

Under the Sea

Grade 1 and 2

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Objectives

Grade One : Animals

- 1.1 Students will recognize characteristics which can be used to identify, describe and classify [sea life].
- 1.2 Students will identify, by sight or by sound, a wide variety of[sea life].
- 1.3 Students will observe, describe, or imitate how animals behave in their natural environments.

Grade Two: Habitats

- 2.1 Students will investigate characteristics of pond and ocean environments.

Grade Two: Oceans

- 3.1 Students will become aware of the diversity of life found in oceans.
- 3.2 Students will gain an understanding of oceans world wide.

Other

- 4.1 Students will develop and reinforce math, language, research, science, and aesthetic concepts, through the use of literature.
- 4.2 Students act as continuous learners as they develop a life long interest and appreciation for life under the sea.

Mathematics Centre

Overall Objectives

At the math centre, students will develop and reinforce concepts from the number and operation, geometry, measurement, and data management and analysis strands. These concepts will be explored through hands-on experiences with teacher-created and student-created manipulatives and children's literature.

Curriculum Objectives:

The following objectives are taken from the Saskatchewan Mathematics Curriculum Guide for the Elementary Level, 1992. The objectives are for Grade One and Grade Two.

Data Management and Analysis

Topic: Collecting

D-1 Acquiring data through

- counting
- surveys
- measuring

Topic: Organizing and Displaying

D-4 design classifications and sort data using

- objects
- pictures

D-6 display data using

- object graphs
- picture graphs

Topic: Summarizing and Interpreting

D-8 discuss, interpret and ascribe meaning to the organized data by.

- examining the shape
- questioning

Numbers and Operations

Topic: Whole Numbers-Counting

N-17 recognize that the last counted number represents the quantity

N-21 use ordinals to describe and order an arrangement

Topic: Whole Numbers-Addition and Subtraction

N-40 demonstrate addition and subtraction by joining sets using manipulatives

N-42 read, write and solve open number sentences using +, -, = and _.

N-44 use manipulatives, pictures or a number line to calculate sums and differences

N-45 demonstrate and record various compositions of a given number

Geometry

Topic: Plane

G-13 name, illustrate and identify examples from the environment of a) square, rectangle, circle, triangle

G-14 trace and draw two dimensional figures

G-16 combine two dimensional geometric figures to make other figures.

Measurement

Topic: Length

M-3 estimate and then measure the length or distance around objects by using non-standard units

M-4 read measuring devices to measure length in a) centimetres b) metres

Activities:

These activities can be modified for the students depending on the grade level.

Activity #1

Objectives:

Scientific : 3,4,5,6,7

Foundational: 1.2, 1.3, 2..1, 3.1, 4.1, 4.2.

Materials:

- Research Materials
- Paper
- Pencil
- Crayons

Task: Watch the video tape provided and observe a variety of sea creatures. Choose one sea creature to research in depth and report your findings in the journal provided.

Challenge 1: Draw a picture of your sea creature. What is its name?

Challenge 2: Write two facts you found the most interesting about your sea creature. (i.e. Where does it live?, what does it eat?, How does it breathe?.)

Challenge 3: Write down any questions you have about your sea creature. How and where can you find

some answers? Share your questions with a partner.

Activity #2

Objectives:

Scientific: 2,3,4,7

Foundational: 1.2, 1.3, 2.1, 3.2, 4.1, 4.2.

Materials:

- Research Materials
- Paper
- Pencil
- Crayons

Task: Look carefully at each foam sea creature. Do you know their names?

Challenge 1: Using the research material, find the names of two of the sea creatures you are not familiar with.

Challenge 2: Write a short description of the two sea creatures.

Challenge 3: Classify the sea creatures. Possible criteria for grouping may include size, length, color, weight, shape, sounds, fins, similarities, differences...etc.

Activity 3

Objectives

Scientific: 1,4,5,6,7

Foundational: 1.1, 1.2, 2.1, 3.1, 3.2, 4.1, 4.2

Materials

- World Map
- Research materials watertable(gravel, shells, puppets, wood, rocks, sponges, fish, salty water, cups, jars),
- Paper
- Pen
- Crayons
- Question Sheet
- Shells

Task Using the map, locate the oceans. What is the name of your favorite ocean? Why?

Challenge 1: What do you know about water in the ocean? With a partner, write down words that describe the ocean and ocean water.

Challenge 2: Experiment with the watertable, and materials in the water. Read "The Legend of the

Sanddollar"

Challenge 3: Use question sheet and write down one thing you learned about ocean water.

Activity 4

Objectives

Scientific: 2, 3, 6, 7

Foundational: 1.1, 2.1, 3.1, 3.2, 4.1, 4.2

Materials

- Shells
- Pen
- Crayons
- Search Sheet

Task Explore the variety of shells in the collection

Challenge 1: Choose one shell and draw a picture of it

Challenge 2: Using the shell search sheet, find the name of your shell.

Challenge 3: Can you attach a story with your shell? What do you think its purpose was in the ocean? Was it a source of food? Shelter?

Activity 5

Objectives

Scientific: 3, 5, 6, 7

Foundational: 1.1, 2.1, 3.1, 3.2, 4.1, 4.2

Materials

- 2 Containers (clear)
- 2 Ice Cubes
- 1 Glass Drinking Water and 1 glass sea water (water table)

Task Observe an ice cube as it melts in a glass of water. How many different observations can you make? Record your observations.

Challenge 1: Place an ice cube in a glass of drinking water, place an ice cube in a glass of sea water. Does any change take place?

Challenge 2: Watch each glass, and keep track of the time it takes to melt each ice cube.

Challenge 3: Which ice cube melted first? How long did it take to melt? Why did one melt sooner than the other.

Activity 6

Objectives

Scientific: 1, 2, 3, 5, 6, 7,

Foundational: 1.1, 1.2, 1.3, 3.1, 4.1, 4.2

Materials

- National Geographic magazine
- Pen
- Paper
- Crayons

Task Look at the variety of articles in the National Geographic magazines. How many different sea creatures do you think live in the ocean?

Challenge 1: Do you think the same sea creatures live in every ocean? What or why not? What would cause sea creatures to only live in a certain place? i.e. penguin. Consider the water.

Challenge 2: What is a tropical sea creature? Can you name one?

Challenge 3: Create your own tropical sea creature. Explain where it lives, what it eats, and why. Draw a picture to accompany your notes. For some ideas look at a National Geographic Magazine.

Activity 7

Objectives

Scientific: 3, 4, 5, 6, 7

Foundational: 1.1, 1.2, 1.2, 2.1, 3.1, 3.1, 4.1, 4.2

Materials

- CD ROM (Computer)
- Internet

Task Explore sea creatures on the CD ROM and the Internet.

Challenge 1: Write down the address to your favourite sea/ocean homepage.

Challenge 2: Write down the most interesting thing you learned about **life under the sea**.

Mathematics Activities

Aquariums

The manipulatives used in this activity are developed from **Workjobs 2: Number Activities for Early Childhood**.

The "aquariums" are made with blue rectangle pieces of bristol board. These will serve as the aquariums. Sand can be glued to the bottom of the aquariums with some green felt for plants on the side. The fish are made out of large lima beans which are spray painted orange on one side and yellow on the other. Orange and Yellow felt tails can be added on to the fish after the paint has dried. (Do not glue the fish to the bristol board. For complete instructions for creating workjob see Workjobs 2 Resource.

Baratta-Lorton, M. (1979). **Workjobs 2: Number Activities for Early Childhood**. Addison-Wesley Publishing Company.

Objectives

Curriculum: N-17, N-21, N-40, N-42, N-43

Foundational: 4.1, 4.2

Task Create various combinations of the following numbers using the yellow and orange fish on the blue aquarium card.

5 8 4 3 7 10 6 9

Challenge 1: Create addition and subtraction equations. (Be sure to find the appropriate answer).

Challenge 2: Using the equation cards create the addition and subtraction equations. (Teacher should have pre made equation card and answer cards drawn up for the students) Be sure to find the appropriate answer card.

Fishing for Numbers

Manipulatives used in this activity are 20 fishing rods which can be made out of a small sticks or rulers with a string and a magnet . The Numeral and Operation cards will have paper clips taped to the back so the magnet fishing rods with be able to pick up the cards. (Remember to leave some of the paper clip showing, do not cover it completely with tape.)

Objectives

Curricular : N-40, N-42, N-43, N-44

Foundational: 4.1

Materials

- Fishing poles
- 20 Fish
- Numeral Cards

- Operation Cards
- Total Cards

Task Using the fishing pole, catch a fish and find the corresponding numeral card.

Challenge 1: Catch 2 fish, find the numeral cards, then add them together. find the correct total card.

Challenge 2: Catch 2 fish, find the appropriate numeral cards, then subtract the two numbers. Find the correct total card.

Challenge 3: Catch 2 fish and find their corresponding numerals cards. Flips over an operation card and work out the problem. Find the correct total card to complete the equation.

Challenge 4: Flip over 3 fish. Add them together and find or create the answer.

Create a Sea Creature

Objectives

Curricular: G-12, G-16, G-13, G-14

Foundational: 1.1, 4.1, 4.2

Task Using the shape tracers provided, create a unique sea creature. You must use a minimum of 5 shapes and at least 2 different shapes. On a sheet of paper, write down the shapes you used and how many of each shape. You might also want to include a name for your sea creature and some characteristics.

Challenge 1: Using the information books recreate a real-life sea creature using various shapes.

Challenge 2: Look at the sea creatures other students made. Can you name all the shapes? Write your answers and guesses down.

Sea Sample

With this project there were sea creatures made out of craft foam. They were cut out in various sizes, shapes , colours and lengths and then decorated with fabric paint . Students can also use their sea creatures developed in the previous activity.

Objectives

Curricular: D-1, D-4, D-8, M-3, M-4

Foundational: 1.1, 1.2, 3.1, 4.1, 4.2

Task 1 Classifying and Organizing Data

Organize the sea creatures by

1. colour
2. size (smallest - largest and largest-smallest)
3. shape
4. anyway you like!!

Please write down your results.

Task 2

Estimate and Measuring Length

Using unifex cubes, Link'N Learn or string measure the length of each of the sea creatures. NOTE: You might want to guess first, then measure!!

Estimate how many centimeters each sea creature is: Then measure each creature with your ruler. Were you close?

Please write down your results

Challenge : How many small fish long is the blue whale? Killer whale? Beluga whale? Shark? Sea Turtle? Seal? Bottle nose Dolphin?....etc.

Children's Literature

Objectives

All Math Objectives

Task Choose 1 of the four books:

Ocean Parade

Sea Sums

Sea Shapes

Arctic Fives Arrive

Read the book with a partner. Using the pictures and given equations, follow along as a **math interpreter**. When you are done, write down what you learned from the book, what you liked and disliked , and anything else in you Math Book.

Challenge 1: Write the next page of the book

Sample Debriefing Questions:

These questions could be asked while the teacher is at the center, during conference time, or during the whole class debriefing time.

Sea Creatures:

What shapes did you use to create your sea creature? Is there anything different you would do if you created another one. Is he real or imaginary? Where does he live? How does he eat? Is there a real sea creature that looks like him? Tell me what makes your sea creature special.

Aquariums:

Which number did you work on? How many different ways did you make that number? Are there any other numbers you would like to try to make? Were you successful with answering the addition questions? Subtraction questions? Tell us how you came up with your answers. Did you make up any new questions? Share them with us.

Fishing for Number:

How did you go about fishing? Did you try to catch certain fish or did you catch which ever one you could? Were you successful in finding the answers to the questions? Can you tell us how you set up your question? How many fish did you catch and add them all together.

Sea Sample:

How did you sort the sea creatures? What was the longest creature you measured? The shortest? Did you share your results when you measured the creatures using the Link'N Learn, cubes, ruler. Did you see how many fish it would take to equal the blue whale? the bottle nose dolphin? etc.

Children's Literature

Which book did you read? Why did you like that book? What was the book about? What math activities did you do while reading the book? Tell us how you would create the next page of the book.

Evaluation

- Observation
 - Debriefing Time
 - Portfolios
 - Tally Sheet
 - Anecdotal Records
 - Whale Book
 - Conferences
 - Growth shown over the course of the unit.
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[Sea World - Animal Information Database](http://www.bev.net/education/SeaWorld/infobook.html) (http://www.bev.net/education/SeaWorld/infobook.html)

[Whale s and Ocean Life - Grade Three Cross Curricular Activities](http://www.sillybilly.com/ocean.html)

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[Ocean Planet](http://seawifs.gsfc.nasa.gov/ocean-planet.html) (http://seawifs.gsfc.nasa.gov/ocean-planet.html)

[Whale Watching -Web](http://blues.helsinki.fi:80/whale) (http://blues.helsinki.fi:80/whale)

Obtained from Math Central

<http://MathCentral.uregina.ca/>