A Frog's Place

Unit Of Work
Key Learning Area : Science

PART TWO – Curriculum Links and Lesson Plans

Developed by Alex Hilvert as a Science Unit for Upper Primary Students as part of a B. Education Degree at the University of Canberra.

KLA: Science	**Lesson Plan: one (in A Frog's Place Unit)**	**Class: Year 4**	**Number of students: 30**	**Number of minutes in lesson: 40**
ESSENTIAL LEARNINGS: There are different kinds of frogs. Frogs call to mate. **PRIOR LEARNING:** Students have previously covered life cycle concepts. Students are familiar with group mind map process.			**AIM:** Students engage with frog subject and contribute prior learning. Student understands that there are different species of frogs and that they call to mate. Students explore understandings through investigating activities that use observation and manipulating materials. **ASSESSMENT:** Record student's prior understandings for later assessment. Observe method and interest of students while on task at stations, question for understanding. **INDICATORS:** Student are able to articulate that there is a variety of different frogs in their environment. Student are able to explain why frogs make calls. Students have participated at stations and have attempted to answer related questions. Student contributes to group discussion.		
Time Frame			**MATERIALS/ RESOURCES:**	**TEACHING STRATEGIES:**	**INCLUSIVE PRACTICES:**
10min 10min. 15 min 5 min	***ORIENTATION/INTRODUCTION:*** Class sits in circle in group area and creates mind map on "What we know about frogs". Engage students by reading the book Around Here. Involve students in the interactive aspects. ***CONTENT:***Question children "How do frogs find each other?" Distribute frog call cards to children. One child is blinfolded and leaves the room with a helper. The children practice their calls in a circle. The blindfolded child is brought back and placed in the middle of the circle. The teacher names a frog and vocalises it's call. All students take part in the chorus of calls, using the call from their cards. The task of the blindfolded student is to listen carefully and locate a student in the circle who is making that exact call. Repeat exercise with a new blind folded person (there may be two, or three). Explain that frogs call to mates, when habitat conditions are right. Discuss the competition involved in calling. To elaborate on task students choose to work in partners or independently at one of the following stations. Station one – manipulating available materials to increase the volume of their call. Station two: student's experiment with water and plastic bags on hands, to determine the merit of webbed feet. Station three: students decorate allocated walls with images of local and foreign frogs. ***EXTENSION:*** students are asked to imagine there is a frog body shop where frogs could go to buy different feet. Design a catalogue for different types of frog feet. List their strengths and weaknesses. ***CLOSURE:*** students gather and clarify understandings/share findings. Teacher reinforces idea that there are different frogs. Mentions question for next "How are all frogs the same?". Pack up room/wash hands.		Butchers paper Marker Pen Around Here interactive book by Alex Hilvert 30 cards with frog names and calls on them. 3 blindfolds CD player Frogwatch ACT frog call CD (played while children experiment.) Scissors, Paper Toilet rolls, Cardboard boxes Recycled materials Three buckets Plastic bags. Plastic for ground Photocopies/magazine images/posters of local and foreign frogs Blutac/velcro sticky labels for walls (see also resources)	Include tangent thoughts and ask students for their questions while brainstorming about frogs to foster curiousity (TS6) Discuss using hearing as a form of observation/scientific process (TS7) Allow students space to investigate and play with materials – (TS9) see safety Give students chance to explain understandings before finishing.(TS15) Brainstorm safe practices with group sticking pictures on walls. Children may experience embarrassment about mating – use appropriate language.	Ask for suggestions from ESL students – use simple clear language and visual cues. Go over student's frog name/sound with ESL children/learning disability child. Provide ESL teacher with relevant glossary of new words used in science class. Where possible brief ESL students on class discussion topics before class Check mating concepts are appropriate to child's cultural background

Teacher strategies reference the NSW board of studies k-8 science curriculum http://k6.boardofstudies.nsw.edu.au/

KLA: Science	**Lesson Plan: Two (in Frog's Place unit)**	**Class: Year 4**	**Number Of Students: 30**	**Minutes in Lesson: 50**

ESSENTIAL LEARNING EXPERIENCE:
Finding out what areas need to be covered to know what a frog needs to survive.

PRIOR LEARNINGS:
Students have created a mind map on what they know about frogs.
Students have some group work experience.
Students have basic awareness of report concept.
Students are aware that frogs:
-vary within a species
-make calls to reproduce.

AIM:
Students clarify investigation questions regarding the needs of a frog. Students start to explore resources related to investigation. Students engage with group report task.

INDICATORS:
Students (and teacher) have devised a list of areas to research. Students have written out their own question to answer in science books. In groups students have started report brainstorming worksheet.

ASSESSMENT:
Teacher records investigation contributions made by students (write intials) during discussion on mind map. Teacher observes and evaluates how groups are working.

Time Frame		**MATERIALS/ RESOURCES:**	**TEACHING STRATEGIES:**	**INCLUSIVE PRACTICES:**
10 min	***ORIENTATION/INTRODUCTION:*** Bring out mind map created in lesson one. Recap on variety of local frogs. Introduce group research task. Allocate groups. Students are informed about wetlands excursion (notes go home).	List of group divisions Group role badges Wetlands note photocopies	For cooperative learning (TS1) Introduce tool of 'talking stick' to give students all a chance to talk.	Give independent learners some options to explore focus questions on own. Ensure groups have a mix of genders.
10min.	***CONTENT:*** Students are queried as group "What will we need to know before we start designing frog pond?" Using mind map from previous week and further brainstorming group will explore what a frog needs to survive. Question and clarify areas to be investigated. Work with children's ideas and divide into five areas: Food: What does a frog/the local frogs eat? Safety: Who are the frogs Predators/How might it keep safe? Appropriate Shelter: Sunshine/Temperature? Plants: Are they needed/which ones? Moisture – What depth will be needed/Can they swim/What to tadpoles like?	Mind map from lesson one Butcher's paper Marker pen	As much as possible have student negotiated learning/direction while clarifying investigation – encourage children to articulate focus questions. (TS4), (TS12)	Brainstorm extension research questions with advanced students. Pair ESL/learning disability students together but mix with stronger literacy students. Check they understand question, look for ways to incorporate research from their cultural background/adapt focus to include more visual components.
20min.	Go through group work tips on hand out sheet and give to students. Children commence group work using the jigsaw model (see notes) Groups attend research stations A,B or C. A = Student's develop questions to ask Catchment Education Officer on excursion. B = Explore book resources. C = Internet/CD ROM search.	Hand out on cooperative learning/helpful websites for students Science books/pencils Frog books (see resources) 10 computers	Remind children about evaluating resources (to be covered more in other subjects.(TS3)	
10min.	***CLOSURE:*** Student meet with their report group fill out commence initial brainstorming for presentation. Pack up room.			

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KLA: Science **Lesson Plan: Three (of Frog's Place unit)** **Class: Year 4** **Number of Students: 30** **Minutes in Lesson: 50**

ESSENTIAL LEARNINGS: Science organises living things into different categories. Frogs are amphibians. **PRIOR LEARNINGS:** Students are familiar with cooperative learning. Life cycle concepts have been covered.	**AIM**: Students hypothesize and predict appropriate categories for living things. Students understand that there are categories for living things. Students explore how frogs are classified. Students knows that frogs are amphibians. **INDICATORS:** Student has contributed to group task by making suggestions and proposing explanations. Student is able to discuss how frogs may be categorised. **ASSESSMENT:** Listen to each groups' reasoning and analyse explanations of students. Observe how students interact in groups.

Time Frame	***ORIENTATION/INTRODUCTION:***	**MATERIALS/ RESOURCES**:	**TEACHING STRATEGIES:**	**INCLUSIVE PRACTICES:**
5min.	Recap on lesson one, show book Around Here again	Around Here interactive book	Support/facilitate groups where required refer to cooperative learning tips (TS1)	Mix up groups, ensure variety of gender, cultural backgrounds, language skills. Be aware of not assigning stereotyped roles to group members.
10min.	Engage students with activity: Divide/direct class into various groups - "All those who have blue eyes on the left side of the room, all those who have finished their math's homework to the right side etc, explain dichotomous key.	Task worksheet Group Role Badges/pins 100 or more colour images of living things – be sure to include including mammals, fish, birds, reptiles, amphibians, invertebrates and plants. Use some wetland creatures and a variety of frogs. Encyclopedias	Ask questions that will tease out why students made their decisions (TS10)	Include animals/plants that would be familiar to students of culturally diverse language backgrounds.
20min.	***CONTENT:*** Explain task (see worksheet). Children will be divided into groups of three and given roles within the group. The task is to classify the pictures of living things into at least 3, but no more then 7 categories.		Initiate a discussion about why some groups systems work better then others.	Spend time with ESL/Learning disability students during group exercise.
5min.	Group meets, spokespersons explain their classification method to class. Discuss.		Discuss ambiguity for groupings (TS15)	
10min.	***CLOSURE:*** Explain that Frogs are amphibians and what this means. Point out other groupings frogs are part of e.g. a wetlands creature, in an indigenous context and the animal kingdom. (see teacher notes). Clarify understandings. Allow children time to rearrange their groups according to existing classification systems.		Observe if children can apply understanding	

Teacher strategies included in lesson reference the NSW board of studies Science and Technology k-6 curriculum
http://k6.boardofstudies.nsw.edu.au/

KLA: Science	Lesson: four (in Frog's Place unit)	Class: year 4	Number of Students: 30	Minutes in Lesson: 95 (not including travel)

ESSENTIAL LEARNINGS:
Observing, classifying and collecting data on invertebrates in a wetland setting. Asking Education Officer questions related to reports.

PRIOR LEARNINGS:
Students are aware that living things are classed into different categories. Students understand that frogs are often wetland creatures. Students have developed questions about frogs for Catchment Education Officer.

AIM: In a wetlands habitat students make observations, identify invertebrates and collect data. Students use community member as resource source for investigations. Students understand there is a relationship between invertebrate populations and ecosystem health.

INDICATORS:
Students have participated in task with interest. Students have recorded data, notes and drawings of invertebrates in science books.
Students have asked education officer questions relevant to report (see lesson two)

ASSESSMENT:
Collect science books and examine quality of observations and recordings.
Take notes on students during investigation process.
During question time with Education Officer examine quality of student's questions.

Time Frame		MATERIALS/ RESOURCES:	TEACHING STRATEGIES:	INCLUSIVE PRACTICES:
10min.	***ORIENTATION/INTRODUCTION:*** Students meet Education Officer who explains investigation to measure water quality by observing the variety of invertebrates in the wetland. Officer explains that bugs live in different parts of the wetlands and instructs students about scooping up water bugs/ into trays for observation. Demonstrates moving specimens from large tray to ice cube tray with pipette and spoon. Assign students to trays that include required equipment.	First Aid Box Permission notes Students to bring – pencil, clipboard, science books, hats, drinks and morning tea (provided by Education Officer) Ice cube containers, scooping nets, large trays that hold water, magnifying glasses, invertebrate identification kits, pipette, plastic spoon & soap. Worksheet for students to record invertebrate data/observation of senses	Allow students opportunity to manipulate natural materials (TS9) Encourage both quantitative/and qualitative observation emphasis accuracy (TS7) Discuss handling living things with care and humane techniques of investigation Foster curiosity by querying students about their findings (TS6)	Support and encourage parent of culturally diverse child to attend excursion. Ensure scientific investigation process is appropriate to child's background (talk with parents pre-excursion). Identify children that parent helpers assist in data recordings/at question time. Make a point of asking children to rotate use of inquiry materials – pipette, magnifying glass etc
30min.	Children find buddy and form groups of approximately 4 And commence investigation (with parent helpers).			
20min.	Give out worksheets. Students record data, make notes and diagrams.			
10min.	Student's discuss results with Catchment Officer. Collect worksheets.			
10min.	Student's wash hands and have morning tea while officer explains that Frog's are an indicator species.			
15min.	Students take turns asking education officer questions for their frog research project. Students take notes.			
10min.	Pack up equipment say thank you and goodbye Student's return to school.			

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KLA: Science	Lesson plan: five (in A Frog's Place) unit	Class: Year 4	No. of students: 30	No of minutes in lesson: 50

ESSENTIAL LEARNINGS:
What a frog needs to survive. Presenting a scientific report. Working cooperatively.

PRIOR LEARNINGS:
Student's have researched and produced a report in groups, on what a frog needs to survive. Student's have covered presentation skills in English. Each child has contributed to one component of the report. Students have worked cooperatively in science over the last five weeks.

AIMS:
Groups share understanding about what a frog needs to survive. Students reflect on their cooperative learning.

INDICATORS:
Groups complete an informal presentation to peers on the investigation topic "what a frog needs to survive". Each student has clearly identified one aspect of what a frog needs to survive. Students complete reflection worksheet and contribute to group reflection.

ASSESSMENT:
During group presentation reflect on each student. Observe their group work abilities, the depth of their contribution and their understanding of the concepts. Examine posters/presentation aids where applicable.

Time Frame		MATERIALS /RESOURCES:	TEACHING STRATEGIES:	INCLUSIVE PRACTICES:
10min.	***ORIENTATION/INTRODUCTION:*** Engage with Tiddaliack book, discuss report sharing.	Book for sharing	Discuss the need for a safe a supportive culture – ask students to notice one thing that each group does well in their presentations.	Ask ESL support teacher to spend extra time on student's report (pre-class).
10min.	Groups who are sharing gather and set up required materials. Other students collect science books/pencil. Suggest taking notes/drawings of any new points students learn.	Display board for student work/other support equipment (check with children)	Reinforce importance of being able to communicate scientific understandings. (TS15)	Check that ESL Learning disability students are prepared for report presentation.
10min.	***CONTENT:*** Group stands before class and shares their findings about what a frog needs to survive. The students are aware that this is a practice session and each of the groups will be presenting their ideas to a different classroom in the school. Allow brief verbal reflection by group at the end. The class may give positive feedback.	Student science books/pencils	Foster curiosity by asking children if they have any new questions at end. (TS6)	
2min.	Stretch break for lasting concentration	Reflection worksheet	Poses reflective questions on what the groups have done well. (TS2).	Give ESL/learning disability drawing options for reflection worksheet.
10min.	Second group shares		Have students apply their understanding by asking for ideas for frog pond design. (TS16)	
8min.	***CLOSURE:*** Time for reflection on learning/group process. Students are given reflection worksheets to fill out. .Pack up room.	Tiddalick book		

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