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**Shannon Thomas, Suzanne Akerman
Petra Burmeister, Michael Ewig,
Julia Kögler**

Water

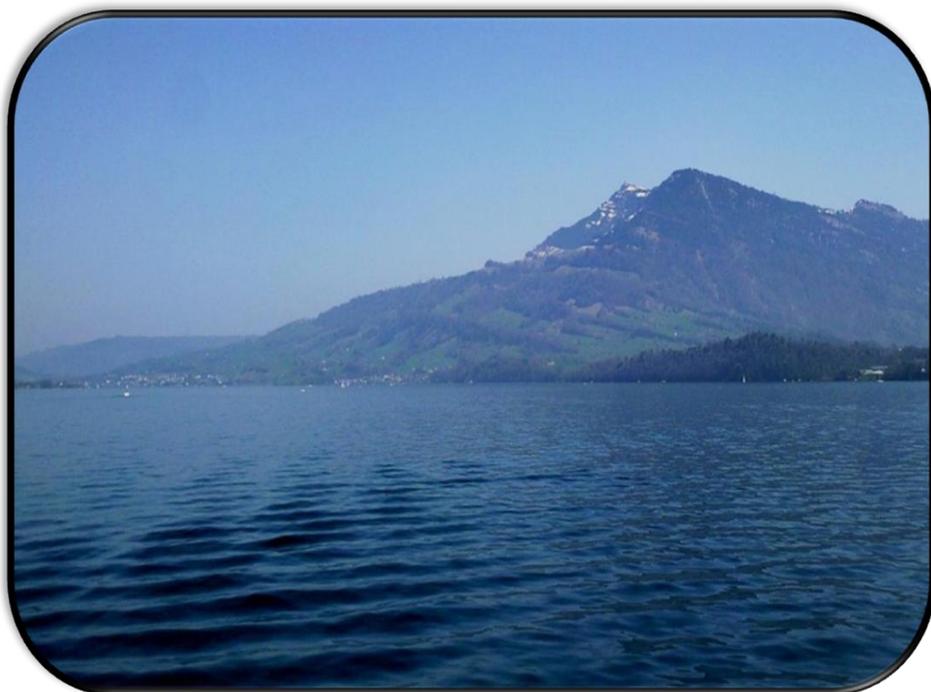


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General Information

Water

Language Aims:

- as a result of the module being filled with experiments and thought inducing activities, the language of this module consists of conversations as opposed to learning specific words or phrases

Science Aims:

- to begin learning how to deduce answers, either through experimentation or through logical classification

Educator Hint:

- This module is a great opportunity to talk about safety issues and to review proper animal handling.
- During the investigations and safety talks, allow enough time for the children to think through the possible answers and deduce a plausible outcome.
- If you would like to include additional material with this module, online databases can be an asset, just as this module makes use of Wiki (-pedia and -media). However, when using online databases, please ensure the accuracy of the information obtained by cross-referencing it with other sources.

Animal Information:

- Turtle facts:
 - **physiology**
 - *body*: head, four limbs, tail, main body covered by a shell (ventral= carapace, dorsal= plastron)
 - *colouration*: turtles vary in colour, mostly they are neutral colours (browns, yellows, greens), but may have vivid colours patterned on their bodies
 - *size*: largest is the leatherback turtle = ~8' (2.4m) long and ~1500lbs (680kg), smallest is bog turtle = ~4.5" (11.4cm)
 - **habitat**
 - Turtles can be found in aquatic habitats almost worldwide, except for the extreme Polar Regions. Normally, they inhabit areas with climates warm enough to ensure a positive breeding cycle. Unlike tortoises, turtles are found in or close to bodies of water.
 - **interesting information**
 - Some species of turtles have skin that is permeable to oxygen in the water, allowing them to remain submerged for extended periods of time. 'Bale' is the name for a group of turtles. The sex of a turtle is determined by ambient temperature during embryonic development. (Canadian Museum of Nature, 2009; Kids Konnect, 2010; U.S. Fish and Wildlife, n.d.)

Investigation possibilities and links:

- fog in a jar
 - <http://eo.ucar.edu/webweather/cloudact1.html>
 - if the fog is not forming, increase the temperature of the water in the jar
 - try and keep the ice in cube form and as cold as possible, don't let it melt
 - with a large group of children, increase the size of the jar...a very large pickle jar works great
- salt water conductivity test
 - ****ensure safety is talked about during this entire investigation****
 - make sure the light bulb and the battery are a match, if the battery is too strong or too weak the light bulb will not work properly



- make sure enough of the wire ends are exposed and connected
- make sure all the materials *you* handle when connecting the circuit are nonconductive
- when investigating the various water samples from the zoo, there is a possibility that the light will come on even if the water is 'fresh' (the zoo keepers might add something to the water that is a conductor), check the samples before the lesson to see if the investigation will work properly
- fish examination
 - during this examination watch the attitudes of the children, if the children become too frightened or too rambunctious put the fish away and wait for the children to become calmer
 - this examination should be a positive experience for the children, and some children might not be comfortable with examining a dead fish
 - during this examination it is also a really great time to talk about/review how to properly handle animals

Website Links:

- <http://www.arkive.org/>
 - if you follow this link, ARKive has a wonderful collection of animal videos
 - enter in your desired animal to the search bar and select your own desired videos
 - ****some videos on ARKive contain images not suitable for young children****
 - ****before showing the videos to the children, please read through the "Terms of Use" on the ARKive website, the ELIAS project and creators of this module are not responsible for misuse of any copyright information****

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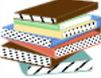


What is water? Session 1 Level 1

Materials:

- 
- map of the world (*not provided with download*)
 - flash cards (*F.C. 1-2*)
 - Jane Story 1 (*page 1*)
 - a jar of fresh water
 - a jar of salt water
 - a bag of ice cubes
 - experiment materials
 - <http://eo.ucar.edu/webweather/cloudact1.html>
 - glass jar, black paper, match, ice cubes, plastic baggie, warm water, flash light, tape, scissors

Words:

- 
- WATER, SALT WATER, FRESH WATER, CLOUD, FOG, ICEBERG, OCEAN, SEA, RIVER, LAKE
 - experiment, sky, drink, yes, no, ice cubes, match, flash light, jar, safety

Activity:

- 
- **exploring water variety and safety** (*world map, F.C.1-2, Jane 1*)
 - water safety (*Jane 1*)
 - Jane 1 (*use the story of Jane to illustrate water safety*)
 - this activity is more for water safety and having the children think about the importance of water safety
 - salt water (*world map*)
 - using a map of the world point out where salt water is located
 - introduce the jar of salt water
 - discuss: sight, smell, colour, etc.
 - allow time for all the children to interact with the sample
 - introduce the names of the bodies of salt water, 'ocean' for the larger and 'sea' for the smaller
 - what animals and plants live in salt water
 - answers to this question can be very broad; therefore, this module does not provide sample pictures
 - to assist in teaching this section, find magazines with aquatic pictures
 - fresh water (*world map*)
 - using the same map point out where fresh water is located
 - introduce the jar of fresh water
 - discuss: sight, smell, colour, etc.
 - allow time for all the children to interact with the sample
 - have the children compare the samples
 - introduce the names of various fresh bodies of water (depending on the age of the children introduce as many as desired)
 - lake, river, stream, brook, pond, puddle, creek
 - what animals and plants live in fresh water
 - answers to this question can be very broad; therefore, this module does not provide sample pictures
 - to assist in teaching this section, find magazines with aquatic pictures
 - icebergs (*world map, F.C. 1*)



- using the map point out where icebergs can be found
- introduce the iceberg F.C.
 - pass around the bag of ice (please note this is just a sample of ice and not a real iceberg)
 - discuss: sight, smell, temperature, etc.
 - allow time for all the children to interact with the sample
- how big are icebergs
 - using the drawing talk about the size icebergs can be
- how is ice made
- clouds and fog (F.C. 2)
 - using the picture begin a discussion of clouds
 - if there are clouds that day, move the children to an appropriate viewing place and talk about the clouds
 - how high are clouds, what colour are they, shape, etc.
 - come back into the circle and introduce the picture of fog
 - what is fog
 - what is the difference between a cloud and fog
 - the main point is the location: fog touches the ground, clouds are above the earth
- **let's investigate**
 - fog in a jar investigation
 - click on the link provided above
 - follow the instructions on the website

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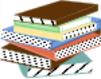


salt vs fresh water Session 1 Level 2

Materials:

- 
- 2 jars of fresh water
 - a jar of salt water
 - salt
 - spoon
 - map of the world (*not provided in download*)
 - Jane Story 1 (*page 1*)
 - Jane Story 2 (*page 3*)
 - experiment materials
 - battery, light bulb, light bulb base with side connections, 3 lengths of insulated copper wires, 2 glass jars, water, salt, 2 popsicle sticks, tinfoil, 2 plastic or wooden clothes pins

Words:

- 
- WATER, SALT, FRESH, OCEAN, SEA, RIVER, LAKE, INVESTIGATION
 - light bulb, electricity, wire, battery, drink, starfish, safety

Activity:

- 
- **exploring water** (*world map, Jane 1, Jane 2*)
 - salt water (*world map*)
 - using the world map have the children point out where the salt water is located, help them if needed
 - introduce the names for saline bodies of water; ocean and sea
 - what animals and plants live in salt water
 - using the sample of salt water let the children explore what salt water is like (smell, sight, etc.)
 - fresh water (*world map*)
 - using the same world map have the children point out where fresh water is located, help them if needed
 - introduce the names of fresh bodies of water; lake, pond, river, stream, brook, creek
 - what animals and plants live in fresh water
 - using the sample of fresh water let the children explore what fresh water is like (smell, sight, etc.)
 - children and water safety (*Jane 1*)
 - Jane 1
 - *use the story of Jane to illustrate water safety*
 - use this time as an opportunity to discuss water safety (when to drink water, when to swim, where to swim, etc.)
 - animals and water (*Jane 2*)
 - can an animal in salt water change to fresh water (and vice versa)
 - some animals can survive in both salt and fresh water (salmon)
 - discuss positive reasons for an animal to have the ability to change from salt to fresh
 - most animals are not able to change from salt to fresh water
 - why is it important for the oceans/seas and river/lakes to be free of garbage
 - depending on the age and ability of the children, discuss what happens when a salt-water animal is put in fresh water
 - Jane 2



- use the other story of Jane to lead into the following experiment
- how can we tell if the water is salt or fresh

➤ **let's investigate**

- visible differences between salt and fresh water
 - using the 2 jars of fresh water talk about what they look like (they should be identical)
 - add lots of salt to one of the jars and stir it well
 - talk about the visible difference
 - can the children pick out which jar is the salt water jar and which jar if the fresh water
 - give the children the opportunity to smell the 2 jars, talk about the scent differences
 - can the children determine which jar is fresh water and which jar is salt water
 - but what if you can't tell from sight and smell
- investigation
 - ****before beginning this investigation please discuss how to be safe while using batteries, light bulbs and wires****
 - tightly wrap tinfoil around each popsicle stick, leaving some of the wood sticking out of the top
 - clamp a clothes pin to the wooden end of a popsicle stick
 - clamp the other clothes pin to the other stick in the same manner
 - strip off about 1" (2.5cm) of insulation from **all** the ends of the copper wires, do not cut the wires
 - have one jar filled with high salinity water
 - have one jar filled with fresh water
 - set the jars side by side on a table
 - screw the light bulb into the light bulb base and set in front of the jars, or where the children can easily see the light bulb
 - connect one end of the 1st wire to the negative pole of the battery
 - connect the other end of the 1st wire to the light bulb base
 - connect one end of the 2nd wire to the positive pole of the battery
 - wrap the other end of the 2nd wire around a tinfoil stick near the top of the tinfoil leaving most of the tinfoil stick hanging down, ensure the wire is touching the tinfoil
 - ****do not touch the tinfoil stick to the battery or the light bulb base****
 - connect one end of the 3rd wire to the light bulb base
 - wrap the other end of the 3rd wire around a 2nd tinfoil stick near the top of the tinfoil leaving most of the tinfoil stick hanging down, ensure the wire is touching the tinfoil
 - while holding onto the clothes pins, touch the bottom ends of the tinfoil sticks together to create a connection and watch the light turn on
 - continuing to hold on to the clothes pins, submerge the bottom ends of the 2 tinfoil sticks into the fresh water
 - make sure the tinfoil sticks are not touching each other or the sides of the jar
 - ...nothing happens
 - continuing to hold the clothes pins, take the tinfoil sticks out of the fresh water jar and then submerge the bottom ends of the 2 sticks in the salt water

- make sure the tinfoil sticks are not touching each other or the sides of the jar
- ...the light comes on
 - you will also see a reaction occurring on one bottom end of a tinfoil stick

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Environmental Exploration

Session 1

Materials:

- water samples from various zoo exhibits
- salt water experiment tools
 - battery, light bulb, light bulb base with side connections, 3 lengths of insulated copper wires, 2 popsicle sticks, tinfoil, 2 plastic or wooden clothes pins (if there is no salt water exhibits in your zoo bring along a salt water sample)

Activity:

- **what kinds of water are in the zoo's exhibits**
 - test the water in the zoo
 - travel around to various water locations in the zoo and test it to see if it is salt or fresh water using the experiment from Session 1 Level 2
 - at each location ask the children if they can determine what kind of water is in the exhibit, without tasting it
 - use the experiment to approve or disprove their answers
 - once the kind of water is determined, talk about the animal living in or around that water source
 - experiment procedure
 - ****before beginning this experiment please discuss how to be safe while using batteries, light bulbs and wires****
 - tightly wrap tinfoil around each popsicle stick, leaving some of the wood sticking out of the top
 - clamp a clothes pin to the wooden end of a popsicle stick
 - clamp the other clothes pin to the other stick in the same manner
 - strip off about 1" (2.5cm) of insulation from **all** of the ends of the copper wires, do not cut the wires
 - have one jar filled with the zoo sample
 - set the sample somewhere visible
 - screw the light bulb into the light bulb base and set in front of the sample, or where the children can easily see the light bulb
 - connect one end of the 1st wire to the negative pole of the battery
 - connect the other end of the 1st wire to the light bulb base
 - connect one end of the 2nd wire to the positive pole of the battery
 - wrap the other end of the 2nd wire around a tinfoil stick near the top of the tinfoil leaving most of the tinfoil stick hanging down, ensure the wire is touching the tinfoil
 - ****do not touch the tinfoil stick to the battery or the light bulb base****
 - connect one end of the 3rd wire to the light bulb base
 - wrap the other end of the 3rd wire around a 2nd tinfoil stick near the top of the tinfoil leaving most of the tinfoil stick hanging down, ensure the wire is touching the tinfoil
 - while holding onto the clothes pins, touch the bottom ends of the tinfoil sticks together to create a connection and watch the light turn on
 - continuing to hold on to the clothes pins, submerge the bottom ends of the 2 tinfoil sticks into the sample
 - make sure the tinfoil sticks are not touching each other or the sides of the sample container

- watch to see what happens
 - if the light goes on ask the children if they remember what kind of water it is
 - if the light does not go on ask the children if they remember what kind of water it is

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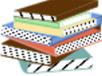


Fish variety Session 2 Level 1

Materials:

- 
- flash cards (*F.C. 3-11*)
 - lengths of string measuring the following fishes' length:
 - Ocean sunfish = 9ft (2.7m)
 - Tuna = 8ft (2.4m)
 - Barracuda = 6ft (1.8m)
 - Electric ray = 4.5ft (1.4m)
 - Anglerfish = 3.3ft (1m)
 - Triggerfish = 1.2ft (37cm)
 - Lionfish = 1.5ft (46cm)
 - Butterfly fish = 8" (20cm)
 - Ornate pipe fish = 6" (15cm)
 - labels of lengths and fish names for each piece of string
 - one long piece of string, no label

Words:

- 
- FISH, LONG, SHORT, SHORTEST, LONGEST
 - ocean sunfish, tuna, barracuda, electric ray, anglerfish, triggerfish, lionfish, butterfly fish, ornate pipe fish, string, measure, compare, experiment

Activity:

- 
- **let's explore fish** (*F.C. 3-11*)
 - using the F.C. go through the various photos of fish
 - point out the various features of each fish
 - ask the children if they can guess as to the length of each fish
 - **let's investigate** (*F.C. 3-11*)
 - bring out the various lengths of string with the labels attached (to make it more exciting have them bunched in a loose group)
 - have a child come to the middle of the circle and lie flat on their back
 - use a separate piece of string to measure the 'length' of a child's arm, leg or entire body
 - compare that length with various other lengths around the room
 - draw the children's attention back to the various pictures of the fish
 - randomly choose a picture, again ask the children if they can guess the length of the fish
 - 'search' through the premeasured string, once you have found the correct string slowly extract the length of the string, exclaiming how long or short the fish is
 - continue in the same manner with all the fish
 - shortest to longest
 - give each child a fish picture
 - see if they remember which fish was the shortest/longest
 - ask the children to arrange themselves from shortest to longest
 - hand out the appropriate length of string to each child
 - compare the lengths of string and see if the children assembled in the correct order
 - help the children to assemble themselves if necessary

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Parts of a fish Session 2 Level 2

Materials:

- 
- a fresh fish from the supermarket (either cleaned or whole, preferably whole)
 - plastic/surgical gloves for the children
 - bucket of warm soapy water
 - 2 towels
 - small pointing tool

Words:

- 
- FISH, SCALES, FINS, MOUTH, EYES, GILLS, TAIL, BODY, 'EARS'
 - gloves, water, wash, dry, towel, fish's colour

Activity:

- 
- **let's explore**
 - before the children observe the fish discuss
 - respect for the fish, how to properly touch and handle the fish
 - the fish is not alive
 - bring out the fish
 - point out various external parts of the fish
 - as you talk about each part of the fish give the children time to absorb the information and to get comfortable with the fish
 - use the pointer to gently move or draw attention to the various features
 - the eyes
 - the 'ears' (the long 'line' extending down the side of the fish)
 - the scales
 - the fins
 - the mouth
 - the gills
 - the colour
 - how does the fish move
 - have the children talk about the directions fish can move in water
 - what are the different fins used for
 - draw attention to each fin and talk about how it helps to 'steer' the fish
 - allow the children to handle the fish
 - have the children practice respectfully holding and examining the fish
 - since this can be a highly stimulating experience for some children, do not force children to touch the fish if they don't want to
 - wash all hands!
 - fish can smell very strong, make sure the children wash their hands well

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Environmental Exploration Session 2

Materials:

- if your local zoo has aquatic enclosures, contact the zoo to arrange a visit
- knowledge of the fishes in the aquatic enclosures
 - talk to the zoo staff for accurate information, or arrange for the zoo keeper to do a presentation during the visit
- ****optional****
 - the investigation materials from Environmental Exploration Session 1

Visit to aquatic enclosures:

- **favourite fish**
 - before touring through the aquatic enclosures ask the group if there is a favourite fish species that everyone would like to observe
 - ask the children to offer their reasoning why this fish is the favourite
 - encourage all the children to speak their mind
- **observations**
 - observe how many fins the fish has
 - observe how the fish moves
 - depending on the size of the group, have the children mimic the movement
 - observe how the fish 'breathes'
 - are the gills visible, where are the gills, how large are the gills
 - what colour is the fish
 - does the fish have any colour patterns (stripes, spots)
 - is the fish a fresh water or salt water fish
 - if desired you can do the investigation from Session 1 to confirm the decision
 - what does the fish eat
 - look for samples in the water or ask the keepers to see samples
 - continue through the rest of the aquatic enclosures and follow the same procedure
 - if you have adequate adult supervision, break into smaller groups so each child has more opportunities to ask questions and discuss ideas

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Turtles

Session 3 Level 1

Materials:

- 
- flash cards (*F.C. 12-13*)
 - 'What *can* a turtle do?' (*pages 7-9*)
 - 6 popsicle sticks, glue, scissors
 - Worksheet 1 (*page 10*)
 - pencil crayons
 - video viewing device (computer/dvd player-television)
 - various turtle videos
 - click on the link provided to visit the ARKive website
 - <http://www.arkive.org/>
 - enter in your desired turtle search criteria in the space provided on the website
 - choose various videos to show the children
 - ****before showing the videos to the children, please read through the "Terms of Use" for the website, the ELIAS project and creators of this module are not responsible for misuse of copyright information****

Words:

- 
- TURTLE, FLIPPER, SHELL, HEAD, TAIL, WATER
 - swim, story, read, puppet, video, watch, colour, worksheet

Morning circle:

- 
- **preparation** (*pages 7-9*)
 - cut out the "What *can* a turtle do?" character pictures
 - glue each picture onto a popsicle stick
 - **story time** (*pages 7-9*)
 - What *can* a turtle do?
 - read through, using the stick puppets, tell the story of what a turtle can do
 - **let's explore turtles** (*F.C. 12-13*)
 - introduce the drawing of a turtle
 - discuss the parts of a turtle
 - shell (texture, colour, size)
 - head (eyes, nose, mouth, absence of external ears)
 - flippers (texture, size, digits)
 - tail (texture, size, colour)
 - how old can a turtle get
 - because of the extremity of turtle ages, compare the age of a turtle to the ages of the children's grandparents if the children cannot comprehend the age
 - are the children's grandparents old or young
 - turtles can age to be even older than grandparents
 - the size of a turtle
 - see the "General Information" section for size information
 - what does a turtle eat
 - use a video to emphasise this point
 - **let's watch**
 - view the various videos of turtles
 - **let's create** (*worksheet 1*)
 - hand out and colour the worksheet

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Differences of turtles and tortoises Session 3 Level 2

Materials:

- flash cards (*F.C. 12-13*)
- Worksheet 1 & 2 (*pages 10 & 11*)
- one copy of Worksheet 2 coloured and cut out
- pencil crayons
- scissors

Words:

- TURTLE, TORTIOSE, WATER, LAND, SHELL, FEET, FLIPPER, HEAD, TAIL
- puzzle, colour, cut, different, same

Morning circle:

- **let's explore turtles and tortoises** (*F.C. 12-13*)
 - introduce the picture of a tortoise
 - lifestyle of a tortoise is terrestrial (on land)
 - how does a tortoise's body reflect its lifestyle
 - shell
 - tortoise shells can be more round/bowl shaped and harder
 - feet
 - tortoises have feet
 - why would tortoises have feet and not flippers
 - head
 - tortoise heads can be more rounded
 - tail
 - introduce the picture of the turtle
 - lifestyle of a turtle is aquatic (in the water)
 - how does a turtle's body reflect its lifestyle
 - shell
 - turtle shells can be more flat than a tortoise shell and can be leathery
 - flippers
 - turtles have flippers
 - why do turtles have flippers
 - head
 - turtle heads tend to be more stream-lined
 - tail
 - can a turtle or tortoise come out of its shell
 - discuss how the shell of a turtle or tortoise is a part of its body, and although the can bring their head legs and tails inside the shell, they cannot completely detach from their shell
- **puzzle time** (*complete worksheet 2*)
 - depending on the size of the group, hand out the various puzzle pieces to the children
 - begin to assemble to puzzle
 - as the children add their piece to the puzzle, review that body part and its importance
- **let's create** (*worksheet 2*)
 - hand out the worksheet
 - colour the worksheet
 - cut the worksheet into puzzle pieces
 - have the children assemble their new turtle puzzle

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Environmental Exploration

Session 3

Materials:

- zoo keeper

Zoo visit:

- **at the turtle enclosure**
 - observe the enclosure
 - discuss the importance of the features in the enclosure
 - turtle's food
 - what does the zoo feed the turtles
 - how would that differ when in the wild
 - turtles
 - quickly review proper behaviour when interacting with animals
 - slow movements, soft movements, quiet voices, avoid touching the head
 - if the turtle is allowed to walk around, please remind the children to provide ample room for the turtle to move, as well as to remain still if the turtle should approach them
 - if a child is uncomfortable with the turtle around them, have the zoo keeper move the turtle away from that child
 - reassure the children that the zoo keeper will not allow the turtle to harm the children, as long as the children approach with caution and follow the instructions of the zoo keeper
 - point out the various body parts of the turtle
 - you may need to wait until the turtle relaxes, so it comes out of its shell
 - have the children take turns interacting with the turtle
 - encourage the children to explain the turtle's
 - skin texture
 - skin temperature
 - strength
 - shell texture

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What animals can stay under water? What animals can't? Session 4 Level 1

Materials:

- flash cards (*F.C. 14-15*)
- Breathing Categories: background 1 (*page 12*)
- poster board ~3'x3' (1mx1m)
- Worksheets 3-5 (*pages 13-15*)
- pencil crayons
- scissors
- glue
- tape or gum tac/ticky-tack/sticky tack

Words:

- WATER, AIR, BREATHE, UNDERWATER,
- swim, various animals, people, full, half, water safety, worksheet, colour, cut, glue, pencil crayons, scissors, breathe in, breathe out

Morning circle:

- **preparation** (*poster board*)
 - adjust size of the picture example in "Breathing Categories: background 1" and glue onto the poster board
 - cut out Jane and laminate
- **let's colour** (*worksheets 3-5*)
 - allow the children to choose an animal picture to colour
 - if there are not enough pictures to go around:
 - print out different animal colouring pages and hand out
 - enlarge the 10 animals provided and print out
 - have the children form groups and work together to colour and answer questions
 - colour all the pictures and cut out
 - set aside
- **water safety** (*poster board and Jane*)
 - what is breathing
 - have the children breathe deeply with you
 - have them put their hand on their chest so they feel their lungs expanding
 - have them hover their hand in front of mouth so they can feel the air moving
 - each time you breath in or out, use the language to aid in explanation
 - Jane goes swimming
 - emphasise
 - Jane likes to swim, but she always needs to come to the surface (top) of the water to breathe
 - the poster board
 - discuss what is on the poster board
 - ensure the children understand that one side is only water and has no air
 - place Jane in the half full side
 - remind the children that Jane needs air to breathe
 - discuss water safety
 - how can children be safe around water
- **how animals 'breathe'** (*poster board and coloured animals*)
 - bring out the children's coloured animal pictures
 - begin with the first child

- have them explain what animal picture they have
 - if they don't know, help them
- ask the child if they know where the animal belongs on the poster board; in the full water side or the half water side
 - if the child does not know state where the animal belongs
- attach the picture on the correct side
- continue through all the children in the same manner

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Lungs and Gills Session 4 Level 2

Materials:

- 
- flash cards (*F.C. 14-15*)
 - Breathing Categories: background 1 (*page 12*)
 - no need for "Jane"
 - poster board ~3'x3' (1mx1m)
 - Worksheets 3-5 (*pages 13-15*)
 - pencil crayons
 - scissors
 - glue
 - tape or gum tac/ticky-tack/sticky tack

Words:

- 
- BREATHE, WATER, AIR, GILLS, LUNGS
 - underwater, various animals, chest, breathe in, breathe out, colour, cut, glue, half, full

Morning circle:

- 
- **preparation** (*poster board, worksheets 3-5*)
 - prepare a poster board: divided in half with one side being full of water and the other only half full
 - print out all 10 animal pictures
 - **let's colour** (*worksheets 3-5*)
 - hand out the 10 water animal pictures
 - have the children choose a picture and colour and cut it out
 - if there are not enough pictures to go around:
 - print out different animal colouring pages and hand out
 - enlarge the 10 animals provided and print out
 - have the children form groups and work together to colour and answer questions
 - set the pictures aside
 - **we're breathing** (*F.C. 14-15*)
 - what are lungs
 - use picture to show where lungs are located in the body
 - have the children place their hands on their chest
 - encourage the children to breathe in slowly and deeply, then breathe out slowly and deeply
 - point out that they should be able to feel their chest getting bigger and then smaller
 - air comes in...fills up the lungs...then air goes out...lungs get smaller
 - mime how the air comes into the body, where it is when it is in the body, and then how it comes out of the body
 - emphasise that lungs need air to work properly
 - What are gills
 - use picture to show where the gills are located on the body
 - ask the children if they remember the gills on the fish, observed two weeks before
 - ask the children if they have gills
 - of course not, so the children will only *pretend* to breathe with gills
 - have the children flutter their fingers on each side of their neck to show where the gills are



- mimic drawing water into the mouth, close the mouth, then flutter the fingers as water passes out the gills
- emphasise that gills need water to work properly
- **where do they go**
 - some animals live only in the water, but breathe air
 - some animals live only in the water and do not breathe air
 - bring the water animal pictures back out
 - begin with the first child
 - have the child talk about their animal (size, colour, name)
 - ask the child how they think the animal breathes, with lungs or gills
 - please help and correct when needed
 - draw the appropriate breathing organ onto the picture (gill slits or lung shapes)
 - repeat with the rest of the children
 - introduce the poster board and discuss
 - make sure the children understand that one side is completely full of water
 - go through the group again and ask each child if they can remember where their animal belongs
 - please help and correct when needed
 - even though these animals spend a long time in the water, some their entire lives, not all the animals can stay underwater

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Environmental Exploration Session 4

Materials for zoo visit:

- 
- knowledge of the 'gilled' animals and the 'lunged' animals in the zoo
 - please use the animals explored in this module, if available
 - question card for each animal (*pages 17-19*)
 - if you choose to find animals that are not included in this module, please use the question card as a guide in creating questions for the new animals
 - you may visit as many animals as desired
 - lung and gill flash cards (*F.C. 14-15*)
 - poster board of "half" water and "full" water used in the previous session (*page 12*)
 - zoo map or directions
 - extra teacher helpers
 - a special surprise for the children
 - either something to eat, play with or do

Materials for park visit:

- 
- station flash cards (*pages 21 & 21*)
 - red light, green light flash cards (*F.C. 16-17*)
 - 4 hula-hoops
 - 2 lengths of rope (for starting and end lines)
 - extra teacher helpers
 - a special surprise for the children
 - either something to eat, play with or do

Within a zoo:

- 
- **preparation**
 - previous to the exploration go through the zoo and determine the aquatic and semi-aquatic animal locations (if possible, locate animals explored during the module)
 - determine a convenient order for visiting the animals
 - assign a teacher helper to each animal, provide them with:
 - animal breathing question and answer
 - lung/gill F.C. & poster board of water
 - as an alternative, you can bring one set of F.C. and poster board with you to each station
 - clues to the next animal
 - directions to the next animal
 - ** at the final animal enclosure set up the surprise station**
 - **Scavenging Sardines**
 - the object of this game is to find the teacher helpers and the surprise at the end by answering questions at each animal
 - game rules
 - the children will stay together as a group
 - at each animal location the children will:
 - have the opportunity to observe the animal
 - answer question 1
 - breathing question
 - answer question 2
 - clue as to the next animal
 - **let's play**
 - send out the teacher helpers
 - start:
 - read out the clues as to the first animal



- use the picture on the card for confirmation or clarification
- travel to the first animal (use the directions if needed)
- 1st animal
 - observe the animal
 - the teacher helper asks the children:
 - How the does the animal breathe? (*older children*)
 - use lung/gill F.C. for assistance
 - Can this animal live only underwater or does it need air? (*younger children*)
 - use poster board for assistance
 - observe the animal and encourage the children to find the gills or to watch the animal come to the surface of the water and breathe
 - the teacher helper uses the question card to give clues for the next animal
 - once the correct answer is provided, invite the teacher helper to join the group and together, travel to the next animal enclosure (use the directions if needed)
- repeat for the other animals

Within a park:

➤ **preparation**

- previous to the exploration set up 4 stations within the park
 - station 1 (whale):
 - *Breathing Beluga*
 - question card, 4 hula-hoops, 2 lengths of rope
 - station 2 (sting ray):
 - *Red Light, Green Light*
 - "red light, green light" cards, question card
 - station 3 (walrus):
 - *Walrus Waddle*
 - question card, 3 lengths of rope
 - station 4 (butterfly fish):
 - *Fishin' Time*
 - question card, 2 lengths of rope
 - surprise activity

➤ **game rules**

- Breathing Beluga
 - object: as a whale, swim from start to finish
 - depending on the size of the group, create 2 racing areas for large groups or one racing area for small groups
 - stretch out one length of rope for the starting line
 - stretch out the other length of rope about 10 meters (33') away for the finishing line
 - depending on the abilities of the children, vary the distance between the starting and finishing line accordingly
 - lay the hula-hoops on the ground at intervals between the starting and finishing line
 - the children must 'swim' from the starting line to the finishing line; however, since they are pretending to be whales, the children must breathe air
 - sometimes whales swim in water that has ice on the surface and the whales must come up to breathe where there is a hole in the ice
 - the hula-hoops are breaks in the ice where the children can come up to breathe

- divide the children into two groups and have them form a line behind the starting line
- take turns to 'swim' through the icy water
 - as a variation of the game, have one child/helper hold the hula-hoop up
 - as the children swim along, they poke their head up in the hula-hoop to breathe
- Red Light, Green Light
 - object: to move only when there is a green light and lie still when there is a red light
 - set boundaries of the 'ocean' where the children are not able to 'swim' out of
 - choose someone to be the card holder
 - the 'card holder' holds up either card and calls out "red light/green light"
 - the 'card holder' watches all of the children to see if they doing as instructed
 - if a child is seen not doing as instructed, that child waits outside the circle until the end of the game
- the children are pretending to be sting rays, which are under the water all of the time
 - sting rays like to lie still on the ocean floor where they are well camouflaged
 - they move by when they do move they look like they're flying through the water
- Walrus Waddle
 - object: to 'walk' like a walrus from start to finish
 - stretch out one length of rope for the starting line
 - for the finishing line, stretch out the second length of rope at a distance from the start
 - stretch out the third length of line about halfway between the start and the finish
 - all the children line up along the starting line
 - at "go" all of the children have to swim like a walrus from the start to the middle line
 - once they reach the middle line, the children must haul themselves out of the water and walk like a walrus to the finish line
- the children are pretending to be walruses; walruses have lungs and come up out of the water to breathe
 - walruses like to come onto land; in the water a walrus is very graceful, but on land the walrus looks awkward when it moves
 - it has 2 front flippers and 2 hind flippers to lift its enormous weight
- Fishin' Time
 - object: for the fisherman to catch all the fish
 - using one length of rope, make a circle
 - choose one child from the group to stand outside the circle and be the fisherman
 - choose one children to come and be the worm
 - have the child hold on to one end of the rope
 - the fisherman holds on to the other end of the rope
 - all the other children are fish, swimming around inside the circle

- the fisherman 'casts' out the line and worm and then slowly 'reels' the worm back
 - the worm tries to catch the fish while it is being 'reeled' in
 - the fish can try to swim away
 - once a fish is caught, have them wait beside the circle
 - continue until all the fish are caught
 - the children are fish in this game and can swim around in the water without coming up to breathe
- **let's go**
- visit each station
 - ask the children the "older children" or "younger children" questions
 - play appropriate game for each station
 - once all the stations are complete enjoy the special surprise with the children somewhere in the park

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