# Ford and Associates

W.G. Ford, Ph.D., C. Psych. Director 226 Lawrence Avenue West Toronto, ON Canada M5M 1B1 Tel:

Fax:

Email:

(416) 783-3606 (416) 783-2347 connect@schoolsearch.ca

#### **The Environmental Language Strategy**

#### **Examples of Procedural Activities**

The following are examples of sequenced activities which work very well with emerging readers. Please direct your attention to the description of the *Environmental Language Strategy* for details on how to actually 'teach' these activities. The program is designed to capture interest and to ensure word recognition through 'writing for reading'. The following procedural activities represent a cross section of experiments, recipes and other fun activities which would allow you to carry out a controlled 'hands on, whole language experience and then follow up with the recommended language programming (see attached description).

The activities are divided as follows:

#### Arts and Crafts

How to make a Blossoming Flow How to make a Pinhole Camera

#### **Science Experiments**

Ice Fishing How to make Sugar Crystals Invisible Ink Hot Water Fountain Water on a Tightrope Gravity Machine Amazing Rolling Can Magic Balloon Bottle Vinegar Rocket Launcher How to find the true colors of Ink How to make copying fluid

#### **Magic Tricks**

Magic Twenty-One Unpepper the Salt The Obedient Matchbox The Magic Paper Towel Hot Water Fountain

### **Receipes**

Hello Dollies Fat Alberts

### **Follow Up Activities & Student Examples**

I've included examples of how the computer print out can be used as a make it yourself workbook as well as some student examples.

# HOW TO MAKE A PINHOLE CAMERA

Purpose:	To m	To make a "camera" though which you can see upside-down images.		
<u>Materials</u> :	Black construction paper, wax paper, an empty frozen orange juice can, tape, a hammer, a small nail.			
<u>Key Words</u>		Instructions		
Cut	1.	Cut a fan-shaped wedge from the construction paper.		
Roll/trim	2.	Roll the wedge into a cone and trim the end so that the cone just fits inside the can.		
Tape	3.	Tape the ends of the cone together.		
Circle	4.	Cut a circle (the same size as the wide end of the orange juice can) from the wax paper.		
Attach	5.	Attach the circle to the wide end of the cone with tape.		
Pinhole	6.	Make a pinhole in the closed end of the can using the hammer and nail.		
Slide	7.	Slide the wide end of the cone into the juice can.		
Point/light	8.	Point the pinhole at a bright light, or at a sunny place and you'll see an upside down image on the wax paper.		
REFERENCI	E:	Scienceworks, p. 72		

# **ICE FISHING**

Purpose:	To lif	t an ice cube with a piece of string.
Materials:	a cup	, string, scissors, salt, an ice cube, water
Key Words		<u>Instructions</u>
Water	1.	Fill a cup with cold water.
Ice Cube	2.	Put an ice cube in the water.
String	3.	Cut a piece of string about 30 cm. long.
On top	4.	Place one end of the string across the top of the ice cube.
Salt	5.	Shake salt on the ice cube.
Wait	6.	Wait for about 10 seconds.
Pull	7.	Pull the string to lift the ice cube.
REFERENCE:		Scienceworks, p. 4

4

# HOW TO MAKE SUGAR CRYSTALS

Purpose:	To ma	To make sugar crystals	
Materials:	a glass saucepan or casserole, water, white sugar, jar, a stirring spoon, a paper clip, a piece of wire, a piece of cloth, thread or thin string, an elastic ban		
Key Words		Instructions	
Measure	1.	Measure 1 <sup>1</sup> / <sub>2</sub> cups of water and pour it into the saucepan.	
Boil	2.	Boil the water.	
Sugar	3.	Stir about 3 cups of sugar into the water, and keep adding sugar until no more will dissolve.	
Cool pour	4.	Cool the mixture and pour it into the jar.	
Wire rim	5.	Put the wire across the rim of the jar.	
Tie paper clip	6.	Tie the paper clip to one end of the string.	
Rub	7.	Rub some sugar into the string.	
Hang	8.	Hang the string from the wire, into the jar.	
Cover elastic	9.	Cover the top of the jar with the cloth and hold the cloth in place with the elastic.	
Set aside	10.	Set the jar aside for a few days and watch what happens.	
Remove	11.	When the sugar crystals are big enough, remove them and let them dry.	
REFERENCE	: <u>Chen</u>	nistry Lab Manual, p.45	

Scienceworks, p. 69

# **INVISIBLE INK**

Purpose:	To make a message on paper which appears only when heated.		
<u>Materials</u> :	vinegar or lemon juice, a toothpick or paintbrush, a candle, a candle holder, matches, a piece of paper, a bowl		
Key Words		Instructions	
Lemon juice	1.	Squeeze some lemon juice into a bowl.	
Dip	2.	Dip the round end of the toothpick into the lemon juice.	
Write	3.	Write a message on the piece of paper, with the toothpick.	
Dry	4.	Let the message dry.	
Candle	5.	Place the candle in a holder, and light the candle.	
Move paper appears	6.	Move the paper back and forth the flame until the message appears.	

REFERENCE: Scienceworks, p. 75

# WATER ON A TIGHTROPE

Purpose:	To make water flow along a string.		
Materials:	a measuring cup, a string, scissors, a jar		
<u>Key Words</u>		Instructions	
Cut	1.	Cut a piece of string approximately 75 cm. long.	
Fill	2.	Fill a measuring cup 2/3 full with water.	
Wet/tie	3.	Wet the string and tie one end to the handle of the measuring cup.	
Place jar	4.	Piece a jar about 60 cm. from the measuring cup.	
Pull string	5.	Pull the string across the spout of the measuring cup and into the jar.	
Hold	6.	Hold the end of string inside the jar so that the string is tight.	
Lift	7.	Lift the measuring cup off the table.	
Pour	8.	Pour the water along the string.	

REFERENCE: Bet You Can, p. 73

# **GRAVITY MACHINE**

Purpose:	To set up a candle which will seesaw up and down due to the force of gravity.	
Materials:	a long candle, a heavy needle, two glasses with flat rims, matches, scissors, two saucers, two pennies, tape	
Key Words		Instructions
Cut	1.	Cut the wax away from the bottom of the candle so the wick is showing.
Heat	2.	Heat the needle.
Needle	3.	Push the needle through the middle of the candle.
Glasses	4.	Place the two glasses beside each other on a table.
Rims	5.	Put the ends of the needle on the rims of the two glasses, so that the candle is balanced parallel to the table.
Pennies	6.	If the candle doesn't balance, tape a penny or two to the lighter side of the candle.
Saucer	7.	Put a saucer beneath each wick of the candle.
Light	8.	Light both wicks.
Watch	9.	Watch the movement of the candle for a few minutes.

REFERENCE: Entertaining Science Experiments, p.82

# AMAZING ROLLING CAN

Purpose:	To make a can roll away from you and then back again, on it's own.		
<u>Material</u> :	A can "punch" opener, scissors, a coffee can or other can with a plastic lid, a long rubber band, a heavy or bolt, cord.		
Key Words		Instructions	
Punch can	1.	Punch two holes on opposite ends of the can, with the can opener.	
Lid	2.	Use a pair of scissors to make matching holes in the lid.	
Rubber band holes	3.	Cut the rubber band and push each end through one hole in the can.	
Cross	4.	Cross the two ends of the rubber band inside the can, to form an "X".	
Tie bolt	5.	Tie the bolt with a piece of cord to the rubber band at the spot where the two ends cross.	
Thread	6.	Thread the free ends of the rubber band through the holes in the lid.	
Cover tie	7.	Cover the can with the lid, and tie the ends of the band together tightly, on the outside of the lid.	
Roll	8.	Roll the can along the ground and it will stop and then roll back towards you.	

REFERENCE: Scienceworks, p.14

### MAGIC BALLOON BOTTLE

Purpose:	To make a balloon move inside and outside the neck of a bottle without touching the ballon.		
Materials:	A bottle, a balloon, scissors, a deep bowl, hot and cold water		
Key Words		Instructions	
Bottle-hot	1.	First, fill the bottle with hot water.	
Cold water	2.	While the bottle is warming, fill the bowl with very cold water.	
Pour out	3.	Pour the hot water out of the bottle.	
Cut balloon	4.	Cut the neck off a balloon.	
Stretch	5.	Stretch the balloon over the top of the bottle.	
In bowl	6.	Quickly, stand the bottle in the bowl of cold water.	
Wait	7.	Wait a few seconds and the balloon will move inside the bottle.	
Exchange water	8.	Exchange the cold water in the bowl for hot water, and the balloon will move outside the bottle.	

REFERENCE: Knowhow Book of Science Experiments, p. 6

### VINEGAR ROCKET LAUNCHER

To "launch" a cork from a bottle, using vinegar and baking soda.		
a large vinegar measur	pop bottle, a cock which will fit in the bottle opening, baking soda, r, water, a thumbtack, tissue paper, scissors, paper towel, a measuring cup ing spoons	
	Instructions	
1.	Fill the bottle with <sup>1</sup> / <sub>2</sub> cup of water and <sup>1</sup> / <sub>2</sub> cup of vinegar	
2.	Cut a piece of paper towel about 10 cm. by 10 cm.	
3.	Put 1 teaspoon of baking soda on the paper towel.	
4.	Roll up the paper and twist the ends.	
5.	Cut four streamers from the tissue paper.	
6.	Attach the streamers to the top of the cork with a thumbtack.	
7.	Drop the paper towel into the bottle.	
8.	Place the cock on the bottle as tightly as you can.	
9.	Wait for the cock to shoot out of the bottle.	
	To "lau a large vinegan measur 1. 2. 3. 4. 5. 6. 7. 8. 9.	

REFERENCE: Mr. Wizard, p. 28

### HOW TO FIND THE TRUE COLOURS OF INK

Purpose:	To determine if there are different colours in ink.		
Material:	a coffee filter, scissors, water colour markers, a pencil, a glass jar, water		
Key Words		Instructions	
Cut	1.	Cut several strips from a coffee filter.	
Draw	2.	Draw a dot near the bottom of one strip with a marker.	
Pencil	3.	Push a pencil through the top of the strip and slide the strip half way along the pencil.	
Jar	4.	Put the pencil on top of the jar, so that the strip hangs inside the jar.	
Water	5.	Fill the jar with enough water to just touch the bottom of the strip.	
Wait	6.	Wait for the water to rise up the strip and watch the ink change colours.	

REFERENCE: Mr. Wizard, p. 26

### HOW TO MAKE COPYING FLUID

Purpose:	To make fluid which can be used to copy a picture from a newspaper.	
Materials:	a newspaper section containing photographs, a bowl, turpentine, a measuring cup water, a bar of soap, a sponge, blank paper, a spoon	
Key Words		Instructions
Mix	1.	Mix four parts of water with one part of turpentine, in a bowl.
Soap	2.	Add a bit of soap about the size of a pencil eraser.
Shake	3.	Shake the mixture until the soap is dissolved.
Cut	4.	Cut a picture or cartoon from the newspaper and lay it flat on a table.
Sponge	5.	Dip the sponge in the liquid and then wet the picture with the sponge.
Paper top	6.	Place the blank sheet of paper on top of the picture.
Rub	7.	Rub the paper with the back of a spoon.
Lift	8.	Lift the blank sheet of paper off of the picture, and an image of the picture will appear on the blank paper.

REFERENCE: Entertaining Science Experiments, p. 21

# MAGIC TWENTY ONE

Purpose:	To perform a card trick.		
Materials:	a deck of playing cards		
Key Words		Instructions	
Shuffle	1.	Shuffle the cards.	
Remove 21	2.	Remove 21 cards from the deck.	
3 lines	3.	Deal the cards facing up in 3 columns of 7 cards, so that the cards overlap. (Be sure to deal the cards from the left to right).	
Pick card column	4.	Ask a person to pick a card and tell you which column it is in.	
Push	5.	Push each column into a pile.	
In middle	6.	Put the pile containing the person's card between the other two piles.	
Repeat	7.	Repeat steps 3 through 6 two more times.	
Count 10	8.	Count ten cards face down from the top of the deck.	
Flip 11 <sup>th</sup>	9.	File the eleventh card over and it will be the card that the person picked.	

REFERENCE: 50 Card Games for Children, p. 70

### **UNPEPPER THE SALT**

Purpose:	To separate a mixture of salt and paper by using static electricity.	
Materials:	salt, p	epper, a comb, a cloth or linen towel
Key Words		<u>Instructions</u>
Cloth	1.	Place a cloth on the table.
Salt	2.	Shake a pile of salt on the cloth.
Flatten	3.	Flatten the pile of salt with your finger.
Pepper	4.	Shake some pepper on top of the salt.
Comb	5.	Run a comb through your hair a few times.
Above salt	6.	Hold one end of the comb about an inch above the salt.
Jump	7.	Watch the pepper jump to the comb.

REFERENCE: Entertaining Science Experiments, p. 89

# THE OBEDIENT MATCHBOX

Purpose:	To pla the str	ace a matchbox on a string such that it will start and stop moving along the ring at your command.
Materials:	an em	pty matchbox, one match, scissors, string, a hole punch.
Key Words		Instructions
Remove tray	1.	Remove the tray from an empty matchbox.
Holes	2.	Make a hole in each end of the tray.
Match	3.	Break one end off of a match so that it just fits into the tray.
Push	4.	Push the match into the tray so that the match is held in place between the sides of the tray.
String	5.	Thread a piece of string through the two holes in the tray and over the match.
Cover	6.	Slide on the matchbox cover.
Hold	7.	Hold the string loosely and the box will slide along the string.
Pull	8.	Pull the string tightly and the box will stop moving.

### THE MAGIC PAPER TOWEL

Purpose:	To dip	a paper towel in water without getting it wet.
Materials:	a glass	s, paper towel, a sink.
Key Words		Instructions
Paper towel	1.	Stuff a piece of paper towel into a glass.
Secure	2.	Turn the glass upside-down to be sure that the paper towel is secure and doesn't fall out.
Water	3.	Fill the sink with water.
Plunge upside-down	4.	Hold the glass straight upside down and plunge it into the water.
Count	5.	Count slowly to ten.
Lift	6.	Lift the glass out of the sink, keeping the glass perfectly straight.
Pull	7.	Pull the paper towel out of the glass and it will still be dry.

REFERENCE: Entertaining Science Experiments, p. 107

### HOT WATER FOUNTAIN

Purpose:	To sho	w that water expands and rises when it is heated.
Materials:	string, scissors, a small bottle, a large jar, food colouring	
Key Words		Instructions
Cut	1.	Cut a piece of string about 30 cm. long.
Tie	2.	Tie the string around the neck of a small juice bottle.
Jar cold water	3.	Fill the large jar with cold water.
Bottle/hot	4.	Fill the small bottle with hot water.
Food colouring	5.	Stir enough food colouring into the hot water to make a strong colour.
Lower upright	6.	Gently lower the small bottle into the jar, keeping the bottle upright.
Watch	7.	Watch the coloured water rise to the top of the jar.

REFERENCE: Scienceworks, p. 42

# HELLO DOLLIES

Purpose:	To bak	te Hello Dollies
<u>Materials</u> :	<sup>1</sup> /4 cup 1 cup y 1 cup f 1 cup f 1 cup o 1 tin sv	butter graham cracker crumbs flaked coconut chocolate Chips weetened condensed milk
Key Words		Instructions
Butter	1.	Put the butter in a baking pan.
Melt	2.	Melt the butter by putting the pan in the microwave for about 45 seconds
Mix/pat down	3.	Mix the graham cracker crumbs with the butter and pat the mixture down in the pan.
Coconut	4.	Sprinkle coconut on top of the crumbs.
Chocolate chips	5.	Sprinkler the chocolate chips evenly over the coconut.
Milk	6.	Pour the sweetened condensed milk over the whole mixture.
Bake	7.	Bake the Hello Dollies in the microwave for 7 to 9 minutes.
Cool	8.	Let the mixture cool and then cut into squares or bars.

### FAT ALBERTS

Purpose:	To bal	ke Fat Alberts
<u>Materials</u> :	12 – 1 <sup>1</sup> ⁄ <sub>2</sub> cup <sup>1</sup> ⁄ <sub>2</sub> cup 1 cup	4 graham crackers unsalted butter brown sugar sliced almonds
Key Words		Instructions
Graham crackers	1.	Line a square pan with graham crackers.
Butter	2.	Put the butter in a large glass measuring cup.
Salt	3.	Place the measuring cup in the microwave until the butter melts.
Sugar	4.	Stir in the sugar.
Boil (2 min.)	5.	Put the mixture in the microwave for about 2 minutes until the mixture boils.
Pour	6.	Pour the sugar mixture over all the graham crackers.
Almonds	7.	Sprinkler the sliced almonds on top.
Bake	8.	Bake for about 8 minutes in the microwave, until the mixture bubbles.
Cool	9.	Cool the Fat Alberts and slice into squares.

# HOT WATER FOUNTAIN

Purpose:	To show that $w_{\_\_\_}$ expands and rises when it is heated.
Materials:	string, scissors, a bottle, a large jar, colouring
Instructions:	
1.	a piece of string about 30 cm. long.
2.	the string around the neck of a small juice bottle.
3.	Fill the large with
4.	Fill the small with water.
5.	Stir enough c into the hot water to make a strong colour.
6.	Gently 1 the small bottle into the jar, keeping the bottle up
7.	the coloured water rises to the top of the jar.

### MAGIC BALLOON BOTTLE

Purpose:	To a balloon move inside	outside the neck of a	without
	touching this balloon.		

Material: a bottle, a \_\_\_\_\_, scissors, a deep bowl, hot and cold water.

### Instructions

1.	F, fill the bottle with water.
2.	While the bottle is warming, fill the bowl with very water.
3.	P the hot water of the bottle.
4.	the neck off a
5.	St the balloon over the top of the bottle.
6.	Quickly, stand the bottle of cold water.
7.	W $\_$ $\_$ $\_$ a few seconds and the balloon will move inside the bottle.
8.	Exchange the cold water in the bowl for water, and the balloon will

#### **ENVIRONMENTAL LANGUAGE STRATEGY, STUDENT SAMPLES**

#### EXAMPLE 1

Activity:	Colour Wheel
Student:	grade 1, non-reader, language disabled
Focus:	oral language, sequencing skills, following directions

<u>Procedure</u>: The activity was carried out. Upon completion, a key word was selected for each step of the activity. The choice of words was negotiated between instructor and student. The instructor and student shared in the drawing of pictures to represent each stop of the activity, and key words were printed underneath.

#### EXAMPLE 2

Activity: Ice Fishing

Student: grade 1, initial reader, excellent expressive language/vocabulary

Focus: reading skills

<u>Procedure</u>: Upon completion of the activity, the student dictated instructions and the instructor typed them directly on to the computer. Instructions were then read over by instructor and student, and modifications were made.

#### EXAMPLE 3

Activity: Ice Fishing

Student: grade 2, beginning reader

<u>Focus</u>: reading skills, specifically the use of context

<u>Procedure</u>: Upon completion of the activity, key words and sentences were written on the board by the instructor. The student then read the sentences aloud and the instructor copied each on to a file card. The student re-read the sentences and suggested a picture to illustrate each.

### EXAMPLE 4

Activity:	The Candle Experiment
Student:	grade 2, beginning reader, over-reliance on phonics, excellent oral language skills
Focus:	reading skills, specifically use of context

<u>Procedure</u>: The student dictated instructions in story form. The instructor wrote down the student's instructions but left out a word in each sentence. The student then read the instructions and filled in the missing words. Missing words were selected such that most could be found elsewhere in the passage. Thus the student had to scan the instructions, locate each necessary word, and copy the word.

#### EXAMPLE 5

Activity: How to Make Spike in his Doghouse
---

Student: Grade 4

Focus: organizing, written expression

<u>Procedure</u>: Instructions were dictated by the student and written on the board by the instructor. They were then read into a tape recorder by the student and instructor, and typed on the computer. See Environmental Language Strategy, Section 6.1). The student listened to the tape a second time and made necessary corrections independently, first on a printout, and then on the computer.

#### EXAMPLE 6

Activity: Carbon Dioxide Fire Extinguisher

Student: grade 4

Focus: reading, spelling

<u>Procedure</u>: This example was a follow-up to the dictation of instructions on the board and the transfer of instructions to the computer. The instructor created a cloze sheet, utilizing the original printed instructions, and adding sections on results and conclusions. The deleted words were those which had initially been spelling problems for the student. The student read the sheet orally and printed in the missing words.

EXAMPLE 7	
Activity:	The Candle See-Saw
Student:	grade 4, reluctant writer
Focus:	written expression

<u>Procedure</u>: Instructions were dictated by the student and written on the board by the instructor. The student then copied the instructions from the board on to paper. The materials section, diagram, and description of observations/results were completed by the student during the next remedial session, following an oral review of the procedure.

### EXAMPLE 8

Activity:	Water on a Tightrope
Student:	entering grade 5, good sequencing/oral language skills
Focus:	written expression, specifically adding detail to writing

<u>Procedure</u>: Through oral review of the procedure, the instructor selected, and wrote on paper, key words for each step. The student used this outline to create sentences, independently. The writing of observations and conclusions was shared by the student and the instructor. The student's instructions were typed verbatim on to the computer by the instructor. They were then edited by the student, first on a printout, and then on the computer. After re-reading the final set of instructions, the student drew a diagram to represent each step.

#### EXAMPLE 9

Activity:	Colour Separation
Student:	grade 5, transferring from French Immersion to English
Focus:	written expression and spelling
Procedure:	See Example 8, above

### EXAMPLE 10

Activity:CarouselStudent:grade 6, superior verbal skillsFocus:written expression/organizations, self-monitoring, independent work habits

<u>Procedure</u>: The student first made an outline of key words, under the guidance of the instructor, and then wrote instructions independently. Instructions were typed by the instructor, and corrected by the student directly on the computer.

#3

# FISHING FOR ICE

You need:	a cup full of water Ice cube Salt String
1.	Put some water in the <u>cup</u> .
2.	Get an ice cube and <u>put</u> it in the cup.
3.	Cut <u>some</u> string and put it on the ice cube.
4.	Put some salt on the string.
5.	Count to <u>ten</u> .
6.	Pull the string <u>out</u> of the cup.
7.	You will catch an ice cube.



