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Murmsi Action Research Report
Science Notebooks: A Tool for Comprehension of Informational Text

Science Notebooks: A Tool for Comprehension of Informational Text

Focus Statement:

High-stakes testing and 2001 No Child Left Behind Act have educators looking at their curriculum and finding ways to increase efficient methods for reaching student population. Florida Comprehensive Assessment Test (FCAT) has expanded to encompass not only writing, reading, and math but will include science as part of the total formula in the 2006/2007 school year. Although I do not currently teach fifth grade where the science portion will be administered, I feel the responsibility for science literacy needs to begin in the early primary grades.

Teaching second grade, the focus of instruction and priority time has been targeted at developing language arts skills. My county mandates a daily two-and-a-half hour block to implement Readers' and Writers' Workshop. A required Math Workshop of one hour is also included in the daily classroom schedule. Then there are the combined time blocks for lunches, pull-out subjects (art, music, media, and physical education), and grade level recess. This does not include various enrichment activities such as guest presentations, special programs, vision screening, pictures, etc.

In discussions with fellow second grade teachers on my grade level I found very little enthusiasm for teaching science. Many do not see teaching science as a way to develop literacy skills which is their major emphasis. Both classroom time and preparation time to become comfortable with content knowledge was listed as the problem. Although a spiraling county science curriculum along with professional

development has been developed to ensure all science strands will be taught throughout the elementary years, few teachers at my grade level have “jumped on board.”

The focus of my action research is to use interdisciplinary teaching in a manner that will engage students in reading and writing about science during their language arts time and allow more time for students to be involved in “doing science.” The vehicle to make connections with other areas of the curriculum will be science notebooks. Students are comfortable with established workshop models and recording in their reading response journal. Students are expected to meet second grade reading and writing standards which includes report/informational writing for their portfolio.

Literature Review

Many articles have been written concerning decreased science instructional time. One reason indicated is because science has not as of yet been tested in various school districts. One study of elementary school teachers in North Carolina presented the following instructional time blocks (high-stakes testing): (Jones, et al., 1999)

- Reading: 34 percent
- Math: 24 percent
- Writing: 17 percent
- Social Studies: 9 percent
- Science: 8 percent
- Phy. Education: 5 percent
- Health: 3 percent

Smith (1991) found that in schools where science was being taught, instruction changed as the time got closer to high-stake testing. Science instructional time was decreased and in some cases stopped completely.

Mintz, E. & Calhoun, J.(2004) discuss the value of using science notebooks in their article, Project Notebook. Reviewing data in a study by Imperial Project of the El Centro School District (Klentschy, Garison, and Amaral 2001) supported the use of science notebooks as a vehicle for establishing a science program that was interdisciplinary across the curriculum. Benefits for using science notebooks were presented at workshops for professional development such as giving students a purpose for expository writing, reflecting on learning, and maintaining their own personal resource for further investigations. Notebooks are a powerful tool for formative assessment. Student entries are evidence of misconceptions, occurred learning and planning for further instruction.

Searching for information concerning a connection for literacy and science led me to literature by Casteel, C.P., & Isom, B.A. (1994). Their article discusses the “parallel processes at work between literacy and science.” The similarities of these processes are valuable in helping students with learning. They stress the value of using literature to “make the unfamiliar more familiar.” When students reflect through writing there is deeper learning and understanding occurring.

Other authors also recommended use of literature to teach concepts to students. Farris, P.J. & Fuhler, C.J. (1994) explained picture books not only are valuable for dealing with sensitive or controversial issues but also encourage curiosity and questions from students.

Mayer, D.A. (1995) discussed choosing literature and the importance of checking for accuracy of information in both text and illustrations to ensure possibilities of misconceptions.

Campbell, B. & Fulton, L. discussed strategies that science notebooks can encompass to promote reading and written communication. Readers in primary grades benefit from writing in their own language and being able to reread their own information gathered and share with others.

Variables of this Research:

I am using my whole class to implement science notebooks that integrates language arts skills and science literacy. There are a total of twenty-four second grade students in a suburban elementary school.

- Caucasian: Twelve
- African American: Six
- Hispanic: Two
- ESOL: Two

Reading and Writing Workshop will be modified during this time frame to integrate science content and activities. Increased time will be added to this Language/Science Workshop as schedule of school allows. There will be many activities such as playday, assemblies, puppet shows that have been put on our school schedule. Students will be using science notebooks instead of their usual writing notebooks to record reading, writing, and organizational strategies and informational writing.

At the end of timeline my class and Mrs. Bell's second grade class will take a summative reading test (Unusual Nests). She will not be using an integrated Language Arts/Science Workshop. Science notebooks will not be used in her classroom and science will be taught separately.

Research Questions:

- Will integrating science with a Readers' and Writers' Workshop format increase student interest in doing science?
- Using science notebooks as a tool, will students be able to transfer reading strategies of reading to informational texts? Will this increase the number of informational texts read by students?

Approach:

A medium size bound composition book was used for student science notebooks. Students personalized their notebooks by decorating cover and title page. Instructions for heading and dating each page consecutively were modeled. Reading passages, instructions, notes, poems, etc. were glued into pages of notebook. Students were instructed not to rip out any of their pages.

Readers' and Writers' Workshops were modified by including science and increasing time. The amount of additional time varied according to daily schedule. Mini-lessons were given for applying reading strategies to informational reading. Procedural mini-lessons were used to model development of science notebooks to include such things as wonderings, reflections, organizational tools for recording data and strategies.

Unit on birds was developed to meet second grade science standards for Strand F: Processes of Life and reading and writing standards.

Negotiations:

Permission from my principal was obtained for this action research project. Parents were informed that the class would be starting unit on birds and this would include instruction on informational reading and writing. In grade level meeting we discussed the requirements for informational/report writing in second grade and my plan for action research. It was agreed that a summative test (Unusual Nests) would be administered to entire second grade. Mrs. Bell agreed to compare her results with me.

Timeline :

Mid February to end of April 2005.

Data Collection :

- **Student Science Attitude Survey** with questions about feelings toward science, roles in science, time allotted for science, television & science, science books, scientists, how I see myself.
- **What Strategy Should I Use? Questionnaire**
- **Checklist of Reading Strategies** in science notebook
- **Reading Log** of fiction and nonfiction books read from January through April.
- **Summative Reading Test**
- **Teacher Observations/Conferences**

Data Analysis

Students completed a Science Attitude Survey before and after implementation of Readers'/Writers' Workshop integrated with science. Seven performance elements were presented at three different levels. For each element there was an increase as indicated in the following chart and graphs that follow:

Science Attitude Survey (Pre/Post)

Performance Element	Level 3	Level 2	Level 1
Feelings Toward Science	Science is fun and interesting 10 21	Science is fun and interesting sometimes 9 3	Science is boring 5 0
Roles in Science	I would like to be put in charge of a science project in our classroom 1 4	I would like to be part of a group in charge of a science project in our classroom. 6 18	I would be uncomfortable taking any role that would place me in charge of a science project in our classroom. 17 2
Time Allotted For Science	I wish we had more time to do science activities in school. 12 22	I am satisfied with the amount of time we spend on science activities 7 2	I wish we spent less time on science activities in school. 5 0
Television and Science	I enjoy watching science on television 8 18	I do not mind whether or not we watch science on television. 6 14	I dislike watching science on television. 10 2
Science Books	I enjoy reading about science in books. I check out science materials on my own time. 5 24	I like to read about science in books, but I haven't taken the time to look for materials on my own. 10 0	I do not like to read about science and would not check out science materials on my own. 9 0
Scientists	Scientists have an interesting job. 5 20	Scientists have an "O.K." job. 15 14	Scientists have a terrible job. 4 0
How I See Myself	I am good at science. 3 19	I am comfortable with science. 5 4	I am not very good at science. 16 1

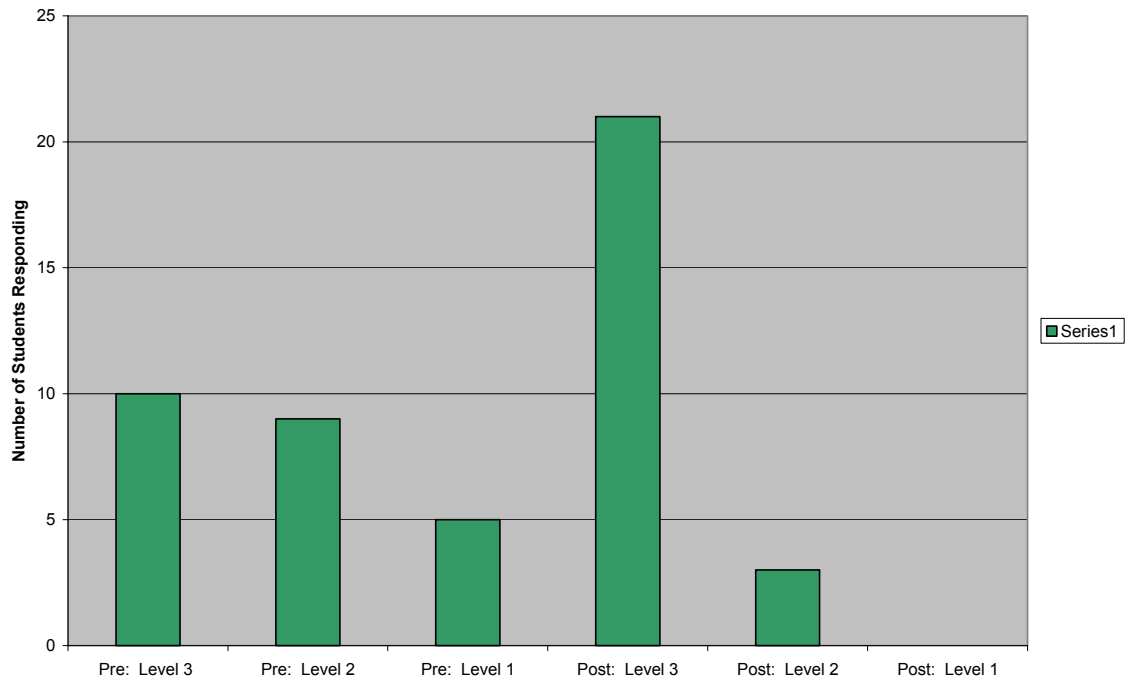
Key - Number of students selecting this choice

Pre:

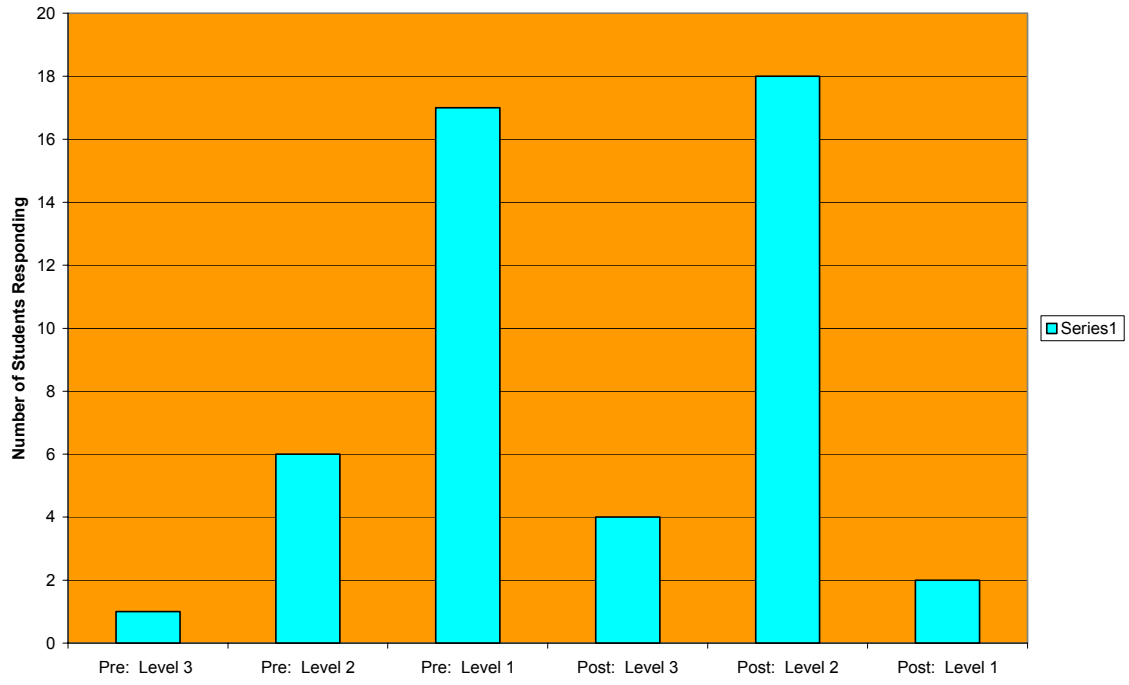
Post:

Science Attitude Survey Graphs

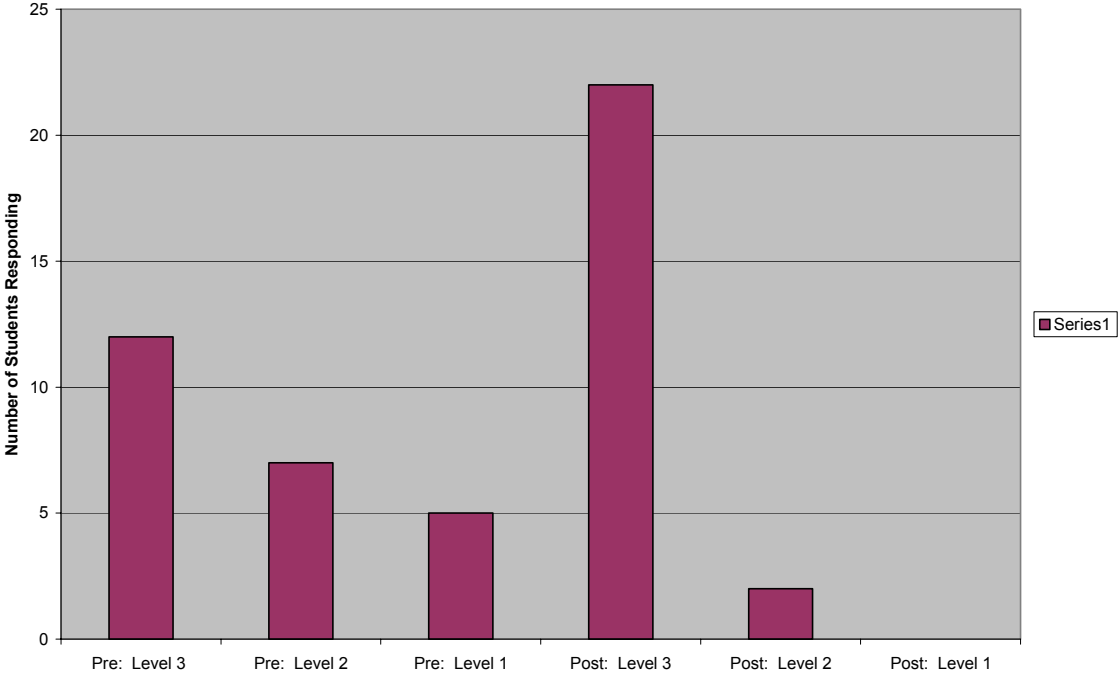
Feelings Toward Science



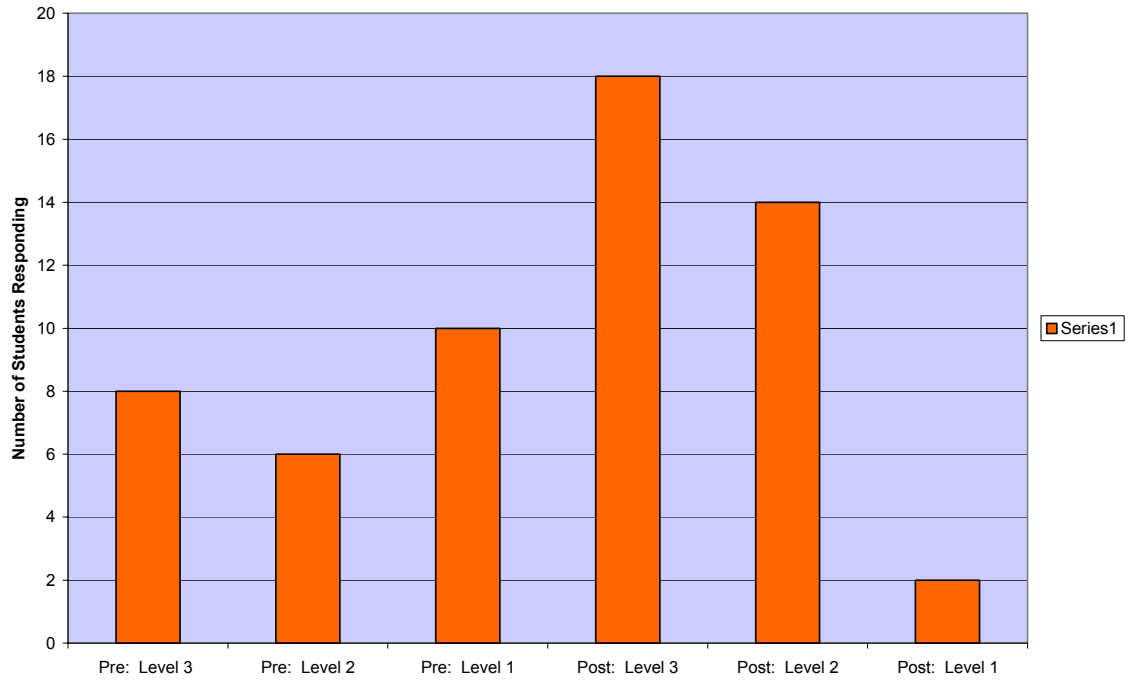
Roles in Science



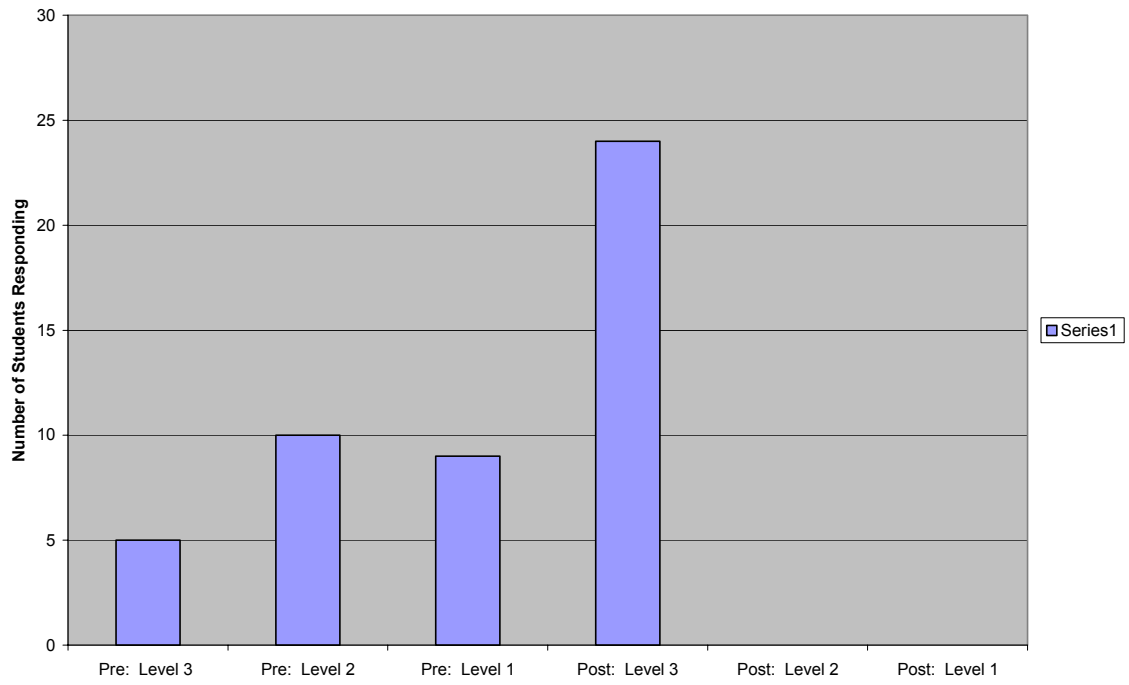
Time Allotted for Science



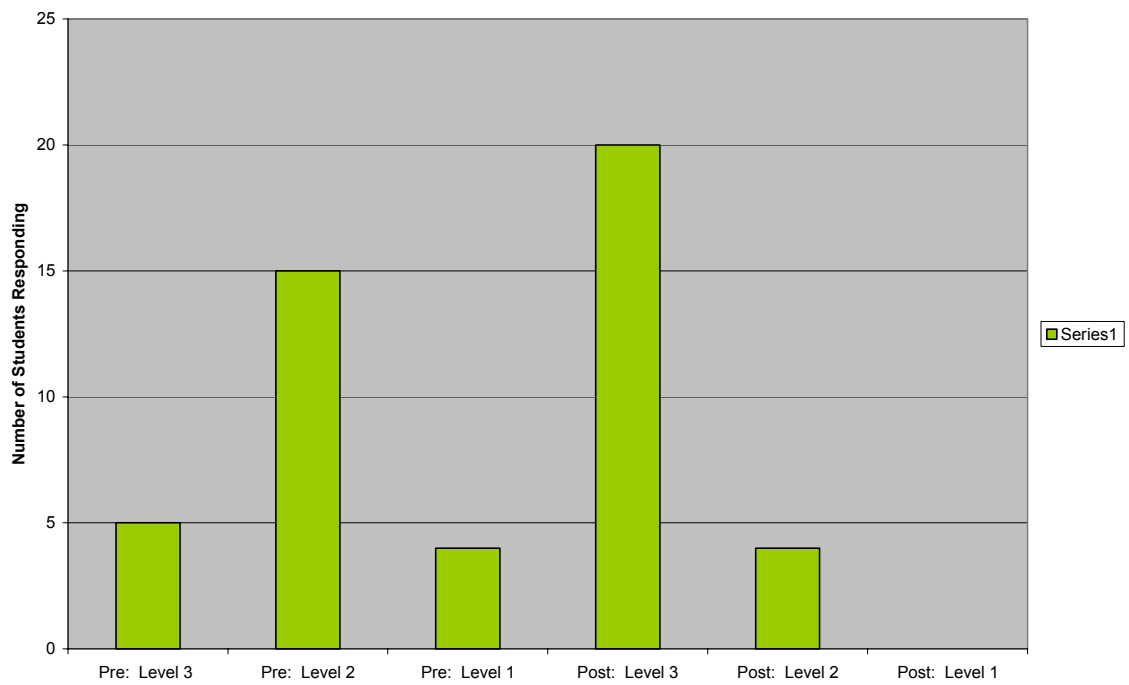
Television and Science



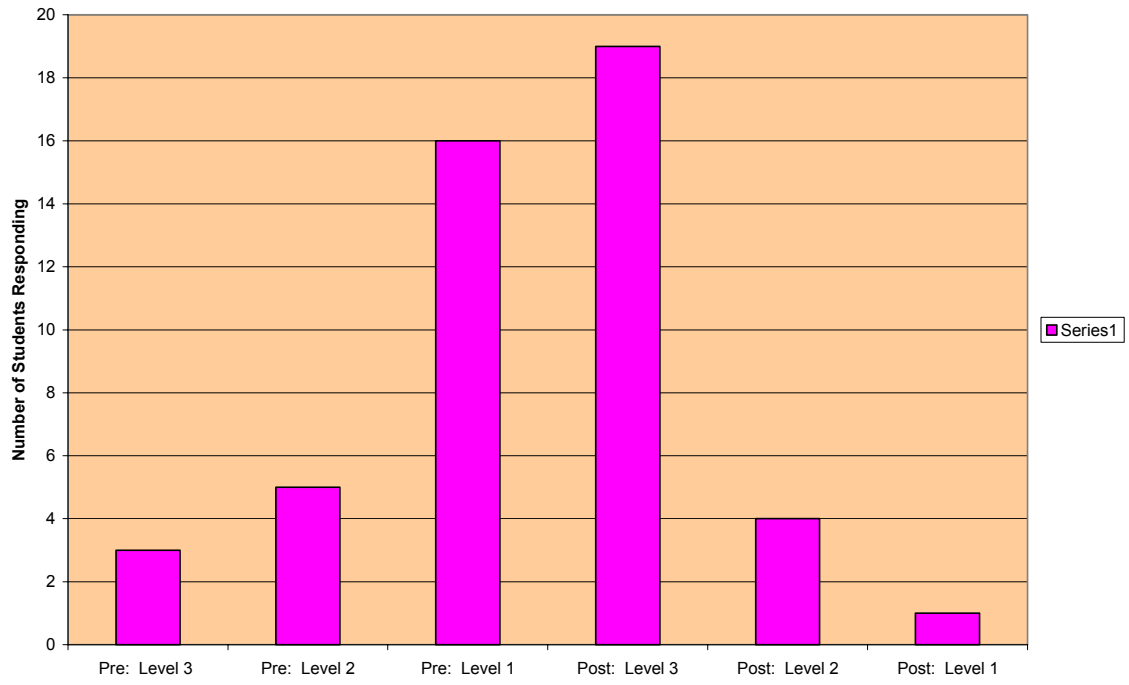
Science Books



Scientists



How I See Myself



My students' main genre for reading up to this time had been fiction. Nonfiction has always been available in our classroom library but all our reading strategies have been used for fiction. Several third grade teachers had expressed their concern that students have difficulty reading for information when using informational text. I wanted to know if students were able to apply learned reading strategies to a new genre. As indicated in the chart, many students had difficulty initially realizing that many of these strategies will apply to other types of text. This increased as we applied these strategies through mini-lessons and practice.

Questionnaire

What type of books do you have more of in your home library? **Fiction**
 24 students answered both (18 students said they have added nonfiction)

What do you like to read more often? **19 students said fiction 4 students said nonfiction**
 10 students answered fiction 11 answered nonfiction

Which is easier for you to read? **23 students said fiction 1 said nonfiction**
 15 answered fiction 5 answered nonfiction 4 answered nonfiction is getting easier

Read the following reading strategies. Will the strategy help you read fiction, nonfiction or both. Circle the correct choice.

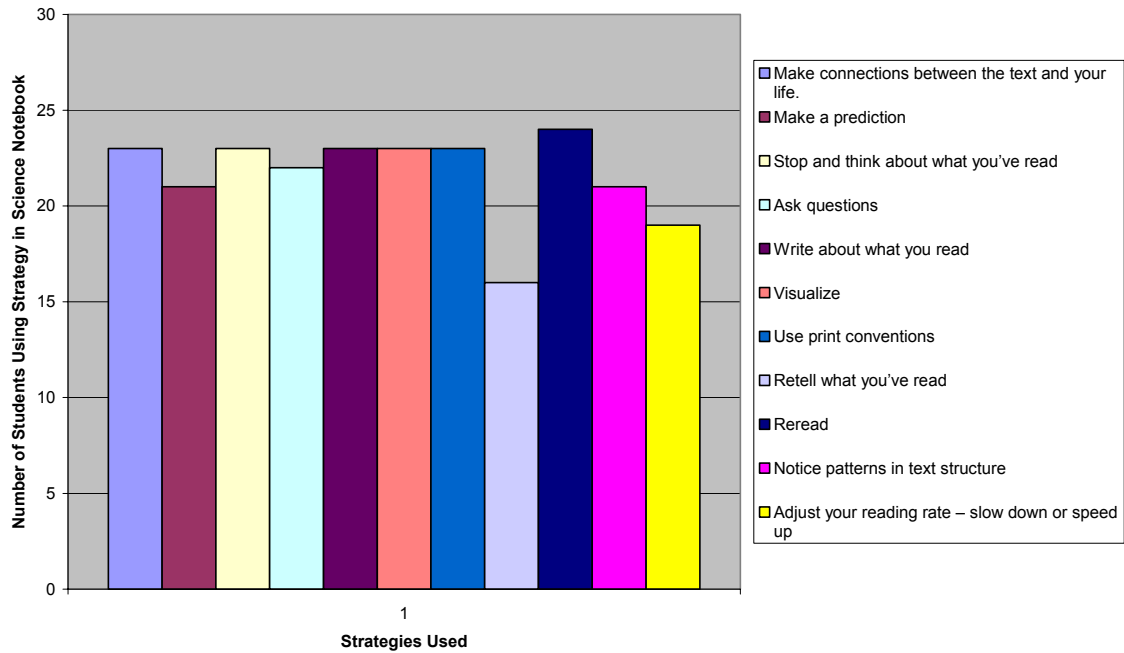
What Strategy Should I Use? **(Pre/Post)**

Reading Strategies			
Make connections between the text and your life: Using knowledge to make a connection will help you understand your reading better.	Fiction 20	Nonfiction	Both 4 24
Make a prediction: Think about what's to come. When an event doesn't match a prediction, rethink and	Fiction 18	Nonfiction	Both 6 24

revise your thinking.			
Stop and think about what you've read: Connect newly acquired knowledge with information you already have.	Fiction	Nonfiction	Both 24 24
Ask questions: Ask questions as you read. Continue reading to find the answers.	Fiction 15	Nonfiction	Both 9 24
Write about what you read: Jotting down a few notes helps clarify meaning	Fiction 16	Nonfiction 4	Both 4 24
Visualize: Create images in your head to help you make sense of what the words are saying.	Fiction 20	Nonfiction	Both 4 24
Use print conventions: Key words, bold print, italicized words, capital letters, and punctuation can all be used to enhance understanding.	Fiction 22	Nonfiction	Both 2 24
Retell what you've read: Ask yourself, "What have I just read?" This helps refresh your memory. Retelling is also helpful when returning to reading after some time has passed.	Fiction	Nonfiction	Both 24 24
Reread: Reread to help you understand the selection better.	Fiction	Nonfiction	Both 24 24
Notice patterns in text structure: Recognizing how a piece is organized helps you locate information more quickly.	Fiction 10	Nonfiction 5	Both 9 24
Adjust your reading rate - slow down or speed up: Good readers don't read everything fast. Slow down when something is difficult. Read faster when something is familiar.	Fiction	Nonfiction	Both 24 24

13	1	1	1	1	1	1	1	1	1	1	1	1
14	1	0	1	0	1	1	1	0	1	1	1	0
15	1	1	1	1	1	1	1	0	1	1	1	1
16	1	1	1	1	1	1	1	0	1	1	1	0
17	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1
20	1	0	1	1	1	1	1	0	1	1	1	0
21	1	1	1	1	1	1	1	1	1	1	1	1
22	1	0	1	1	1	1	1	0	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1

**Becoming Better Readers
Checklist of Reading Strategies**

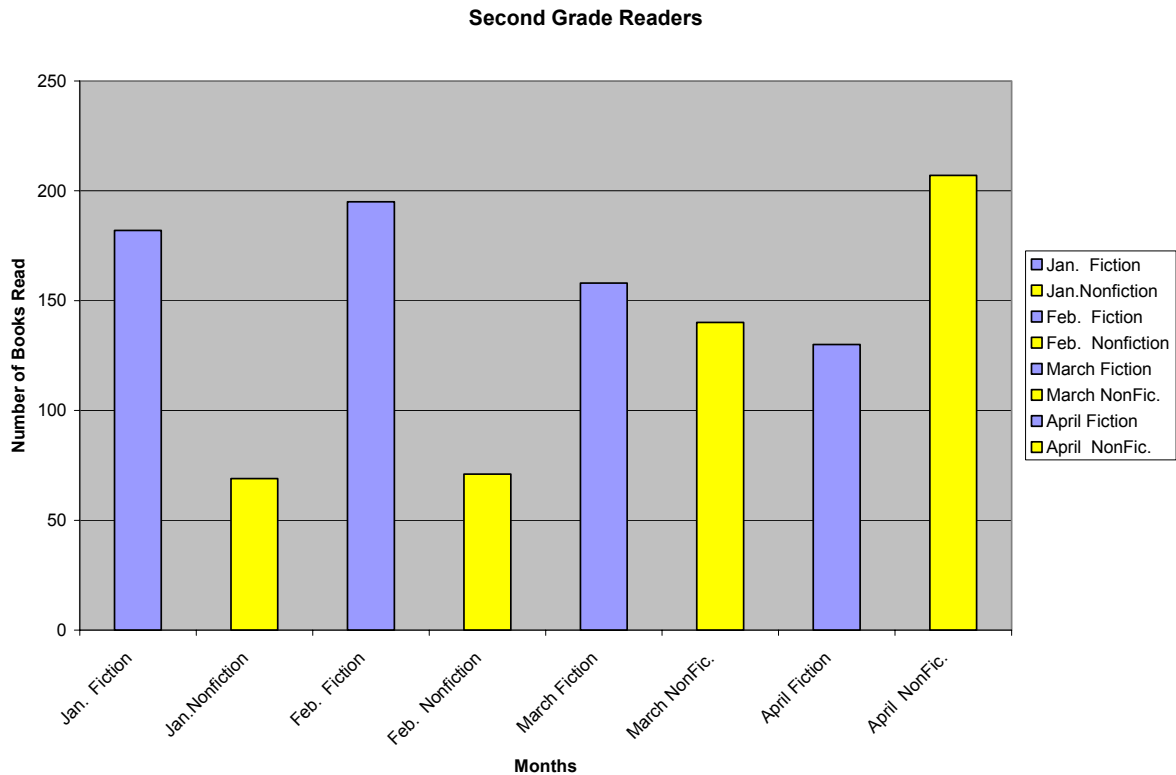


Reading Logs

Students use Reading Logs to record all books they read in class and outside of class. I wanted to know if there was an increase in nonfiction reading. Not only was

there an increase in the number of nonfiction books read but there was a change in students enthusiasm. Students were not only checking out informational texts but rushing into class to be the first to get the bird guides in our class library. They studied different bird characteristics, habitats, migration patterns, nesting, etc. They couldn't wait to share their bird sightings when they arrived at school. Students were even taking bird guides to the playground.

Total Number of Books Read		
Month	Fiction	Nonfiction
January	182	
January		69
February	195	
February		71
March	158	
March		140
April	130	
April		207



Action Plan that has emerged from your research:

Next year I will be teaching a second grade inclusion class. Reflective writing is a window into a students’ understanding. Continual formative assessment is necessary for planning. I would like to continue with this research but take it further. Students followed my directions about entries but I think notebooks need to become more personal for students to take ownership. I would like to explore letting the students decide which organizational method would be appropriate for recording their data and findings. Also, how do I help students recognize their own questions and what to do with their questions?

Discuss your reaction to doing your Action Research project: What did you learn? What questions remain? Other considerations

My action research has been valuable in so many ways. The planning was initially difficult. There are so many areas to explore when working with children. The literature review gave me an “excuse” to stay up late keeping informed of the research of other educators. I felt validated for my own concern about the lack of science being taught in the primary grades. I do not want this generation of children to lose their sense of wonder about the world around them. My question is how to implement all that I want to in my classroom and this action research has given me a starting point. The reflection of my own instruction has been the most valuable aspect of this project. As the school year has come to a close I find myself excited to think about the start of a new year. I just want to get an early start on science embedded in my classroom.

Describe your reaction to the networking tools and other opportunities that are available to you through the MURMSI project.

It has meant so much to work with other colleagues that share my enthusiasm for professional growth. Sometimes I feel that our job as teachers puts us into “isolation” from other professionals due to the fact that we are in the classroom all day. This has been a wonderful sharing opportunity. I really appreciate all the support from everyone involved in the MRMMSI project. Everyone from University of North Florida has been there for any problems. I just wish that I had started sooner because there is just a wealth of knowledge to tap into.

I want to mention the technology that at first frustrated me but I am finding so exciting. Working with Excel for the first time gives me a glimpse of some of the possibilities for classroom use that I want to explore. Just finding the time is the question. I feel weak on statistical reporting and am signing up for a class at UNF this fall. Knowing there are people out there for support is encouraging.

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