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**Biological Sciences:**

**Forward Planning**

**Document**

Gillian Morrell 2016 1266

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| **ENGAGE**   * To capture students’ interests and find out what they already know. * To elicit students’ questions and prior knowledge. * To use diagnostic assessment so that the teacher can notice and recognise students’ existing ideas when planning learning experiences.     **\*\*** This may be used as the first lesson of the unit. An additional engage lesson can be taught through a fun incursion. |

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| **ndgrey_l** | |  |  |  | | --- | --- | --- | | **TERM/WEEKS:** Term 2, WK 1- 10 | **YEAR LEVEL:** Three | **LEARNING AREA/TOPIC:** Biological Science |   **FORWARD PLANNING DOCUMENT** |

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| **WEEK/**  **LESSON** | **AUSTRALIAN CURRICULUM**  **LINKS** | | | **SPECIFIC LESSON**  **OBJECTIVE** | **ASSESSMENT**  **(what & how)** | **TEACHING & LEARNING**  **EXPERIENCES**  **(include learner diversity)** | **RESOURCES** |
| **Science Understanding** | **Science as a Human Endeavour** | **Science Inquiry Skills** |
| **Week 1** | **Biological science**  Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044). | **Use and influence of science**  Science involves making predictions and describing patterns and relationships (ACSHE050)**.** | **Questioning and predicting** | **By the end of the lesson, students will be able to:**   1. Complete a ‘Living’ and ‘Non-Living’ sort. 2. Separate objects according to classification. 3. Draw and write down prior knowledge of ‘Living’ and ‘Non-Living’ things. 4. Work together in a friendly and cooperative manner. | **DIAGNOSTIC**  Listening to student conversations (station one).  KWL activity.  Collection of work samples (station two).  Questioning on the mat, using pop sticks. | **Introduction:**  Students will come in from recess and sit on the mat. To introduce the topic, of the program of work, living and non-living things, the teacher will run a ‘Think – Pair – Share’ activity, following this with a KWL chart (what the students know, what they want to know, and finally what they leant: the end of the program). The students will complete only the K and W sections.  The teacher will show the YouTube video “*Living and Non-Living Things for Kids”*, then use pop sticks to ask students questions about the YouTube video. The teacher will ask if the students can explain what a living thing is, and what a non-living thing is, before beginning with the body of the lesson. The teacher will revise ‘observable features’ (student prior knowledge, from previous term). The teacher will explain what the lesson objectives are, before moving students into stations.  **Body:**  Station activity rotations. There will be three stations / activities already set up for the students to engage themselves in during the lesson. The teacher will explain the safety rules of the stations – i.e. sharing, taking turns and no running. Following stations, the design brief will be introduced.  **Station One:** Living vs Non-living Sort.  In their group, students will work together to complete a *‘Living vs Non-living Sort’*. The students will be given a range of different living and non-living pictures, of animals and objects, and will separate them into either the living or non-living column on a table. Students will converse with each other and justify why they put the pictures in either the living or non-living column. This will be useful for the teacher to listen to as diagnostic information.  **Station Two:** Paper Words.  In their group, students will each be given coloured textas and a blank page with a line down the middle. Students will write words, and draw pictures, to display what they understand about living and non-living things. They will have a couple of minutes to draw / write about living things on one side of the page, before swapping over and doing the same for non-living things. These pages will be helpful for the teacher to look at, following the lesson, in order to understand individual student levels of knowledge.  **Station Three:** Box Rummage.  Students will be faced with three boxes. Two will be empty, and be labelled “Living” and “Non-living”, the third will be filled with household objects and some living items, such as plant leaves, blades of grass, tissues, pegs, pencils, erasers, flower petals, marbles etc. Students will ‘rummage’ together (one student at a time to pick one item at a time: taking turns) to separate the items into either the “Living” or “Non-living” box.  **Conclusion:**  The teacher will run a mat session, using pop sticks, to ask questions and gather student knowledge from the lesson, before introducing the design brief that will be started and integrated into other subjects, in the following weeks. Each student will be given a design brief that they can start thinking about at home.  **Safety / Health considerations:**  Watch students during the ‘Box Rummage’ (station three), make sure students are not arguing over turn taking or hurting each other with the objects from the box.  **Learner diversity (enable and extend):**  Station Two enabler: Students may choose to just draw pictures, instead of writing and drawing.  Station Two extender: Students can justify (by writing on the sheet) what they have drawn and written.  Station Three enabler: Teacher to select a group leader to help the group take turns. The group leader can help those if they ask for it, or seem to be having difficulty.  Make sure to have a ‘What I Need for This Lesson’ poster up on the whiteboard (for any students who may need guidance and visual reminders of what they need to have during the lesson). | <https://www.youtube.com/watch?v=p51FiPO2_kQ>  Pop stick jar (with student names).  Living vs Non-living pictures (laminated).  Coloured textas.  Blank A4 paper.  Three boxes.  Plant leaves, blades of grass, tissues, pegs, pencils, erasers, flower petals, marbles etc. (for station three).  Design Brief (printed in colour). |

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| **EXPLORE**   * To provide hands on, shared experiences. * Students will explore ideas. * Formative assessment to take place throughout the explore phase.   **\*\*** Prior to this lesson, students will have explored variables and the structure of questions for investigations. Students will have conducted prior investigations. |

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| **WEEK/**  **LESSON** | **AUSTRALIAN CURRICULUM**  **LINKS** | | | **SPECIFIC LESSON**  **OBJECTIVE** | **ASSESSMENT**  **(what & how)** | **TEACHING & LEARNING**  **EXPERIENCES**  **(include learner diversity)** | **RESOURCES** |
| **Science Understanding** | **Science as a Human Endeavour** | **Science Inquiry Skills** |
| **Week 2** | **Biological science**  Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044). | **Use and influence of science**  Science involves making predictions and describing patterns and relationships (ACSHE050)**.** | **Questioning and predicting**  With guidance, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge  (ACSIS053). | **By the end of the lesson, students will be able to:**   1. Write a justification as to why certain animals belong to different classification groups. 2. List three observable features of plants, or animals, independently in thirty seconds. 3. Write a prediction, after using their sense of touch, about what they think is in the mystery boxes. 4. Work together in a friendly and cooperative manner. | **FORMATIVE**  Questioning on the mat following ‘*Move Like’*.  Checklist to check against specific criteria and key teaching points. | **Introduction:**  Students will come in from recess and sit on the mat. To introduce the lesson, the teacher will run a game of ‘*Move Like’.* This is where the teacher will play background animal noises and get the students up and moving. The teacher will call out: “slither like…a snake”, “jump like…a kangaroo”, “fly like…a bird”, “swim like…a shark” etc., while the students move around and respond accordingly.  Following *‘Move Like’* the teacher will use the pop stick jar and pull out different student names to ask questions on prior knowledge from the engage phase, such as “What did all of those animals have in common?”, “What do you remember about the difference between living and non-living things?”, “How do you know if something is living?”, “What is an observable feature?”. The teacher will point out the *‘Word Wall’* to give students ideas.  Students will each draw an observable feature of a living thing on a sticky note, before sticking their drawing up on the whiteboard. The teacher will choose two or three interesting ones about which to make points and have a brief discussion with the class about observable features. The teacher will explain the students’ lesson objectives, before starting the station activities.  **Body:**  Station activity rotations. There will be three stations / activities already set up for the students to explore during the lesson. Students will be given approximately nine minutes at each station before rotating.  **Station One:** Animal Classification.  Students will sort a variety of animal toys into classification groups, based on the animal’s observable features. They will complete a report card as they go, answering questions.  **Station Two:** Mystery Boxes.  Students will explore different living (plants and animals) and non-living objects through the sense of ‘touch’. Students will be offered three different boxes that each contain an living or non-living thing, not able to be seen. They will describe what they feel and guess what each box may contain. As they are at the station they will complete an activity sheet.  **Station Three:** Animal / Plant Snap.  Pairs of students will be given a range of snap cards that have different pictures of animals and plants on them. When the same image appears on the card pile, both students will write down, on a min-whiteboard, as many observable features as they can recognise, in thirty seconds.  **Conclusion:**  Students to sit on the mat with eyes to the front. They will then prepare for a game of line categories. Using the pop sticks the teacher will call names of five students. The five students will line up at the front of the classroom and be given a toy animal (i.e. a plastic whale toy). The student at the end of the line is to name three observable features about the animal before it is passed all the way down the line and reaches them. If they succeed they will get another round with a different animal. If they do not succeed they will pick someone new from the pop stick jar who will get up and have a turn. This is a fun way for students to finish off the lesson, it is also useful for the teacher in order to assess how much the students have learnt.  **Safety / Health considerations:**  Watch students during the introductory game of *‘Move Like’,* they must remember not to run, or to knock into each other.  An Educational Assistant will be placed at the Mystery Box station. The station may seem scary to some students, or over-exciting. The Educational Assistant will ensure everyone is behaving safely and enjoying the activity.  **Learner diversity (enable and extend):**  Station One enabler: adjustment of the animal report card where students can choose from multiple choice answers.  Station One extender: Adding justifications as to why the students classified the animals like they did.  Station Two enabler: Students may give verbal explanations of what they feel, rather than write them down.  Station Two extender: Students can guess, and justify, which classification group they think the objects would belong to.  Station Three enabler: A decrease of the target number of observable features and/or an increase of time allowed.  Station Three extender: An increase of the target number of observable features and/or a decrease of time allowed.  Ensure a ‘What I Need for This Lesson’ poster is up on the whiteboard (for any students who my need guidance and visual reminders of what they need to have during the lesson). | Animal music.  Pop stick jar (with student names).  Sticky notes.  Whiteboard.  Science *‘Word Wall’*.  Plastic animal toys.  Report card (enabled and extended to also be included).  Three ‘Mystery Boxes’ (containing toys, feathers, household objects).  Mystery box activity sheet.  Animal / Plant Snap cards.  Stopwatches.  Mini-whiteboards and markers. |

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| **EXPLAIN**   * To support students to develop explanations for experiences and make representations of developing conceptual understandings. * Formative assessment. |

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| **Science Understanding** | **Science as a Human Endeavour** | **Science Inquiry Skills** |
| Week 4 | **Biological science**  Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044). | **Nature and development of science**  Science involves making predictions and describing patterns and relationships (ACSHE050). | **Questioning and predicting**  Represent and communicate observations, ideas and findings using formal and informal representations  (ACSIS060). | **By the end of the lesson, students will be able to:**   1. Collaboratively teach peers about a ‘living thing’, including observable features and what they need to survive. 2. Use research from appropriate sources on the iPad to describe observable features of a ‘living thing’ and what it needs to survive. 3. Work together in a friendly and cooperative manner. | **FORMATIVE**  Observations of the students.  Assess the information on the A3 sheets.  Checklist to see who seems to be meeting the lesson objectives. | **Introduction:**  As the students walk into the class, give each student a mini-card that has a coloured sticker on it. Instruct students to sit on the table that has the same coloured sticker as their cards (5 groups).  The teacher will explain what the students have to do: research at their table, on iPads provided, before doing jigsaw stations where they will teach their peers. Each table will be given a different research topic. The teacher will explain what the students’ lesson objectives are, before starting the jigsaw activity.  **Body:**  Students will participate in a Jigsaw activity. During this time, they will learn about a topic before peer teaching what they learnt and then rotating around the room.  **Jigsaw Station One:** Table One will be given the ‘Sunflower’ as their research topic. The teacher will already have set up the appropriate website on the table for students to read. They will have an A3 piece of paper on their table where they will write down facts and observable features of the sunflower. What does it need to survive?  **Jigsaw Station Two:** Table Two will be given the ‘Toucan’ as their research topic. The teacher will already have set up the appropriate website on the table for students to read. They will have an A3 piece of paper on their table where they will write down facts and observable features of the toucan. What does it need to survive?  **Jigsaw Station Three:** Table Three will be given the ‘Cricket’ as their research topic. The teacher will already have set up the appropriate website on the table for students to read. They will have an A3 piece of paper on their table where they will write down facts and observable features of the cricket. What does it need to survive?  **Jigsaw Station Four:** Table Four will be given the ‘Earth Worm’ as their research topic. The teacher will have already set up the appropriate website on the table for students to read. They will have an A3 piece of paper on their table where they will write down facts and observable features of the earth worm. What does it need to survive?  **Jigsaw Station Five:** Table Five will be given the ‘Pine Tree’ as their research topic. The teacher will already have set up the appropriate website on the table for students to read. They will have an A3 piece of paper on their table where they will write down facts and observable features of the pine tree. What does it need to survive?  **Conclusion:**  **Safety / Health considerations:**  Using the iPads safely and responsibly (use search engines and websites responsibly i.e. do not look up anything that the teacher has not provided already).  **Learner diversity (enable and extend):**  Ensure a ‘What I Need for This Lesson’ poster is up on the whiteboard (for any students who may need guidance and visual reminders of what they need to have during the lesson). | Cards (with coloured stickers).  iPads (fully charged).  A3 Paper.  Textas.  Tables set up in groups. |

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| **ELABORATE**   * To challenge and extend students’ understandings in a new context. * Use of inquiry skills. * Assessment (summative) of science inquiry skills   **\*\*** The design brief will require three lessons and can be completed during the elaborate phase. |

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| **Science Understanding** | **Science Inquiry Skills** |
| **Week 6** | **Biological science**  Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044). | **Questioning and predicting**  Represent and communicate observations, ideas and findings using formal and informal representations  (ACSIS060). | **By the end of the lesson, students will be able to:**   1. Identify living and non-living things and record observations and drawings. 2. Reflect on the scavenger hunt investigation through discussion. 3. Work together in a friendly and cooperative manner. | **SUMMATIVE**  Anecdotal notes during the scavenger hunt.  Video clips of students during the scavenger hunt. Asking questions such as: “why did you put the bin in the non-living section?”, “What is the environment needed for that flower to keep living?” etc.  Observations of the students. | **Introduction:**  As students walk into the classroom the teacher will hand them each a picture of a living thing. Each picture will have a double up. Students will find the other person who has the matching picture and they will join as a pair. Together, students will sit down on the mat and the teacher will ask each pair to stand up and explain why their picture is a ‘living thing’, students are also encouraged to explain the habitat of their picture.  The teacher will explain the students’ lesson objectives and will then explain the investigation about to take place. Each student will be given a ‘Scavenger Hunt’ activity sheet and the teacher will explain the activity, making sure that the students’ are aware of the safety point of keeping close to their partner with whom they are matched.  **Body:** Scavenger Hunt.  Students will line up, in their pairs, and follow the teacher, like quiet mice, to the school oval. With them they will each carry a pencil, an activity sheet and a clipboard. They will be given thirty minutes to explore the oval, in pairs, and write down / draw observable features of living / non-living things outside (i.e. tree, rubbish bins, flowers, worms, vegetable garden etc.). The teacher will remind students to take notes of the environments that the living things need in order to keep living. The teacher will remind students to think about that during their design briefs.  The teacher will walk around and take anecdotal notes of the students’ participation in the activity. The teacher can also walk around the oval with a video camera to take clips of students while the students are doing their scavenger hunt. The teacher can use these clips as summative assessment to see how much the student explanations and justifications have improved and grown throughout the weeks. The short video clips can be put on the parent ‘dojo’ page for the class and the students can watch it after school.  Students will line up quietly in their pairs and follow the teacher, like quiet mice, back to the classroom. The students will each put their name on their scavenger hunt pages and place these in a pile on the teacher’s desk, before placing clipboards and pencils back in the crate beside the teacher’s desk.  **Conclusion:**  Students are to sit on the mat, after which each pair will stand up and says the most interesting ‘living thing’ they found outside, and why they found that the most interesting.  **Safety / Health considerations:**  Students to stay in their pairs during the whole scavenger hunt.  No students are to go near the school pool area during the scavenger hunt.  Teacher to do a head count on the way out to the oval and on the way back into the classroom.  Students have to be able to see the teacher at all times during the lesson.  **Learner diversity (enable and extend):**  Scavenger Hunt enable: Students who may struggle to write down information may be videoed by the teacher instead, giving them the same opportunity to explain themselves and justify their responses, without having to write it all down.  Scavenger Hunt extend: Students are also to write about the habitat / environment within which they found each item.  Ensure a ‘What I Need for This Lesson’ poster is up on the whiteboard (for any students who my need guidance and visual reminders of what they need to have during the lesson). | Scavenger hunt activity sheet.  Clipboards (and clipboard crate).  Pencils.  Video camera (fully charged).  ‘Class Dojo’ system.  Match up cards to pair up the students. |

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| **EVALUATE**   * To provide opportunities to review and reflect on their learning. * Assessment (summative) of science understanding.   **\*\*** Students will have been given time in class and will have been assigned elements as homework to present findings in a presentation. |

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| **WEEK/**  **LESSON** | **AUSTRALIAN CURRICULUM**  **LINKS** | | **SPECIFIC LESSON**  **OBJECTIVE** | **ASSESSMENT**  **(what & how)** | **TEACHING & LEARNING**  **EXPERIENCES**  **(include learner diversity)** | **RESOURCES** |
| **Science Understanding** | **Science Inquiry Skills** |
| **Week 10** | **Biological science**  Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044). | **Communicating**  Reflect on investigations and programs of work (ACSIS058). | **By the end of the lesson, students will be able to:**   1. Participate in the KWL. 2. Write detailed responses in their activity booklets. 3. Work independently and quietly. | **SUMMATIVE**  KWL activity.  Activity Booklets (work sample).  Kahoot Quiz. | **Introduction:**  Students will come in from recess and sit on the mat. The teacher will run a ‘Think – Pair – Share’ activity, before following this with a KWL chart (what the students know, what they want to know, and finally what they learnt: the end of the program). The students will complete only the L (what they learnt) part of the KWL, following the K and W from the beginning of the teaching program.  Using the pop stick jar the teacher will pick three people who will take turns to stand up the front of the classroom and play “21 Questions” with the rest of the class. The student at the front of the room will think of an animal, while the rest of the class ask ‘yes / no’ questions (21 of them), before they guess the animal that the student is thinking of.  **Body:**  To begin the body of the lesson the teacher will ask all students to sit at their seats as she / he hands out the activity booklets to be completed individually (as a summative work sample: see the ‘teacher resources’ page). The teacher will have coloured pencils on the tables for colouring in time (for early finishers who want to add colour to their booklets).  Students will be given twenty minutes to complete their booklets. Early finishers may add colour to their booklets if they choose to. All booklets are to be placed in a pile on the teacher’s desk.  The classroom helpers will then roll in the iPad trolley from the year three learning block. Teacher will run a ‘Kahoot quiz’. Every student will have an iPad set up to do this, and will sit at their desks (iPads from the shared iPad trolley in the year three learning block). Questions will address living and non living things, observable features, reproduction, habitat and survival.  **Conclusion:**  To conclude this program of work, the teacher will run a review and reflection with the students.  **Safety / Health considerations:**  Students to move around the room safely (i.e. when completing the ‘think, pair, share’ and KWL).  Handle the iPads with care (always be seated when using, and while holding, the iPads).  **Learner diversity (enable and extend):**  Relaxing background music will be on during the activity booklet time if the class responds well to background music. Music will not be used if the students do not usually respond well to it.  Ensure a ‘What I Need for This Lesson’ poster is up on the whiteboard (for any students who may need guidance and visual reminders of what they need to have during the lesson). | iPads.  Activity Booklets.  Kahoot Quiz.  Pop stick jar (with student names).  Coloured pencils. |