Teacher, assesses each presentation in accordance to the summative rubric (Appendix 3)

Work samples – to show understanding and achievement of outcomes

See appendix 1

STUDENTS

Number - 21 students in this class

Differentiation needs

- Learning experiences need to cater for a range of readiness levels, different prior knowledge, learning styles and alternate conceptions.
- Students will be grouped based on mixed abilities to ensure students of different levels will learn to work together and support each other.
- Whole class and small group work are mixed throughout the unit to ensure that students are interacting with each other to gain differing perspectives.

Learning styles:

Kinaesthetic- Students learn through hands on experiences as they engage in the construction of an airport design;

- 3D model creation
- First hand experiences at an airport (excursion)
- Other forms of physical experience, which each group has created to support their design.

Auditory- Students learn best through verbal discussion, talking things through and listening to other students ideas;

- Lengthy amount of discussion time
- Speaking/listening to the Guest speaker
- Listening to fellow students presentations

Visual- Visual learners use images and symbols to understand and retain information;

- The use of maps
- Reading of 'Window' on the interactive whiteboard
- Freedom to present their proposal in a movie, poster or video (television advertisement)
- Physically witnessing the internal and external features, designs and needs of Sydney Airport.

Special needs- Students that have difficulties with problem-solving, communicating and social skills will;

- Students work together as a group to develop knowledge within the zone of proximal development, by working a variety of abilities (mixed ability groups)
- Teacher provides closer facilitating and scaffolding.
- Offer a variety of options and materials that will help students communicate in their chosen form.

ADD/ADHD- Students that have trouble focusing, are overactive, or cannot control their own behaviour will;

- Stress balls will be available for these students to hold and squeeze
- Constant moving around the classroom in between activities.
- Assigning these students a classroom role that will apply throughout the whole unit, this will keep them focused on their given task.

- **Lesson one:**

This lesson caters for the visual learners as students are viewing their surroundings. The students are grouped in mixed abilities e.g. Lower achievers are scattered within the gifted/talented students. In these groups each student takes on a role e.g. director, speaker, manager. This ensures all students are participating.

- **Lesson two:**

The whole class discussion allows all students to hear other peer's ideas, therefore helping the struggling students to grasp the concept of a changing environment. This discussion will significantly help the struggling students in the individual task, as it will give them ideas to elaborate on. The gifted/talented students will also be asked to write a further paragraph on why they think these changes have occurred.

- **Lesson three:**

The quick discussion and brainstorm activity will prompt the lower achieving students to ask questions and engage in the conversation. Having a professional come into the classroom helps challenge the gifted/talented students, as they are able to think on a deeper level. By breaking up the students into groups and rotating their roles ensures that all students are participating in all aspects of the unit.

- **Lesson four:**

This lesson caters for all learning styles as it engages all students in the learning process. This is done through looking around the airport, having students write what they see to aid them in their designs and physically being immersed in the airport atmosphere.

- **Lesson five:**

This lesson caters for all learning styles as it engages all students in the activity. This IWB activity acts as a springboard into students planning their own airport in Badgerys Creek and gives them ideas they can apply to their own designs.

- **Lesson six:**

Students are again in their groups taking on a different role. This involves all students participating in the learning process.

- **Lesson seven, eight and nine:**

Students are collaborating their design ideas together as a group to gain differing perspectives. This helps lower achieving students engage in, reason and explain their ideas. Gifted/talented students explore new ways to sell their presentation persuasively.

Differentiation for Aboriginal and Torres Strait Islanders - 8 ways of learning

Story sharing- 'Windows' by Jeanne Baker gives the students the opportunity to have a yarn about the story and also about the change in their own lives/communities. Also sharing the knowledge of the Guest speaker, which would give the students knowledge about the airport and how it works as well as sharing their experience/perspective of the airport.

Images and Symbols- Creating visual texts as well as print texts e.g. mind-maps, diagrams, posters.

Land links- Linking content to the local community, which is done by exploring the future use of the land (airport)

Deconstruct/Reconstruct- Breaking down Sydney airport to construct a new and improved airport that will benefit the community in all aspects.

Non-verbal- Observations of the airport and visual design process. Students also participate in reflections and hands-on practical work.

Community links- Meeting the needs of the community

Learning maps- Students can visualize the end product that they are working towards (holistic image)

Non-linear- Lots of repetition, returning to concepts but in a deeper understanding.

Skills, interests and prior knowledge

- Prior knowledge, interests and alternate conceptions are highlighted throughout this unit of work

ST2-14BE - Describes how people interact within built environments and the factors considered in their design and construction

- Creates mind map highlighting ideas and understandings of built environments
- Discussion about varies built environments within their neighbourhood and community
- Suggest ideas to design and construct an environment after discussing the factors considered

LEARNING MATTER

<p>ESSENTIAL UNDERSTANDINGS</p> <p>STUDENTS WILL LEARN ABOUT...</p> <ul style="list-style-type: none"> • The social and environmental factors that influence design • The public, servicing, environmental and aesthetic needs found in Sydney Airport • The components/needs that are essential to create an efficient and sustainable airport • Changes made over time to built environments • How an airport functions • The impact on Aboriginal and community cultural values • Significant loss of Aboriginal heritage land 	<p>ESSENTIAL SKILLS</p> <p>STUDENT WILL LEARN TO...</p> <ul style="list-style-type: none"> • Identity changes made over time in their community/world • Research and find quality information sources and applications • Use Google maps • Determine the actual scale and size of an area • Be persuasive in their airport presentation in order to sell their designs • Work together as a team to design a built environment • Become more culturally aware of the impacts/effects of built environments on Aboriginal land and in the wider community
<p>RELATED TEXT TYPES</p> <p>This is integrated with the Key Learning Area English.</p> <p>Persuasive writing- Throughout this unit the students will develop persuasive writing techniques as part of their design proposal to support their ideas when presenting to the 'council board' (class).</p> <p>Explanations- Students develop explanations for the ideas they are incorporating into their design. This supports their investigations as they are able to communicate their findings by providing meaning behind their solutions.</p>	

5E'S	LEARNING ENGAGEMENTS	RESOURCES AND PREPARATION	OUTCOME CODE	SIG N-OFF
ENGAGE	<p>LESSON 1: 60mins Whole class - Look at our built environment</p> <ul style="list-style-type: none"> • Take the students into the school courtyard to observe and identify their own conception of their school built environment. • Take photos/videos of the built environment (pre-assessment). <p>Group work – (groups of 3) Create a mind map based on their conceptions and ideas of the different built environment in the world. Whole class- one speaker from each group contributes their group’s ideas to the class.</p>	<ul style="list-style-type: none"> • iPads to take pictures and videos of the students concept of a built environment • Butchers paper and textures for the group work creating a mind map where the students can modify throughout the term • Interactive White Board (IWB) 	<p>ST3-14BE ST3-1VA</p>	
	<p>LESSON 2: 60mins Whole class (one the floor) – Read ‘Window’ by Jeannie Baker</p> <ul style="list-style-type: none"> • Discuss the changes made to the built environment observed in the book. • Use the birthday cards on the windowsill to highlight time periods (numeracy). • Invite students to share stories of changes they have observed in their neighbourhood. • Discuss and share changes outside their own community. (e.g bridges, new sports clubs, shopping centres) <p>Individual - Using a Dubai before and after image. Write a paragraph describing the changes they see. (Pre-assessment). The higher ability students will also be asked to write why they think these changes have occurred.</p>	<ul style="list-style-type: none"> • Interactive White Board to view the Window book by Jeannie Baker (1991.) link as a class: www.slideshare.net/MrsJuteau/windows-2992791 • Pictures of Dubai’s landscape before and after. • Science books to write a paragraph describing the changes seen overtime in Dubai. 	<p>ST3-14BE ST3-1VA ST3-2VA</p> <p>HT3-3 HTS-5</p> <p>EN3-7C</p>	

		<ul style="list-style-type: none">• Glue and scissors to paste the Dubai picture in their Science books.		
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EXPLORE	<p>LESSON 3: 90 min</p> <p>Students are placed into their groups according to mixed abilities and give them a task sheet explaining the process and final goal/problem to solve (8ways – learning maps):</p> <p>Problem to solve: <i>The government is proposing a new airport in Western Sydney, Badgerys Creek. You are the employed Architect of this new built environment.</i></p> <p>Design process: Using the built environment design process below, design an efficient airport.</p> <ol style="list-style-type: none"> 1. Determine what type of environment it is. (Community, residential etc) 2. Find the needs of this type of built environment 3. Explore the site (Google earth) 4. Explore similar existing sites (Excursion) 5. How to meet the needs through design. <p>Groups- (Inquiry Task)</p> <p>Class watches a Youtube video on the airport development a springboard into their task (<i>Youtube-BADGERYS CREEK Airport economics</i>)</p> <ul style="list-style-type: none"> • Roles are given within the group. (Speaker, director, manager) • Guest speaker comes in to discuss the servicing and public needs of an airport. This is done as a whole class activity where students engage with the guest asking questions to find the needs of the public and services. <ul style="list-style-type: none"> ○ Students write notes in their science journal during the guest speaker to refer back to when designing their airport. • In groups students will work around 5 different stations exploring the needs of an airport. They will be filling in a worksheet that is divided into four sections (Environmental, aesthetic, public, Aboriginal community and servicing needs), rotating after 10mins <ul style="list-style-type: none"> ○ Station 1 (Environmental) using books, Ipads to explore and discover needs and potential solutions. ○ Station 2 (Aesthetic) using books, Ipads, apps and building materials and products bought in by the teacher to explore and discover needs and potential solutions. ○ Station 3 (Public) Using books, Ipads and information from guest speaker to explore and discover needs and potential solutions. 	<ul style="list-style-type: none"> • Science journal • Group role badges; Manger, speaker and director • Teacher organises a guest speaker from the airport to discuss the need and answer students individually designed questions (support from teacher prior) • Interactive White Board for the teacher to discuss and record ideas to provide support the students questioning for the guest speaker • IPads to research the environmental needs and Aesthetic needs for their airport design. • IPads apps • Books: • Formative assessment rubric appendix 2 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-4WS</p> <p>MA3-3WM</p> <p>EM3-3A EN3-1A</p> <p>HT3-3</p>	<p>Page 12</p>
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	<ul style="list-style-type: none"> ○ Station 4 (Service) Using books, Ipads and information from guest speaker to explore and discover needs and potential solutions. ○ Station 5 (Aboriginal community) Students watch a short clip on their iPads using headphones and discuss the discoveries about traditional Aboriginal land ties and traditional cultural connections and how this influences the development of an Airport in this area. Students discuss design techniques to pay respect to the Aboriginal community. <p>Whole Class- Speaker from each group shares their findings at each station with the class and teacher.</p> <p>Assessment: Teacher performs a formative assessment through observation on each group in accordance to the rubric in appendix 2.</p>	<ul style="list-style-type: none"> • Youtube: http://www.youtube.com/watch?v=56wW3ZH6kUQ • Book <i>Architecture according to pigeons</i> by Speck Lee Tailfeather (2013). • Book <i>The ABC's of Environmental Science</i> by William Katz (2001). 		
	<p>LESSON 4 Excursion to Kingsford Smith Domestic Airport Terminal 2/3. After exploring the needs required in lesson 3 students will explore the below points in regards to what works and what doesn't work in Sydney airport.</p> <ul style="list-style-type: none"> ○ Explore the environmental needs. ○ Explore the public needs. Explore the servicing needs. ○ Explore the transport function. ○ Explore technology use. ○ Explore the general flow of the airport ○ Explore the aesthetics. <p>Students are to take notes and draw pictures in their science journal by observing their surroundings. They will also be asked to take pictures using a digital camera to use in presentations and design ideas.</p>	<ul style="list-style-type: none"> • Science journal • Bus for transport to and from the airport • Digital camera to record and take pictures to jog the students' memory in following lessons. • Parent support and attendance Parent and principal permission. 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>HT3-3</p>	

	<p>LESSON 5: 60mins (spatial awareness, scale and proportion)</p> <p>Whole class – On the Interactive White Board, show the aerial image of the Badgerys Creek development site and Sydney Airport on Google maps.</p> <ul style="list-style-type: none"> ○ As a class model a potential airport layout by drawing over the top of the aerial image on the IWB. ○ Teachers and students will discuss and design a possible way to layout the airport structure incorporating spatial awareness and scale. ○ Using the Sydney airport aerial have students measure buildings and other structures to gain an understanding of the potential size of buildings in their own design. <p>Group Work (form of formative assessment in accordance to appendix 2) – Students rotate group role to mix responsibilities.</p> <p>Students will open the same aerial image of Badgerys Creek development site and design a layout of their own airport concept incorporating their solutions to solving the needs explored in prior lessons.</p> <p>The Sydney airport aerial will be left open on the IWB out the front for students to come up and measure elements of the airport design/layout.</p>	<ul style="list-style-type: none"> • Interactive White Board • Google Maps of Badgerys Creek https://maps.google.com.au/maps?q=badgerys+creek&client=safari&ie=UTF-8&ei=HI6yU9f9EcaBkQXP4IHgCQ&ved=0CAgQ_AUoAQ • Google Map of Sydney Airport https://www.google.com/maps/place/Sydney+Airport/@-33.939923,151.175276,17z/data=!3m1!4b1!4m2!3m1!1s0x6b12b0f11b3383db:0xafdf355d5a4b6577 • iPads when designing own layout of their airport 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>MA3-9MG MA3-3WM</p> <p>HT3-3</p> <p>VAS3.1</p>	
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EXPLAIN	<p>LESSON 6: 60mins (Rotate group roles) In this lesson students will be using all their new knowledge and information to compare and contrast their ideas and findings with other groups.</p> <p>Groups- Make a digital poster with images, drawings and annotations, highlighting ways the students are going to cater the needs of a functional airport (eg. A sheltered walkway to protect the public from weather conditions). This poster will be used to support and explain the reasoning behind the students layouts developed in the prior lesson.</p> <p>Whole Class-</p> <ul style="list-style-type: none"> • The speaker of the group will share their layout and poster to the class to show their ideas of their airport. • As a class the students will discuss comparisons and similarities in each other’s designs, findings and ideas. This will be written on the IWB filling in two columns; similarities and differences. <p>Science Journal (formative assessment): At the end of the lesson students are given 5 mins to record interesting ideas and findings gained from their peers in their science journal.</p> <p>Assessment: Teacher assesses students explanations and poster in accordance to appendix 2</p>	<ul style="list-style-type: none"> • Computers and iPads to design a digital poster • Butchers paper and permanent marker • Ipad app: Educreations • Ipad app: Architecture • Formative assessment rubric appendix 2 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>EN3-1A</p> <p>VAS3.1</p>	
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ELABORATE	<p>LESSON 7: 60mins (Rotate group roles) – model making Taking their new knowledge from comparing and contrasting each other’s designs, ideas, findings, and hearing their reasoning, students are able to extend on their own designs.</p> <p>Groups- Students discuss in their groups any new information gained from the explain stage (recorded in their science journal) which they would like to include or change about their groups design. Students use reasoning skills to vocalise their opinions.</p> <p>Using their practical skills the groups will begin constructing a 3D model of their airport design. This enables the groups to see their design in a more life like manner, which also provides a visual design aid to support their presentation at the end of the unit.</p> <p>Science Journal (formative assessment): Students use their science journal to record any information, ideas and reasoning’s behind their ideas.</p>	<ul style="list-style-type: none"> • Science journal • Toilet roles • Cardboard • Gluetack • Sticky tape • Varies craft/model making resources 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>MA3-9MG MA3-3WM MA3-14MG</p> <p>VA3.1</p> <p>EN3-1A</p>	
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	<p>LESSON 8: 90 mins (rotate group roles)</p> <p>Teacher informs the class that in this lesson students need to create a:</p> <p>Creative aid:</p> <ul style="list-style-type: none"> • Representation technique to highlight the study, findings and new information that have been discovered throughout the unit of work, and how they have influenced and been incorporated into their airport design. • Shows evidence of conceptual understanding. • Helps persuade the council board to 'choose their design to build' <p>Persuasive writing:</p> <ul style="list-style-type: none"> • Persuasive writing piece to aid the students in their persuasive presentation. <p>The groups begin discussing with one another and their teacher ways to make their presentation more sellable/persuasive to the 'council board'. This is done through a creative aid (ie. sustainability poster, television advertisement etc)</p> <p>The groups work together finishing off their 3D models and begin working on their creative aid and persuasive writing piece.</p>	<ul style="list-style-type: none"> • Computers and iPads with apps to design their end product (eg. power point, • Butchers paper and pen • Paddle pop sticks, glue, tape, paint, paint brushes, water, cardboard, 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>MA3-9MG MA3-3WM MA3-14MG</p> <p>VA3.1</p> <p>HT3-3</p> <p>EN3-1A EN3-3A EN3-7C</p>	
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	<p>LESSON 9: 60 mins (rotate group roles)</p> <p>Groups- Students continue to prepare their persuasive presentation for the 'council board' meeting. This includes:</p> <ul style="list-style-type: none"> • Their creative aids, • 3d model • Persuasive writing to aid them in their presentation. 	<ul style="list-style-type: none"> • Science books to prepare and write a piece of persuasive writing. • Computers and iPads with app's to design their end product • Butchers paper and pens • Paddle pop sticks, glue, tape, paint, paint brushes, water, cardboard, 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>MA3-9MG MA3-3WM MA3-14MG</p> <p>VA3.1</p> <p>HT3-3</p> <p>EN3-1A EN3-3A EN3-7C</p>	
<p>EVALUATE</p>	<p>LESSON 10: 60mins (summative assessment)</p> <p>Groups- During the presentation the class is acting as the council board. Each group presents their airport design to the 'council board' through a persuasive approach.</p> <ul style="list-style-type: none"> ○ After each presentation the 'council board' (students) will ask questions that requires the presenting group to review and reflect on their learning, new skills and understandings. ○ The teacher assesses the group presentations in accordance to appendix 3. 	<ul style="list-style-type: none"> • Persuasive writing piece • Summative assessment rubric. • IWB 	<p>ST3-14BE ST3-1VA ST3-2VA ST3-3VA ST3-4WS</p> <p>HT3-3 HTS-5</p> <p>EN3-1A EN3-3A EN3-7C</p>	

RESOURCES

<p>ONLINE/TEXT/VISUAL</p> <ul style="list-style-type: none"> • Window by Jeannie Baker • http://thisbigcity.net/five-sustainable-building-materials-that-could-transform-construction/ • http://www.sustainable.com.au/energy-efficient-construction.html • http://www.boral.com.au/product_index/sustainable_building_solutions.asp • http://www.climatesmartsolutions.com.au/eco_materials.html • http://universityparkairport.com/airport-info/Airport-Master-Plan/ • APPS on IPAD <ol style="list-style-type: none"> 1. Architecture 2. Sydney Airport 3. EduCreation • <u>Dubai photo:</u> http://www.break.com/pictures/before-and-after-dubai-2375074 • http://www.slideshare.net/MrsJuteau/windows-2992791 • http://www.google.com/maps/preview?q=sydney+airport&ie=UTF-8&ei=sVu2U7iEAoKGkAXJvYG4Bg&sqi=2&ved=0CAYQ_AUoAQ • https://www.google.com/maps/place/Badgerys+Creek+NSW+2555/@-33.8814655,150.7431792,13z/data=!3m1!4b1!4m2!3m1!1s0x6b12924431c3e639:0x5017d681632ac70 • https://www.youtube.com/watch?v=56wW3ZH6kUQ 	<p>HUMAN</p> <ul style="list-style-type: none"> • Teacher • Students • Airport Guide • Guest speaker from the airport • Parent/caregiver
<p>PLACE</p> <ul style="list-style-type: none"> • Kingsford Smith Sydney Domestic Airport Terminal 2/3 • Gymea Bay school courtyard 	<p>MATERIALS/REAL LIFE ITEMS</p> <ul style="list-style-type: none"> • Butchers paper • IPAD • IWB • Window by Jeannie Baker (Book) • Dubai picture • Glue • Scissors • Pencils • Science workbook

	<ul style="list-style-type: none">• Computers• Pens• Permission note• Proposal to principal• Bus• Clipboard• Camera• Paddle-pop sticks• Tape• Paint brushes• Water• Cardboard• Paint• Paper• Recycled materials/ other materials for students to create their presentation
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Diagram of airport:

- glass roof
- sleeping pods with antibacterial wipes
- phone chargers available
- free wifi
- cafés that cater everyone's dietary needs
- Solar panels
- indoor garden
- music/ silent disco/ entertainment
- movie theatres
- chemist
- first aid
- gym
- massage
- free parking unless leave car over night
- public transport
- business class lounge and economy lounge
- children's playroom
- children sitting area/parents room
- language convertors
- bars

Natural landscape changed to urban, city, developed.



DUBAI

~~changes over time~~

The change that Dubai has experienced from 1980 to 2012 and the present time explores the needs of the society and technological developments of the world. The reasons for these changes are due to the needs of the increasing population and big business moving over to the country.

- transport, car parks, disabled access
- Food
- Services
- checking counters

- staff members
- security
- electronic check in

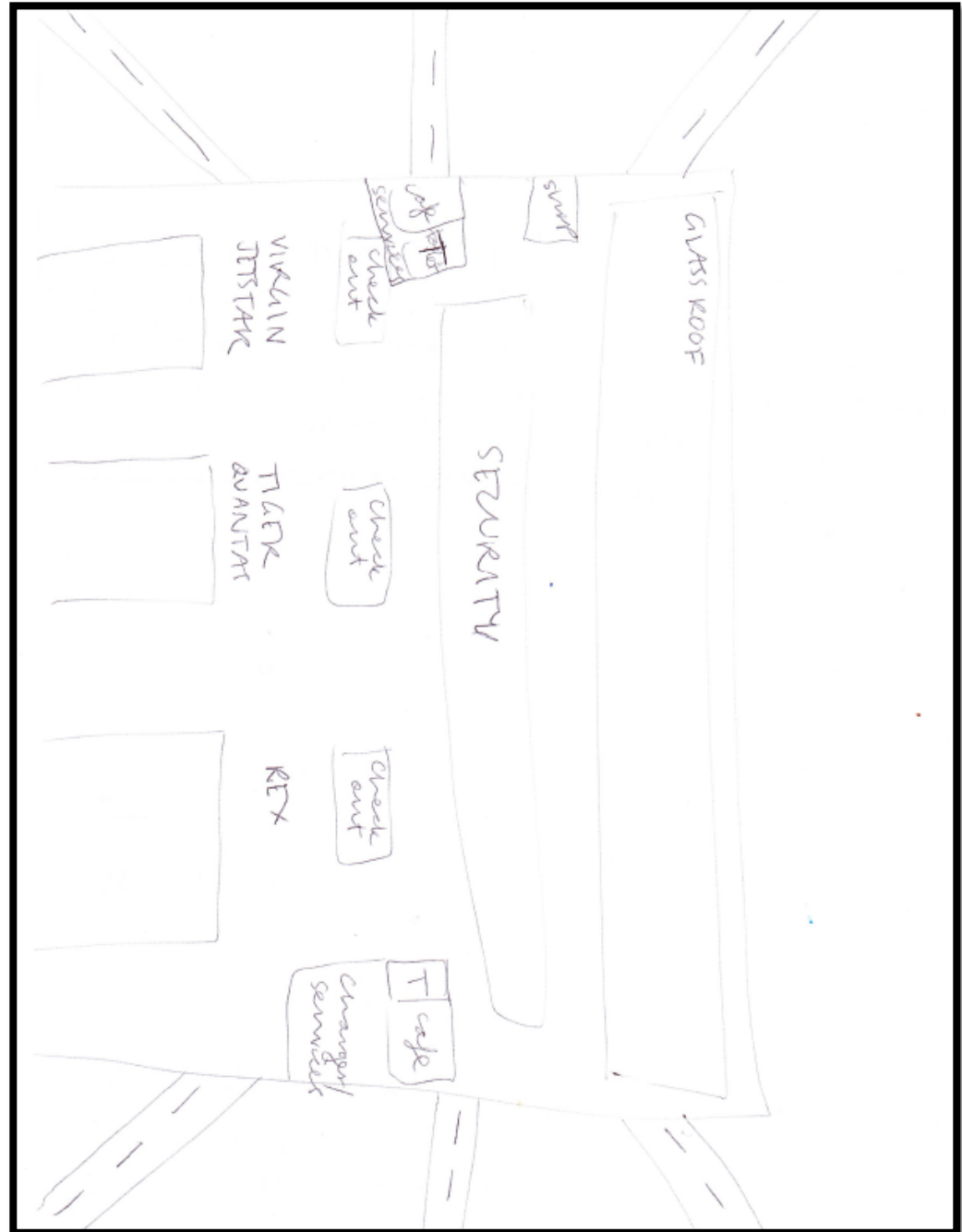
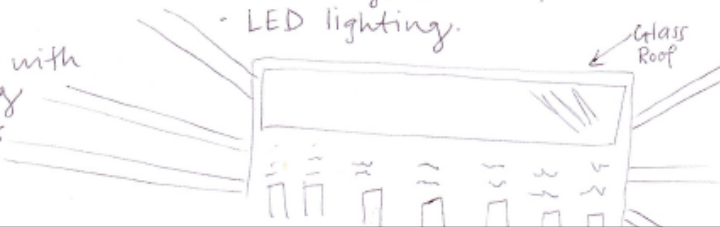
Environmental

- rubbish bins
- trees, environment that is knocked down for the building
- bio degradable products.
- LED lighting.



Aesthetic

- comfortable
- looks good
- need runway with actual building
- fire safety exits



APPENDIX 2:

FORMATIVE ASSESSMENT RUBRIC

OUTCOME	Requires, teachers explicit guidance and attention.	Working positively with minimal guidance.
Students are developing an understanding of Aesthetic needs		
Students are developing an understanding of environmental needs		
Students are developing an understanding of service needs		
Students are developing an understanding of public needs		
Evidence of a progressive design.		
Showing creative thinking throughout the design process		
Explains progressing ideas effectively		
Showing development in scientific terminology		
Using scientific skills effectively and efficiently throughout the design process		
Working collaboratively in their groups, utilising group roles effectively.		

Teacher comments:

APPENDIX 3:

SUMMATIVE ASSESSMENT RUBRIC

OUTCOME	Working towards	Working securely	Working beyond
Students have an understanding of Aesthetic needs			
Students have an understanding of environmental needs			
Students have an understanding of service needs			
Students have an understanding of public needs			
Ability to communicate their design proposal effectively			
Presents a unique and creativity design			
Uses persuasive language effectively			
Uses scientific terminology			
Uses scientific skills effectively and efficiently to design their airport			
Working collaboratively in their groups, utilising group roles effectively.			

Teacher comments:

Risk Assessment Plan

Name of School: Gymea Bay Public School Name of principle: Mrs Casey Description of lesson: Kingsford Smith Airport site excursion Date of lesson: Term 2 Group/class: 5B			Number in Group/Class: 20 Name of classroom teacher: Miss O'Neill, Miss Moore, Miss Flanagan, Miss Bouffler Contact Number: 0431963433 Accompanying staff, parents, caregivers, volunteers: The classroom teacher		
Task/Activity	Hazard Identification & Associated Risk	Assess risk. 6-low. 1-high	Elimination or control measure	Who	When
Lesson one	<ul style="list-style-type: none"> • Falling on uneven ground • Breaking technology 	6 5	<ul style="list-style-type: none"> • First aid kit on hand • Remain on designated footpaths • Teachers and parents/carer volunteers supervise student activity • Brief students before walking to the courtyard before commencing activity. 	<ul style="list-style-type: none"> • Coordinating teacher • Volunteers 	<ul style="list-style-type: none"> • Prior to walking to the courtyard •
Lesson three, four, five and seven	<ul style="list-style-type: none"> • Breaking technology • Dehydration 	5	<ul style="list-style-type: none"> • Enforce rules and monitor behaviour • Water breaks 	<ul style="list-style-type: none"> • Teacher 	<ul style="list-style-type: none"> • When completing activities
Lesson eight and nine	* Finding inappropriate sites	3	<ul style="list-style-type: none"> • Internet website blockages and supplying suggested words to search and appropriate links. 	<ul style="list-style-type: none"> • Teacher/school 	<ul style="list-style-type: none"> • Throughout the unit when students are on internet
Lesson ten	* Unplanned and unsafe presentation space	5	* Create a clear space that is free from wires, chairs and desks.	* Teacher and students	* Prior to commencement of presentations

Plan prepared by: K O'Neill, B Flanagan, K Bouffler and A Moore

Position: Year 5 teacher

Date: 15th July 2014

Prepared in consultation with: Year 5 staff, Deputy Principle.

Communicated to: Teachers

Monitor and Review- Monitor the effectiveness of controls and change if necessary. Review the risk assessment if an incident or significant change occurs.

Appendix 5

Risk Assessment Plan: Kingsford Smith Domestic Airport

<p>Name of School: Gymea Bay Public School Name of principle: Mrs Jones Description of lesson: Kingsford Smith Airport site excursion Date of lesson: 04/08/14 Group/class: 5B</p>	<p>Number in Group/Class: 20 Name of classroom teacher: Miss O'Neill, Miss Moore, Miss Flanagan, Miss Bouffler Contact Number: 0431963433 Accompanying staff, parents, caregivers, volunteers: 3 teacher 1 parent/volunteer</p>
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Task/Activity	Hazard Identification & Associated Risk	Assess risk. 6-low. 1-high	Elimination or control measure	Who	When
Walking to and from the coach/bus	<ul style="list-style-type: none"> • Falling on uneven ground • Struck by vehicle on road 	6 2	<ul style="list-style-type: none"> • First aid kit on hand • Remain on designated footpaths • Use pedestrian crossings • Teachers and parents/carer volunteers supervise student activity • Brief students before moving to the coach and getting off the coach of the rules and behaviour to stay safe 	<ul style="list-style-type: none"> • Coordinating teacher • Volunteers 	<ul style="list-style-type: none"> • Prior to walking to the bus and getting off the bus. • On excursion
Coach transport to excursion venue	<ul style="list-style-type: none"> • Tripping/falling when boarding or getting off the coach • Vehicle Accident 	6 1	<ul style="list-style-type: none"> • Enforce rules and monitor behaviour • Remind students to watch their feet when boarding and un boarding • Ensure vehicle operators hold appropriate license(s) and insurance. • Check availability of seat belts • Vehicle to be appropriate for needs of the group. E.g. wheelchair access • Ensure seatbelts are worn 	<ul style="list-style-type: none"> • Coordinating teacher, other staff members. 	<ul style="list-style-type: none"> • Prior to activity • During activity • Prior to booking busses
Preparation/ introduction in the airport with guide	<ul style="list-style-type: none"> • Injury, accident, emergency • Dehydration • Stranger danger • Sharp objects 	4 5 4 4 3	<ul style="list-style-type: none"> • Carry a phone, first aid kit, water bottle • Conduct site inspection • Ensure students are wearing the correct uniform so they are easily identified • Students are to carry water bottles 	<ul style="list-style-type: none"> • Coordinating teacher • Staff members • Excursion guide 	<ul style="list-style-type: none"> • Prior to excursion • During excursion

	<ul style="list-style-type: none"> Unattended items Using public toilets 	6			
Guided walks around the airport and lunch and recess times	<ul style="list-style-type: none"> Strangers (Unknown) members of the public Lost child/children 	6 2	<ul style="list-style-type: none"> Correct ration of children to adults Set boundaries and out of bounds areas. Guide to lead the group and additional teacher/adults to monitor the group from behind Head counts at various intervals of the day. Ensure guide have checked site for public not complying with instructions. Wear enclosed shoes. Inform students to look before you touch, don't put your fingers anywhere you can see. Move at a slow pace and avoid areas with major trip hazards. When crossing roads, stop group before crossing. Group crosses as one with an adult at the front, middle and back of group. Pre check toilets before allowing students to go in. Carry first aid kit. Give first aid where required. Inform excursion coordinator. 	<ul style="list-style-type: none"> Excursion coordinator Volunteer adults Excursion Guide Guide Excursion Coordinator Other staff teachers Excursion Guide Teachers Excursion Guide Excursion guide and teachers 	<ul style="list-style-type: none"> All prior to events and during the excursion.
	<ul style="list-style-type: none"> Unattended items 	3			
	<ul style="list-style-type: none"> Slips, trips and falls 	6			
	<ul style="list-style-type: none"> Being hit by Cars, bicycles, buses and pedestrians 	2			
	<ul style="list-style-type: none"> Using public toilets 	6			
	<ul style="list-style-type: none"> Medical difficulties 	3			
	<ul style="list-style-type: none"> Going through security 	6			
Diet and food during excursion	<ul style="list-style-type: none"> Students allergies to certain foods 	3	<ul style="list-style-type: none"> Ensure students bring their own lunch from home. Send a list home of foods not to bring. Discuss with the group about the importance of only eating your own food. Ensure a responsible adult is with each group 	<ul style="list-style-type: none"> Teachers an excursion coordinator 	<ul style="list-style-type: none"> Before excursion day During the activity

			<ul style="list-style-type: none">• Ensure students with Epipens carried by the staff member of the group with that child.• Communicate special requirement with all staff members and volunteers, especially emergency procedures		
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Plan prepared by: K O'Neill, A Moore, B Flanagan and K Bouffler

Position: Year 5 teacher

Date: 15th July 2014

Prepared in consultation with: Year 5 staff, Deputy Principle.

Communicated to: Teachers

Monitor and Review- Monitor the effectiveness of controls and change if necessary. Review the risk assessment if an incident or significant change occurs.



Student Excursion Consent Form

Dear parents/caregivers,

Year 5's are studying 'Flying into the future' as part of the built environments unit of work this term. The students will be travelling to **Kingsford Smith Sydney Domestic Airport** (T2 and T3).

The students will experience the uniqueness of Sydney Airport and experience the layout/design of the area. Students will also be paying close attention to the needs of people, servicing and of the community. This day will give the students' real life and hands-on experiences to support their unit of work on built environments.

Miss Bouffler, Miss Moore, Miss O'Neill and Miss Flanagan will supervise students.

We will be traveling to and from the venue by bus.

When: Monday 4th of August 2014

Arrive at school: 8:30am sharp for roll call. Bus leaves at 9:00am

Pickup at from the school: 3:30pm

Cost per student: \$20.00

Equipment to bring:

- School uniform
- Hat
- Sunscreen
- Recess
- Lunch
- Plenty of drinks/water bottle
- Pencils
- Clipboard with paper

Student behavior:

Phones are not to be used during the excursion and a bought at their own risk.

'I acknowledge that during the excursion, acceptable standards of behavior will be expected of the students. I understand that in the event of my son's/daughter's serious misbehavior during the excursion, he/she may be sent home. I further understand that in such circumstances I will be informed and have to come and pick them up from the excursion venue.'

Parent consent: (PLEASE RETURN THIS SLIP TO YOUR STUDENTS TEACHER ALONG WITH ANY NECESSARY MEDICAL DETAIL)

I have read all of the above information provided by the school in relation to the excursion.

I give permission for my daughter/son: _____ to attend: _____

Parent/guardian: _____

(Signature) _____ (Date) _____

Parent supervisors/helper: YES NO

We require 2 parent/caregiver helpers on this excursion. In the case we get more offers then needed, parents will be pick from a random draw.

Additional Information:

Please note any existing medical details/conditions which the school should be aware of for the excursion: _____



Appendix 7

Dear Alison Kasey,

Stages 3, Year 5's are designing a new airport for Western Sydney, Badgerys Creek as part of the Built Environments unit. The unit provides opportunities for students to explore the diversity of different built environments within Australia. It also examines the characteristics of a built environment needed to meet the needs of the community surrounding it.

I am proposing to take Year 5 (Miss Bouffler, Miss Moore, Miss O'Neill and Miss Flanagan) to Kingsford Smith Sydney Domestic Airport to enrich students understanding of the built environment by providing first hand experience of the airport and T2/T3 terminal's. Students will be observing the structural and spatial dimensions of the airport aswell as explore the inside of the domestic terminals.

By seeing the significance of an area like Sydney Airport, students' are able understand how systems in built environments are designed to meet the needs of people. It also highlights social and environmental factors and how dramatically they influence the design of built environments. In this unit students will be working towards proposing a new airport in Western Sydney, Badgerys Creek. Students are an "employed Architect of this new built environment" and their task is to design and make a model appropriate for the Badgerys Creek area.

The excursion relates directly to the syllabus outcomes:

ST3-14BE - Describes systems in built environments and how social and environmental factors influence their design.

Excursion Details:

- **Dates:** To be held on Monday 4th of August 2014
- **Cost:** \$20.00 per student
- **Day Times:**
 - Arrive to school at 8.300am for a 9:00 departure time.
 - Recess at 11:00am
 - Lunch at 1:00pm
 - Arrive back to school at 3:30pm.
- **Travel arrangements:** 40minute bus trip to and from the school and Sydney Airport.

- **Weather arrangements:** In the case of wet weather the excursion will be postponed to a later date.
- **Special Needs:**
- **Parent Helpers/supervisors:** We will require only 4 parent helpers (2 per class)

This excursion will guide and enrich our students in their discovery and understanding of Built environments, which is imbedded within the community. It will leave students with new and positive perspectives of the design processes involved, the aspects needed for a functional airport, and sustaining for the future. Making this excursion to Sydney Airport is an essential component for our Built environments unit.

Kind Regards,

Miss O'Neill, Miss Moore, Miss Bouffler and Miss Flanagan

SCHOOL OF EDUCATION

ED3009 – SCIENCE 3 ASSESSMENT 1 (UNIT OF WORK PART A) GROUP: WRITTEN OUTLINE 50%

Student Name: _____

I/d: _____

Student Name: _____

I/d: _____

Student Name: _____

I/d: _____

Student Name: _____

I/d: _____

Criteria	Fail	Pass	Credit	Distinction	High Distinction
Rationale	<ul style="list-style-type: none"> No rationale Rationale not consistent with NSW Science K-10 syllabus 	<ul style="list-style-type: none"> Describes what is being taught rather than states why it is being taught NSW Science K-10 outcomes listed 	<ul style="list-style-type: none"> Good reasons across all domains of understandings, skills, values and attitudes 	<ul style="list-style-type: none"> Very good reasons across all domains consistent with a constructivist view of teaching and learning 	<ul style="list-style-type: none"> Excellent reasons across all domains consistent with a constructivist view of teaching and learning as supported by the literature
Outcomes	<ul style="list-style-type: none"> No outcomes stated Far too many outcomes so unit not focused No other KLAs identified 	<ul style="list-style-type: none"> Not well distributed across domains Other KLAs identified 	<ul style="list-style-type: none"> Focused by and consistent with learning context Other KLAs identified 	<ul style="list-style-type: none"> Consistent with learning context and Science and Technology content Other KLAs identified and cross referenced in activities 	<ul style="list-style-type: none"> Consistent with learning context, Science and Technology content Other KLAs identified and cross referenced in activities
Concepts	<ul style="list-style-type: none"> No concepts stated Content rather than concepts stated 	<ul style="list-style-type: none"> Concept is clearly stated and present in most activities 	<ul style="list-style-type: none"> Concept is clearly stated and presented in all activities Concept is consistent with and focused by outcomes 	<ul style="list-style-type: none"> Concept is clearly stated and presented in all activities Concept is consistent with and presented stage appropriately 	<ul style="list-style-type: none"> Concept is clearly stated and presented in all activities Concept is consistent with and focused by outcomes, presented in an engaged and stage appropriate way
Teaching and Learning Activities	<ul style="list-style-type: none"> Not consistent with an interactive, hands-on approach to teaching and learning 	<ul style="list-style-type: none"> Interactive and hands-on 	<ul style="list-style-type: none"> Usually interactive, hands-on and engaging with an emphasis on understanding 	<ul style="list-style-type: none"> Always interactive, hands-on and engaging with an emphasis on understanding 	<ul style="list-style-type: none"> Always interactive, hands-on, engaging with an emphasis on understanding as informed by the literature
Teaching and Learning Strategies – 5 E Model, and Teaching Approaches	<ul style="list-style-type: none"> Not consistent with an interactive, hands-on approach to teaching and learning No reference to 5 E model 	<ul style="list-style-type: none"> Consistent with an interactive, hands-on approach to teaching and learning 5 E model identified 	<ul style="list-style-type: none"> Diverse strategies consistent with an interactive, hands-on approach to teaching and learning 5 E model used most of the time 	<ul style="list-style-type: none"> Diverse strategies consistent with an interactive, hands-on, inquiry-based approach to teaching and learning 5 E model used to promote learning and understanding 	<ul style="list-style-type: none"> Diverse, interactive, hands-on, inquiry-based approach to teaching and learning informed by literature 5 E model used to promote learning and understanding in accordance with the literature
Resources	<ul style="list-style-type: none"> No resources stated Resources limited to materials 	<ul style="list-style-type: none"> Include references and a list of materials 	<ul style="list-style-type: none"> Include references and a list of materials that will interest and engage 	<ul style="list-style-type: none"> Include references and a list of materials that will interest and engage a diverse range of student abilities 	<ul style="list-style-type: none"> Include materials that will interest and engage a diverse range of student abilities and relate to everyday life
Assessment Tasks	<ul style="list-style-type: none"> Two types (formative and summative) not included 	<ul style="list-style-type: none"> Both formative and summative assessments included and described 	<ul style="list-style-type: none"> Both types of assessment included and used to promote teaching and learning 	<ul style="list-style-type: none"> Both types of assessment with formative assessment actively promoting learning and a variety of strategies used to promote teaching and learning including skills and understandings 	<ul style="list-style-type: none"> Both types of assessment with formative assessment actively promoting learning in a creative way a variety of strategies used to promote teaching and learning including skills, understandings, values and attitudes

Alternative activities <ul style="list-style-type: none"> Indigenous Students; Students with Special Needs; Gifted and Talented Students 	<ul style="list-style-type: none"> Two alternative activities not included 	<ul style="list-style-type: none"> Clearly identified as alternatives to original activities 	<ul style="list-style-type: none"> Clearly cater for the needs of target students, interesting and engaging 	<ul style="list-style-type: none"> Engaging, interactive, hands-on, with an emphasis on understanding 	<ul style="list-style-type: none"> Use of literature to inform engagement, interaction and understanding
Risk Management	<ul style="list-style-type: none"> No risk management plan in place for the activities 	<ul style="list-style-type: none"> Risk management plan is developed for some of the activities, however, is at times incorrect or lacking sufficient detail. 	<ul style="list-style-type: none"> Risk management plan is developed for some of the activities. 	<ul style="list-style-type: none"> Risk management plan is developed for all activities and is appropriate for the activities. 	<ul style="list-style-type: none"> Risk management plan is developed for all activities and is consistent with legislation and policies.
Literacy strategy	<ul style="list-style-type: none"> No literacy strategy included No English KLA Outcomes included 	<ul style="list-style-type: none"> Literacy strategy clearly stated English KLA Outcomes included 	<ul style="list-style-type: none"> Literacy strategy embedded across the range of activities English KLA Outcomes included and connected to the science concepts in ½ of the lessons 	<ul style="list-style-type: none"> Literacy strategy embedded across the range of activities and clearly connected to the concept English KLA Outcomes included and connected to the science concepts in ¾ of the lessons 	<ul style="list-style-type: none"> Literacy strategy embedded across the range of activities and clearly connected to the concept as informed by the literature English KLA Outcomes included and connected to the science concept at all times
Numeracy strategy	<ul style="list-style-type: none"> No numeracy strategy included No Maths KLA outcomes included 	<ul style="list-style-type: none"> Numeracy strategy clearly stated Maths KLA outcomes included 	<ul style="list-style-type: none"> Numeracy strategy embedded across the range of activities Maths KLA outcomes included and connected to the science concepts in ½ of the lessons 	<ul style="list-style-type: none"> Numeracy strategy embedded across the range of activities and clearly connected to the concept Maths KLA outcomes included and connected to the science concepts in ¾ of the lessons 	<ul style="list-style-type: none"> Numeracy strategy embedded across the range of activities and clearly connected to the concept as informed by the literature Maths KLA outcomes included and connected to the science concept at all times
Academic literacy: referencing skills – citations within text, quotations, range of sources, appropriate style, reference entry format, reference layout.	<ul style="list-style-type: none"> No attempt made to meet School of Education referencing requirements 	<ul style="list-style-type: none"> Referencing does not meet School of Education requirements 5 or more different errors 	<ul style="list-style-type: none"> Referencing usually meets School of Education requirements 3-4 different errors 	<ul style="list-style-type: none"> Referencing nearly always meets School of Education requirements 1-2 different errors 	<ul style="list-style-type: none"> Referencing meets School of Education requirements No errors
Academic literacy: writing skills – text structure, text level grammar, sentence level grammar, spelling, punctuation, vocabulary, and referencing.	<ul style="list-style-type: none"> Poor use of English Assistance needed to improve standard of academic writing 	<ul style="list-style-type: none"> Errors in English but text structure, text level grammar, sentence level grammar, punctuation, spelling and vocabulary acceptable 	<ul style="list-style-type: none"> English in terms of text structure, text level grammar, sentence level grammar, spelling, punctuation and vocabulary is consistently good 	<ul style="list-style-type: none"> English demonstrates clarity of understanding 	<ul style="list-style-type: none"> English is superior

Grade

General Comment (if any):

Tutor: _____

Date: _____