ME, ME, JUST LET ME DO IT!

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The Education Fund
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"Me, Me! Just Let Me Do It!" came from my initial action research study examining the impact of the integration of science process skills and developmentally appropriate hands-on science experiences on student readiness skills for kindergarten within the pre-kindergarten VPK Routines. The rationale for this action research was based on the critical needs of my students concerning their level of engagement in daily routines, lack of readiness skills evidenced in the pre-tests given at the beginning of the school year for phonological awareness, cognitive matching, cognitive counting, language comprehension, and language naming; and the number of English Speakers of Other Language (ESOL) students in my classroom lacking a viable "pre-school vocabulary." Secondly, the level of student engagement in our daily routines was low because of their maturity level. Most of the students did not like to participate in language activities. The last serious challenge was that their readiness skills were significantly lower than any of the past year's classes. The previous year I had received an Impact II grant for "What's the Big Idea?" that I had implemented in the classroom.

As I looked back on my reflective journal I noted the students were most involved and enthusiastic on "Wacky Wednesday". Every "Wacky Wednesday" since the beginning of school during Discovery Time the students would participate in a developmentally appropriate "hands-on" science activity. More sharing would occur during small and large group discussion relating to these activities. The science vocabulary introduced during this time was being used during work time by the students in the block and writing areas. The answer to my problem seemed to be in creating a science oriented classroom. Matching pre-k students' natural curiosity with science process skills and planned science-based developmentally appropriate activities on a daily basis that included interactive story reading, child-interest driven activities, music, movement, oral language activities, and hands-on exploration activities, would increase the student level of on task behavior that would result in increasing the developmental pace of readiness skills. Science process skills are skills used across the curriculum such as attentive observation, object manipulation, classification, making predictions and the use of verbal, musical, and kinesthetic languages to describe the properties of manipulated objects.

Scientific awareness can begin in pre-kindergarten when children's curiosity and desire to learn are at a high point, and will be enriched in the following years. In my pre-kindergarten classroom it is common to hear….

"ME, ME JUST LET ME DO IT?"

HOW DO YOU DO IT?

Basic science process skills were emphasized throughout activities that the students were involved as a part of the daily routines.

- The teacher, paraprofessional, and volunteer used a vocabulary list to assist them in integrating the process skills throughout the day.
    - As teacher became familiar with the skills the easier it was to integrate science process skills into the curriculum.
    - Using the senses to gather information about objects or events was integrated at work time and during recall time.
    - Inferring, making an educated guess about an event or object and predicting outcomes, was integrated into story time.

- Communicating using words and/or graphics was used during all the daily routines.
    - The pre-k children learned to develop and use concept maps with symbols and words to describe their observations.

- Classifying, grouping ordering objects and events into categories based on properties and attributes was integrated during clean-up time.

- Opportunities to observe and explore nature objects were made available for the students.

- Simple tools (pulleys, hands lens) and equipment were introduced and provided for use at work time and small group time.

- Everyday events (weather, insects) were used to help children learn about nature and students were encouraged to make comparisons as these statements represented how young children made conclusions from their observations.

- Books about nature and science were placed in the book corner, centers and on the science table.
- Selected types of media (online resources and movies) were used to introduce and develop science concepts.

WACKY WEDNESDAY

- Developmentally appropriate hands-on science experiences implementation.

- Science vocabulary derived from the activity was introduced and integrated into the daily routines.

- Small group discussion occurred after each session allowing children in their own language an opportunity to express what they observed.

- Literacy and Language activities in large and small groups were correlated to the "Wacky Wednesday" activity.

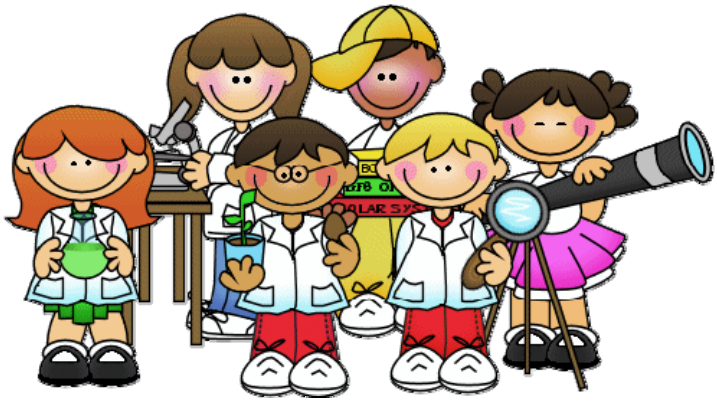
- Concept maps were introduced and used by the teacher and student as a way of communicating the development of science concepts.

- Music and movement activities were correlated with the science concept being taught.

- Supporting science music and movement activities were used on a daily basis.

- Integrated higher level science skills were developed during "Wacky Wednesday" activities.

- "Wacky Wednesday" occurred every Wednesday afternoon.



PRE-K SCIENCE VOCABULARY WORDS

(FROM MDCPS PRE-K TO 2NDGRADE CBC)

INTRODUCTION TO SCIENCE AND SCIENCE PROCESS SKILLS

Particle	Whole	Part	Pieces	Invisible	Energy	Measure	Nutrition
Diet	Heat Energy	Light Energy	Melt	Hot	Warm	Cold	Cool
Shade	Food Groups	Shadow	Sunlight	Position	Rotate	Moon	Stars
Clouds	Sunny	Cloudy	Rainy	Overcast	Patterns	Windy	Chilly
Sun	Planets	Sunlight	Air	Food	Water	Shelter	Space
Die	Basic Needs	Living	Non-living	Grow	Changes	Human	Puppy
Baby	Adult	Kitten	Cat	Bird	Animal	Frog	Eyes
Vision	Sight	Bright	Shiny	Dull	Colors	Shapes	Observe
Properties	Attributes	Tongue	Sour	Sweet	Salty	Taste	Flavor
Odor	Scent	Aroma	Sound	Loud	Whisper	Quiet	Yell
Scream	Roll	Slide	Fly	Float	Sink	Push	Pull
Butterfly	Insect	Life cycle	Stages	Larvae	Mammal	Spider	Egg
Chrysalis	Moth	Amphibian	Back	Up	Down	Fast	Slow
Backward	Forward	Environment	Straight	Motion	Speed	Motion	Seed
Plants	Stem	Roots	Fruit	Product	Sprouts	Explain	Materials
Findings	Hypothesis	Report	Graph	Trials	Data	Tools	report
Procedure	Size Words	Findings	Record	Result	Scientist	Habitat	Test
Scale	Hand Lens	Magnify	Predict	Classify	Sort	Properties	Textures
Shapes	Problem Statement						

State of Florida Sunshine State Standards
Correlation of High/Scope Key Experiences to Sunshine State Standards Grade: Pre-K

Sunshine State Standards Grade PreK-2 The Nature of Science	High/Scope Key Experiences for Preschool Children Relationship of High/Scope Key Experiences to the Sunshine State Standards The Nature of Science
Standard 1: (SC.H.1.1) **The student uses the scientific processes and habits of mind to solve problems.** 1. Knows that in order to learn, it is important to observe the same things often and compare them. 2. Knows that when tests are repeated under the same conditions, similar results are usually obtained. 3. Knows that, in doing science, it is often helpful to work with a team and to share findings with others. 4. Knows that people use scientific processes including hypotheses, making inferences, and recording and communicating data when exploring the natural world. 5. Uses the senses, tools and instruments to obtain information from his or her surroundings.	• Exploring and describing similarities, differences and the attributes of things • Recognizing objects by sight, sound touch, taste, and smell • Imitating actions and sounds • Relating models, pictures, and photographs to real places and things • Creating and experiencing collaborative play • Talking with others about personally meaningful experiences • Describing objects, events, and relations • Experiencing and comparing time intervals • Anticipating, remembering, and describing sequences in events
Standard 2: (SC.H.2.1) **The student understands that most natural events occur in comprehensive, consistent patterns.** 1. Knows that most natural events occur in patterns.	• Exploring and describing similarities, differences and the attributes of things • Describing objects, events, and relations
Standard 3: (SC.H.3.1) **The student understands that science, technology, and society are interwoven and interdependent.** 1. Knows that scientists and technologists use a variety of tools (e.g., thermometers, magnifiers, rulers, and scales) to obtain information in more detail and to make work easier.	• Describing objects, events, and relations • Recognizing objects by sight, sound touch, taste, and smell

The Science Process Skills by Padilla (1990)

BASIC SCIENCE PROCESS SKILLS	DEFINITION/EXAMPLE
OBSERVING:	Using the senses to gather information about an object or event. Example: describe yellow.
INFERRING:	Making an "educated guess" about an object or event based on previously gathered information. Example: She makes lots of mistakes because her eraser is used up.
MEASURING:	Using either standard and nonstandard measures or estimates to describe the object or event. Example: using a ruler to measure the height of a plant.
COMMMUNICATING:	Using words or graphic symbols to describe an action, object or event. Example: drawing a concept map.
CLASSIFYING:	Grouping or ordering objects or events into categories based on properties or criterion. Example: Placing all the cubes that are the same color together.
PREDICTING:	Stating the outcome of a future event based on a pattern of evidence.
INTEGRATED SCIENCE PROCESS SKILLS	
DEFINING OPERATIONALLY:	Stating how to measure a variable. Example: the plant growth will be measured in inches.
FORMULATING HYPOTHESES:	Stating the expected outcome of the experiment.
INTERPRETING DATA:	Organize data and draw conclusions from it. Example: read and analyze a graph
EXPERIMENTING:	Being able to conduct an experiment and the parts of an experiment.
FORMULATING MODELS:	Create a mental or physical model of a process or event.
CONTROLLING VARIABLES:	Identify that variables can affect an experimental outcome.

Integrating Science in Curriculum Areas

TOPIC EXAMPLES	ACTIVITY EXAMPLES	SUNSHINE STATE STANDARDS
How do you make mud?	"Mrs. Wishy Washy" Sand Table Water Play Concept maps	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1; ALL THE LANGUAGE ARTS
Exploring Pattern Blocks	Introduce patterns Exploring pattern blocks "Mr. Noisy's Patterns" Patterns on clothing Patterns in nature Sorting by color Sorting by shape People patterns	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1; ALL THE LANGUAGE ARTS
Exploring Cuisenaire Rods	Exploring rods Sort by color Arrange by size What ways can you make an orange block? Make pattern trains	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring Insects: Butterflies Ladybugs	Observation Drawing in journals Attributes of Insects Raising caterpillars to become butterflies Life cycle Collection in the bug jar Compare and contrast to other critters "The Grouchy Ladybug" "The Very Hungry Caterpillar"	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring Spiders	"The Very Busy Spider" Ananzi Stories Attributes of Spiders Observation of spiders Making spiders Compare and contrast to insects Different kinds of spiders	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring Trees: Apple Orange Mango Avocado Pine	Foss Kit on trees Tree books Parts of a tree Sort leaves Attributes of trees	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring Birds	Attributes of birds Observation Colors "Are You My Mother?" 'A Mother for Choco" Compare and contrast to other animals we know Sort by size and color Field trip to Parrot Jungle	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring Amphibians: Frogs Toads	Attributes of amphibians Over in the Meadow Raising tadpoles	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1; ALL THE LANGUAGE ARTS
How do you make Bubbles?	Bubble experiment	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS

How do you make Butter?	Butter experiment	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1; ALL THE LANGUAGE ARTS
Exploring Colors	Jello Experiment Rainbows Art area Prisms Color paddles Mixing colors "The Monster Party" M&M count	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring seeds: Beans Pumpkins Watermelon	Soaking and examining seeds with hand lens. Sorting seeds by size, type, and color Growing seeds "Pumpkin,Pumpkin" "Jack and the Beanstalk"	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring our 5 senses: Touch Taste Smell Sound Sight	Aliki's "The 5 senses" Taste Party Mystery touch Box Sort and Classify Loud and quiet noises "Arthur's Glasses" 5 senses experiments	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring magnets	Magnet Races What can a magnet attract Cereal experiment Magnet Experiments Observation	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring fruit and vegetables: Green beans Watermelon Oranges Apples Pineapples Peas	Fruit and Vegetable. Party Sort and Classify? How do we grow? Attributes of fruits and vegetables. Healthy diet	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Exploring Actions and Reactions	Bottle Rockets Force-fast and slow Push and Pull body	SC.A.1.1.1,2,3;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1; ALL THE LANGUAGE ARTS
Hot and cold	How does fat keep us warm? Experiment How do you make ice cream? Jello experiment Candy melt Ice melt	SC.A.1.1.1,2,3; SC.B.1.1.4,5;SC.H.1.1; SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1
Exploring force: Push and pull Water Air	Magnets Balloons Experiments Kites Wind Water play Push and Pull Body	SC.A.1.1.1,2,3; SC.C.1.1.1,2;SC.C.2.1.1,2; SC.H.1.1;SC.H.2.1;SC.H.3.1;PE.A.2.1;PE.B.2.1; PE.A.1.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS
Weather and Weather words	Calendar activities	;SC.H.1.1;SC.H.2.1;SC.H.3.1; MU.A.1.1;MU.E.1.1;VA.E.1.1;HE.B.3.1; MA.E.2.1;MA.E.1.1;MA.E.3.1;MA.B.1.1;MA.B.2.1; MA.B.3.1;MAB.4.1 ALL THE LANGUAGE ARTS

Integrating Science in Curriculum Areas

Science Concepts for Grades K-2

This is a resource to assist teachers in the development of science concepts. These concepts and vocabulary words can be introduced at or before the specified grade level. Students should have a clear understanding of them by the end of second grade. These concepts and words spiral throughout the curriculum to enhance understanding and learning in grades K-2, 3-5, and 6-8.

Kindergarten	First grade	Second grade
• properties	• investigate/experiment	• states of matter (solid, liquid, gas)
• matter	• predict/hypothesize	• particles (atom, molecule)
• observe	• similarities/differences	• models
• measure	• compare/contrast	• heating/cooling effects
• describe	• classify	• flow of energy
• sort	• discover	• interact
• tools (hand lens, balance, etc.)	• data	• characteristic
• senses	• scientist	• sound
• shape	• light energy	• vibration
• size (length, height,...)	• heat energy	• loudness
• mass/weight	• temperature	• magnet
• texture	• thermometer	• Earth's axis
• movement	• force	• rotate
• fast/slow	• motion	• revolve
• push/pull	• weather	• orbit
• food energy	• pattern	• organism
• solid earth materials	• moon cycle	• stages of growth
• day sky (sun)	• animal	• vertebrate
• night sky (moon, stars)	• plant	• plant parts
• living things	• adapt	• environment
• non-living things	• habitat	• results
• basic needs	• food chain	• conclusion

Division of Mathematics and Science Education
Science FCAT Glossary

Taken from www.science.dadeschools.net

SCIENCE LITERACY RESOURCES

ABOUT ARACHNIDS: A GUIDE FOR CHILDREN 1561450383 John Sill
Scientific Thinking Strand H
ALIKI'S BOOK OF THE FIVE SENSES 0690567626 Aliki
Processes of Life Strand G; Scientific Thinking Strand H
A MOTHER FOR CHOCO 0399218416 Keiko Kasza
Processes of Life Strand G; Scientific Thinking Strand H
AMIGO 0766019136 Byrd Baylor
Scientific Thinking Strand H
ANTARCTICA 0374403716 Helen Crowchar
Earth/Space Science Strand E; Processes of Life Strand G
ARE YOU MY MOTHER? 0394800184 P.D. Eastman
Earth/Space Science Strand E; Processes of Life Strand G
BIRDS BUILD NESTS 1570915016 Yvonne Winer
Scientific Thinking Strand H
BRR! A BOOK ABOUT POLAR ANIMALS 0439201659 Berger & Berger
Processes of Life Strand G
BUGS FOR LUNCH 0881062723 Margery Facklam
Processes of Life Strand G
BUTTERFLIES IN THE GARDEN 0688174795 Carol Lerner
Scientific Thinking Strand H
CATERPILLAR AND POLLIWOG 0671662813 Jack Kent
Processes of Life Strand G
CLIFFORD'S BIG STORM 0590257552 Norman Bridwell
Earth/Space Science Strand E; Processes of Life Strand G
CLOUDY WITH A CHANCE OF MEATBALLS 0689707495 Judi Barrett
Scientific Thinking Strand H; Nature of Matter Strand A,B,C
DEAR REBECCA, WINTER IS HERE 0064434273 Jean George
Earth/Space Science Strand E; Processes of Life Strand G
FIREFLIES 0689710550 Julie Brinkloe
Processes of Life Strand G; Scientific Thinking Strand H
GENTLE GIANT OCTOPUS 076361730X Karen Wallace
Processes of Life Strand G; Scientific Thinking Strand H
GREGORY THE TERRIBLE EATER 0590433504 Mitchell Shamat
Processes of Life Strand G; Scientific Thinking Strand H
I FALL DOWN 0688178367 Vicki Cobb
Force and Motion Strand D; Scientific Thinking Strand H
IN FRONT OF AN ANT 1929132638 Satoshi Kuwahara
Processes of Life Strand G; Scientific Thinking Strand H
LITTLE PANDA 068986616X Joanne Ryder
Processes of Life Strand G; Scientific Thinking Strand H
MAKE WAY FOR DUCKLINGS 0670451495 Robert McCloskey
Processes of Life Strand G; Scientific Thinking Strand H
MOUSE PAINT 0152560254 Ellen Stoll Walsh
Scientific Thinking Strand H
MR. NOISY'S BOOK OF PATTERNS 0091611993 Rozanne Williams
Scientific Thinking Strand H
MRS. WISHY WASHY 1559112026 Joy Cowley
Physical and Chemical Science Strands
ON THE SAME DAY IN MARCH 0064435288 Marilyn Singer
Earth/Space Science Strand E
ON THE WAY TO THE BEACH 0688175155 Henry Cole
Scientific Thinking Strand H
OVER IN THE MEADOW 52588548X John Langstaff
Processes of Life Strand G

SCIENCE LITERACY RESOURCES

PUMPKIN, PUMPKIN 0688056954 Jean Titherington
Earth/Space Science Strand E; Processes of Life Strand G
PUFFINS CLIMB, PUFFINS RHYME 0152024433 Bruce Mc Millan
Processes of Life Strand G; Scientific Thinking Strand H
SPIDERS AND THEIR WEBS 0792269799 Darlyne A. Murawiki
Processes of Life Strand G; Scientific Thinking Strand H
STARTING LIFE BUTTERFLY 1559718684 Claire Llewellyn
Processes of Life Strand G; Scientific Thinking Strand H
STELALUNA 84261311573 Janell Cannnon
Processes of Life Strand G; Scientific Thinking Strand H
T. REX 0763621846 Vivian French
Earth/Space Science Strand E
THE BIGGEST PUMPKIN EVER 0590411136 Steven Kroll
Scientific Thinking Strand H
THE EMPEROR'S EGG 0763618713 Martin Jenkins
Processes of Life Strand G; Scientific Thinking Strand H
THE GREAT KAPOK TREE 0152026142 Lynne Cherry
Earth/Space Science Strand E; Processes of Life Strand G
THE GROUCHY LADY BUG 0590312278 Eric Carle
Scientific Thinking Strand H
THE TINY SEED 0689842449 Eric Carle
Processes of Life Strand G
THE VERY BUSY SPIDER 0399229191 Eric Carle
Processes of Life Strand G; Scientific Thinking Strand H
THE VERY HUNGRY CATERPILLAR 0399229191 Eric Carle
Processes of Life Strand G; Scientific Thinking Strand H
THE VERY QUIET CRICKET 0039226842 Eric Carle
Processes of Life Strand G; Scientific Thinking Strand H
TIGER MATH, LEARNING TO GRAPH 080507161X Nagda & Bickel
Scientific Thinking Strand H
TIME TO SLEEP 0080503764 Denise Fleming
Earth/Space Science Strand E; Processes of Life Strand G
VERY LONELY FIREFLY 0399243674 Eric Carle
Processes of Life Strand G; Scientific Thinking Strand H
WAITING FOR WINGS 0439424496 Lois Ehlert
Processes of Life Strand G; Scientific Thinking Strand H
WACKY WEDNESDAY! 0394829123 Dr. Suess
Scientific Thinking Strand H
WHY DO LEAVES CHANGE COLOR? 0064451267 Betsy Maestro
Earth/Space Science Strand E; Processes of Life Strand G
HOW MANY SEEDS ARE IN A PUMPKIN? 0375840141 Margaret McNamara
Processes of Life Strand G; Scientific Thinking Strand H
MR. SEAHORSE 0141380896 Eric Carle
Processes of Life Strand G; Scientific Thinking Strand H
PANDA, PANDA WHAT DO YOU SEE? 0805080783 Bill Martin
Processes of Life Strand G; Scientific Thinking Strand H

TEACHER RESOURCE BOOKS

FLASH! BANG! POP! FIZZ! 0764111426 Janet Chahrour
STEP BY STEP SCIENCE SERIES Carson-Dellosa Publishing Company
SCIENCE EXPERIMENTS YOU CAN EAT Vicki Cobb
AMES BOOKS CHECK AIMES WEBSITE

HELPFUL WEBSITES

www.stevespanglerscience.com
www.sciencebuddies.com
www.ncrel.org/sdrs/areas/issues/content/cntareas/science/sc500.htm
www.how2science.com
www.preschoollearningonline.com
www.activityschoolbus.com
www.enchantedlearning.com
www.softschools.com/science - free science worksheets
www.iknowthat.com/com/L3?Area=L2_Science
http://science.dadeschools.net
www.edgov.pubs
www.alibris.com –great place to purchase books at a discount
www.ps41computer.htm

DONATION LIST

Marbles	Clear Plastic Cups	Yogurt Cups/Tops	Q-tips
Vinegar	Food Coloring	Old Cookie Sheets	Foam Trays
Cornstarch	Baking Soda	Measuring Cups/Spoons	Cooking Oil
Toy Cars	Cardboard Tubes	Balloons/Balloon Pump	Golf Balls
Tennis Balls	Coffee Filters	Empty/Clean Soda Bottles	Funnels
Straws	Zip Loc Bags	Fishing Line	Spoons
Foil Wrap	Film Canisters	Medicine Droppers	Corks
String	Storage Containers	Plastic Mixing Bowls	

PURCHASE ITEMS

Resource Books for Teacher and for literacy events
Balloons/Balloon Pump
Metric measuring containers
Funnels
Tornado tubes
Magnets
Safety Glasses
Golf, tennis, ping pong balls
Thermometers
Sand box Sand
Marbles
Toy Cars
Seeds
Soil for Planting
Copy Paper, Drawing paper (please limit to about 1 or 2 reams only)

Soaring to New Heights
with the
Science Sunshine State Standards

A Resource Guide for K-2 Teachers

Miami-Dade County Public Schools
Division of Mathematics and Science Education

The Attribute Train

- **Strand A: Nature of Matter**
- **Benchmark: SC.A.1.1.1** – The student knows that objects can be described, classified, and compared by their composition (e.g., wood or metal) and their physical properties (e.g., color, size, and shape).
- **Strategy:** hands-on/minds-on, graphic organizer
- **Materials:** attribute blocks, *Attributes* worksheet
- **Word Wall/Vocabulary:** attribute, thick, thin, large, small
- **Literature Connection:** *The Puddle Pail* by Elisa Kleven
  The Button Box by Margarette S. Reid
  Grandma's Button Box by Lind Williams Aber
  Frog and Toad Are Friends by Arnold Lobel
- **Lesson/Procedure:**
  1. Read the story *The Lost Button* from the book *Frog and Toad Are Friends* by Arnold Lobel. In the story Frog loses a button and uses attributes to describe his lost button to Toad. While reading the story, have students pay close attention to the description so that they may help find the lost button. (Suggested strategy: Have pictures of the different buttons and let the students eliminate the buttons as you go through the story.)
  2. Introduce the word "attribute." An attribute describes color, size, shape, texture, and thickness.
  3. Give each student two attribute blocks and have the students sit in a circle.
  4. Place one attribute block on the floor.
  5. The next student lays down a block that has one attribute which is similar to the previous one (e.g., I can lay this block down because it is ……. thick or red, etc). You may want to eliminate texture for this activity since the texture is always smooth.
  6. The activity continues until all the students have placed both blocks on the floor.

Ice Cream

- **Strand A: The Nature of Matter**

- **Benchmark: SC.A.1.1.3** -The student verifies that things can be done to materials to change some of their physical properties (e.g., cutting, heating, and freezing), but not all materials respond the same way (e.g., heating causes water to boil and sugar to melt).

- **Strategy**: hands-on/minds-on, teacher demonstration

- **Materials:** candle, piece of paper, scissors, 2 sealable plastic bags (one a small size, one a gallon size), milk, sugar, salt, measuring spoons, measuring cups, vanilla extract

- **Word Wall/Vocabulary**: matter, liquid, solid, gas, change, reaction, temperature, heating, properties

- **Literature Connection**: *Eighteen Flavors*, Poem by Shel Silverstein in the book *Where The Sidewalk Ends*

- **Lesson/Procedure**:
  1. Review with students the word "properties." Describe the properties of some items in the classroom.
  2. Inquire if they can cite examples of how materials change when things are done to them. (Write examples on the board.)
  3. Cut a piece of paper and ask the students to explain what changes occurred. Write them on the board. For example, the paper became smaller.
  4. Burn a candle and ask students to explain changes.
  5. Tell students they will observe how something can also change as a reaction to a temperature change.
  6. Follow the procedure to make ice cream. Make sure to take the temperature of the mixture as a liquid (write temperature on the board) and again when it freezes (to make ice cream, see recipe below).

7. Discuss with students the changes that took place and write on board. Ask students to state what they think caused the liquid mixture to freeze.
8. Students can then make their own ice cream in groups or with partners.

❖ **Assessment**
Students will complete the K-W-L (What you know-What you want to learn-What you learned) chart (found on the next page) for cause and effect. They can draw the 'before' and 'after'.

❖ Procedure for making ice cream

Ingredients

2 sealable plastic bags (one a small size and one a gallon size)
½ cup of milk
¼ teaspoon vanilla
¼ cup sugar
½ cup salt
½ cup crushed ice or cubes

❖ Place milk, vanilla, and sugar in a small plastic bag. Stir this mixture with a spoon. Take the temperature and write on board. Seal the bag tightly. Place the ice cubes and salt in the larger plastic bag. Put the small bag with the liquid mixture inside the large bag. Seal the large bag and have two students hold each end. Move the bag back and forth for approximately five minutes or until you see mixture become firm. Take temperature again and compare with first reading.

Eighteen Flavors

By Shel Silverstein
Where the Sidewalk Ends

Eighteen luscious, scrumptious flavors -
Chocolate, lime and cherry,
Coffee, pumpkin, fudge-banana,
Caramel cream and boysenberry,
Rocky road and toasted almond,
Butterscotch, vanilla dip,
Butter-brickle, apple ripple,
Coconut and mocha chip,
Brandy peach and lemon custard,
Each scoop lovely, smooth, and round,
Tallest ice cream cone in town,
Lying there (sniff) on the ground.

How Does Light Travel?

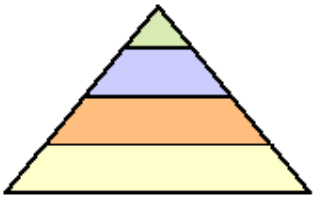
- **Strand B: Energy**
- **Benchmark: SC.B.1.1.2** – The student knows that light can pass through some objects and not others.
- **Strategy:** cooperative learning groups, whole group, hands-on/minds-on, graphic organizer
- **Materials:** Three index cards, three pieces of black construction paper cut the same size as the index cards, ruler, pencil, flashlight, single-hole punch, clay, and *How Does Light Travel* worksheet
- **Word Wall/Vocabulary:** light, shadows, straight line,
- **Literature Connection:** *The Way to Start a Day* by Byrd Baylor
  Bear Shadow by Frank Asch.
- **Lesson/Procedure:**

1. Teacher will prepare index cards by using a ruler to draw lines on each card from one corner to the next forming an "X." A hole will be punched in each card where the lines intersect.
2. Read to the class *The Way to Start a Day* by Byrd Baylor or *Bear Shadow* by Frank Asch. Discuss how the sun affects our daily life, encouraging children to think about the light we receive from the sun and how man has created artificial light.
3. Divide the class into Cooperative Learning Groups with each student assuming the responsibility of director, assistant director, materials manager, reporter, or team member. This can be achieved by colored clothespins (student selects a colored clothespin, e.g., the reds are the directors, the oranges are the assistant directors, etc.), or by students counting by fives. Discuss the job responsibilities of each member.
4. Distribute to each group the three index cards, the black construction paper, a ball of clay, and a flashlight.

5. Students stand the cards up in the balls of clay, spacing them about 15 cm apart, one behind the other so that they can see straight through the holes. One of the students shines a ray of light from the flashlight straight into the first hole and then into the hole from the side.
6. Students discuss among themselves what happens after each step of the experiment. Students also move the cards so that they cannot see straight through the holes, observing the results. Finally, students place a piece of black construction paper behind each hole on the card, shining the flashlight through the holes, discovering that light can pass through some objects and not others.
7. Teacher gathers students in a circle or whole group format and asks, "What changed when you moved the cards? How did you make the light travel through the holes in all three cards at the same time? What did you find out about light? How do you know that light travels in a straight line?" (Students will infer that when light travels in a straight path, it will go through; but if the path is blocked, light will not keep going.)

- **Assessment**: Students will complete the *How Does Light Travel* worksheet on the next page:
    1. What does the light do when you shine it straight into the first hole?
    2. What does the light do when you shine it from the side into the hole?
    3. Draw a picture of the three index cards and the light.
    4. Draw a picture of the three index cards with the black paper and the light.

Food Pyramid



- **Strand B: Energy**
- **Benchmark: SC.B.1.1.5-** The student knows that every human action requires energy that comes from food.
  SC.B.2.1.1- The student recognizes systems of matter and energy.
- **Strategy:** physical model, hands-on/minds-on
- **Materials:** popcorn, strips of yellow, green and brown paper
- **Word Wall/Vocabulary:** energy, sun, action, food, pyramid
- **Literature Connection:** *The Edible Pyramid* by Loreen Leedy
  Gregory, the Terrible Eater by Mitchell Sharmat
- **Lesson/Procedure:**
  1. Review with the students that the sun is a source of energy. Tell them today they will learn how the energy from the sun is transferred to plants and then to animals.
  2. Tell students that people also need energy from food.
  3. Discuss the different foods that they eat and discuss how they feel before and after they eat.
  4. Tell the students that they will do a pyramid, which represents different foods that they need to live. Each child can hold a picture of the food item or wear a paper headband with the color that represents the food. For example a green headband would represent plants.
  5. Have a student stand in front of the room wearing a picture of the sun.
  6. Have two students stand behind the sun. They will represent grains and beans.
  7. Have three students stand behind the previous two. They can represent fruits and vegetables.
  8. The final row will be four students who represent meat, fish, poultry, and dairy (you can have a milk or cheese, hamburger, chicken, etc.).

9. The students will begin to pass on "energy" with popcorn. Tell students the popcorn is a symbol of energy and that this energy will be transferred or passed from the sun to plants and animals and finally to people. This energy will help us do many things.
10. Begin by giving a cup of popcorn to the "sun student" and having the sun pass seven pieces to each of the grains. Have the grains eat two pieces and give the rest to the plants and so on until they reach the students who represent the meat. Those students will give whatever is left to a boy and a girl in the class who represent people.

- **Assessment**:
  1. Have students list the different foods that they like to eat.
  2. Have students draw pictures of the different things they were able to do while hungry and then draw pictures of what they were able to do after eating.

Force and Motion With Cars

- **Strand C: Force and Motion**
- **Benchmark: SC.C.1.1.1.-**The student understands that different things move at different speeds.
- **Strategy:** Teacher demonstration, buddy work, hands-on, visuals
- **Materials:** ramps (different materials may be used such as cardboard, books, blocks), different toy cars, masking tape
- **Word Wall/Vocabulary:** push, pull, force, distance
- **Literature Connection:** *The Wheels on the Bus* by Maryann Kovalski
  Go, Trains, Go; Poem, by Gerri Brisco and Richard Fretias
- **Lesson/Procedure:**
  1. Assess students' prior knowledge by brainstorming what they know about force (you may not receive too many responses).
  2. Read with students the poem *Go, Trains, Go.* Demonstrate the use of force to the students with a toy car and a ramp. Ramp may be made with books, blocks, etc.
  3. Have students predict what will occur when you let go of the car from the top of the ramp. Write responses on board.
  4. Let go of the car and check responses. Measure in a non-standard manner, such as the car traveled from Maria's desk to Teisha's desk.
  5. Next tell students you will push the car just a bit and ask if they think the push will affect the distance (or how far) the car will travel.
  6. Push the car slightly from the top of the ramp and this time measure informally again and compare. Discuss the differences in length traveled with a push and by just letting go of the car.
  7. Have the students work with partners. Explain that they will compare the distance the car travels on a ramp with and without a push. They can push the car with one finger the first time, let it move without a push the next time (no push), and give it a slight push with their hand for the last time (teacher may demonstrate with a ramp).

8. Distance may be measured by placing a piece of masking tape at the bottom of the ramp. Explain to students that they will measure from the bottom of the ramp to the point at which the car will stop. Have students place another piece of masking tape at the end to show where the toy car stopped.

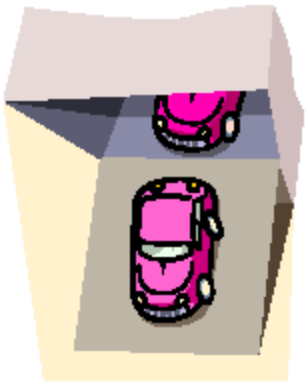
❖ **Assessment**

Review terms *far, farther* and *farthest* with students. Discuss results and write on board on a chart.

Example:

No Push Small Push (finger) Big Push (hand)

Discuss which would be the best section to place the words far, farther and farthest on the chart (see sample worksheet).

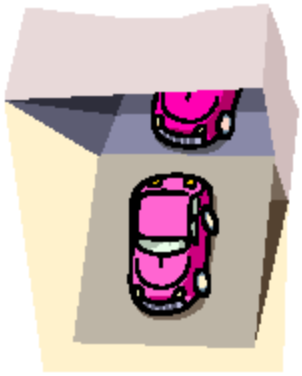


Force and Motion With Cars

Name_____

Place the words far, farther and farthest in the correct row.

No Push	
Small Push (finger)	
Big Push (hand)	



Go, Train, Go

You have a train, but it won't run
Because you need a battery.
But there's another way to go.
Try using gravity.

Hold the train at the top of a hill.
Then take your hand away.
Watch it rolling all the way down.
Gravity saved the day!

You know you have a metal train.
So guess what you can do.
Put the magnet very close by.
It pulls the train to you!

Then you find a battery.
You quickly put it in.
Flick the switch, the train takes off.
And does a little spin!

Original lyrics by Gerry Brisco and Richard Fretias

Bird Bodies

- **Strand F: Processes of Life**

- **Benchmark: SC.F.1.1.4** – The student understands that structures of living things are adapted to their function in specific environments.

- **Strategy:** physical models, Venn diagram

- **Materials:** spoon, tweezers, chopsticks, nuts, seeds, plastic shoebox container full of water, gummy worms, hand strainer, paper cups (can also use cooked spaghetti to simulate worms), *Bird Bodies* worksheet

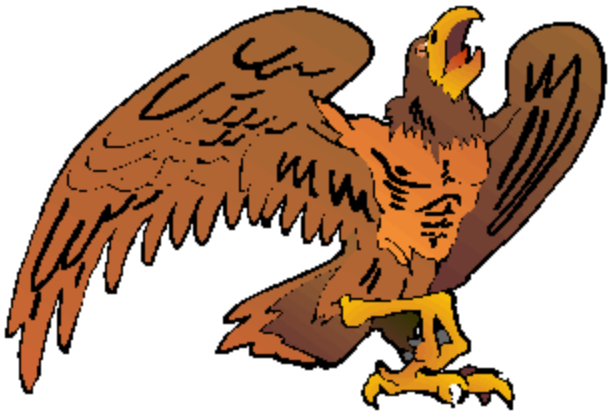
- **Word Wall/Vocabulary:** structure, beak, wingspan, webbed feet

- **Literature Connection:** *Science Works For Kids Series* by Jo Ellen Moore

- **Lesson/Procedure:**
  1. Read section on birds from *Science Works for Kids* Series by Jo Ellen Moore.
  2. Show pictures of different types of birds (e.g., duck, seagull, pelican, parrot, crane, hawk).
  3. Have an open discussion on how the birds are similar and how they are different.
  4. Discuss how each bird body part helps the bird survive in its own particular environment.
  5. Find a large open area outdoors would be best.
  6. Place students in groups of four or five.
  7. Assign a different tool to each student (spoons, tweezers, or chopsticks). Assign the students a number from 1-5 and arrange it so that each number represents a specific tool (spoon, chopsticks, tweezers, etc.). Next have students form groups of five. Each group should have one of each tool.
     a. Example: #1 student will have tweezers, #2 student will have a spoon, the #3 student will use chopsticks.
  8. Scatter the nuts, seeds, and spaghetti in a big circle. Also put the container with water and spaghetti or gummy worms in the same area.

9. Each student is a different kind of bird. Each bird collects food in a different way.
10. The object is to see which "bird" (student) can collect the most food using the assigned tool (beak).
11. When the activity is finished, have the students write down the observations they made about their beaks. Which foods were easiest for you to get and why? Discuss the similarities and differences based on food collections.
12. Distribute *Bird Bodies* worksheet for students to complete.

❖ **Assessment**:
Have the students design and create an imaginary animal with physical characteristics that enable it to survive in a particular habitat or ecosystem. The students may use yarn, cutouts, construction paper, pipe cleaners, shoeboxes, fabric, Styrofoam, buttons, etc.



Bird Bodies

Name _____ Date_____

Look at the pictures of these birds. Describe what their body parts tell you about them.

_____
_____
_____
_____

_____
_____
_____
_____

_____
_____
_____
_____

Processes of Life

- **Strand F: Processes of Life**
- **Benchmark: SC.F. 2.1.1 -** The student knows that living things have offspring that resemble their parents.
- **Strategy**: whole group interaction/teacher-directed, graphic organizer, class discussion
- **Materials**: various photos of students, various photos of parents of students, pictures of adult animals and their offspring
- **Word Wall/Vocabulary**: parents, offspring, inherit, characteristic, similarity(ies), difference(s)
- **Literature Connection**: *Are You My Mother?* by Leo Stiggs
- **Lesson/Procedure**:
  1. Read *Are You My Mother?* to the class.
  2. Brainstorm with students how they are alike and how they are different from their parents.
  3. Create a Venn Diagram (see sample) on the board for the entire class on similarities and differences between the students and their parents. For example, a similarity might be same color of eyes, whereas a difference might be height.
  4. Discuss how some students may resemble their parents because they have similar characteristics such as the hair or eye color.
  5. Explain that they will observe in the classroom, photos of their classmates and separate photos of their classmates' parents. The pictures will be taped on the board in a random manner. (Suggested strategy: Place only five parent/child photo sets on the board at a time).
  6. Have students guess which pictures should go together.
  7. Discuss how students share likenesses with their parents. Follow up with differences.

8. Present pictures of baby offspring and their parents and discuss similarities and differences. (The literature selection, *Are You My Mother?* Should be reviewed at this point.)

- **Assessment**

  The students will create their own books with two 8.5" by 11" construction papers. On one paper, glue the photo of the student and on the other paper glue the photo of their parents. Have students write at the bottom of the page simple sentences such as, *I have brown eyes*, on their page and *My mom has brown eyes* on the page with their mother's picture.