



## **Coalition for Improving Mathematics and Science Education and the Coalition for Science Literacy**

### **Survey of Elementary School Teachers on Science Education**

As part of their ongoing interest in teacher preparation and practice, a survey was commissioned in October 2000, by the Florida Coalition for Improving Mathematics and Science Education (CIMS) with a grant from the Aerospace States Association and support from the Coalition for Science Literacy at the University of South Florida. This survey examined the preparation and professional development of elementary school teachers and current teaching practices in elementary science education. Results of the survey were intended to inform education policymakers and legislators so that they would initiate and adequately support programs to help elementary school teachers become more effective in advancing their students' understanding of science.

### **District Selection**

Twelve school districts were selected to participate in the survey. The selection was made to ensure representation of large, medium, and small districts with a geographical spread across the state. Selected districts were:

- |            |                |
|------------|----------------|
| ■ Brevard  | ■ Hillsborough |
| ■ Dade     | ■ Lee          |
| ■ Desoto   | ■ Martin       |
| ■ Duval    | ■ Orange       |
| ■ Gulf     | ■ Santa Rosa   |
| ■ Hamilton | ■ Sumter       |

### **Procedures**

Within each school district, elementary schools were selected at random in the following pattern: 2 in small districts, 4 in medium districts and 7 in large districts for a total of 52 schools. Appendix A contains a listing of the schools selected for each district and a copy of the survey. The survey contained 14 items, 11 of which were structured response items with 3-4 response options. Two items



were a combination of structured response and open-response, and the last item was open-response. The survey also contained six items, which sought to obtain demographic information about the respondents. Appendix B contains a summary of responses to the open-ended items.

Evaluation Systems Design, Inc. (ESDI) of Tallahassee, Florida was contracted to assist in the data collection procedures, analyses, and reporting of the study. The Suncoast Area Center for Educational Enhancement sent to each school a packet containing sufficient surveys in individual envelopes for dissemination to all teaching faculty. Principals disseminated the surveys to all classroom teaching staff during a faculty meeting or in mailboxes. It took one teacher less than 5 minutes to complete the survey. A priority mail return envelope was provided to return the surveys directly to ESDI for data analysis. A total of approximately 1,500 surveys were disseminated (52 school with 30 teachers per school).

This report contains an analysis of the results obtained as of November 3, 2000. At that time, 554 surveys had been returned from 35 schools across all 12 school districts geographically spread across the state. Through November 24, 2000, an additional 80 surveys from three schools were received after the initial report was submitted. Since the additional information was nearly identical to the first set of 554 surveys, no changes were made to the initial report.

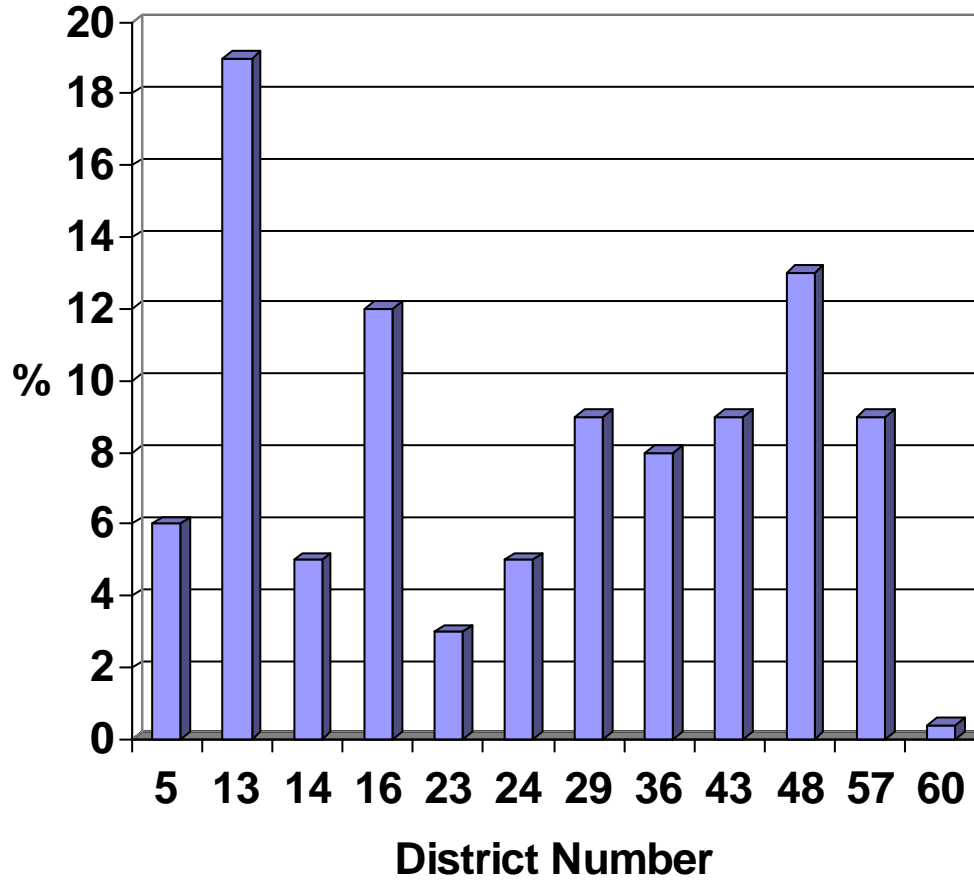
## **Results**

Appendix C contains Tables 1-3 that present the statistical results from the analyses of the surveys. The following Charts 1-14 present visually the responses of the 554 teachers to the survey questions.

### **Survey Sample**

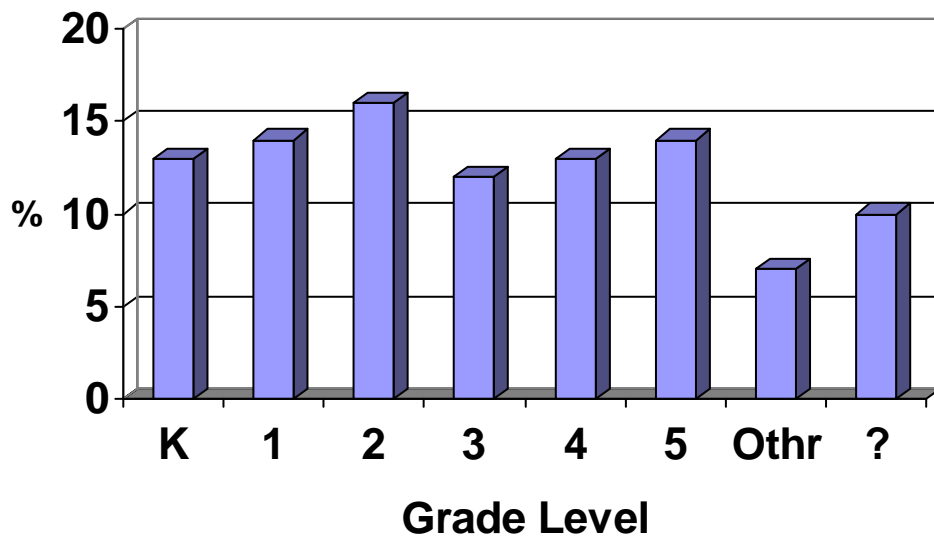
Results were received to date from 554 teachers in 34 schools located in 12 school districts. Chart 1 presents the distribution of responses across the 12 school districts.

### Chart 1: Respondents by District



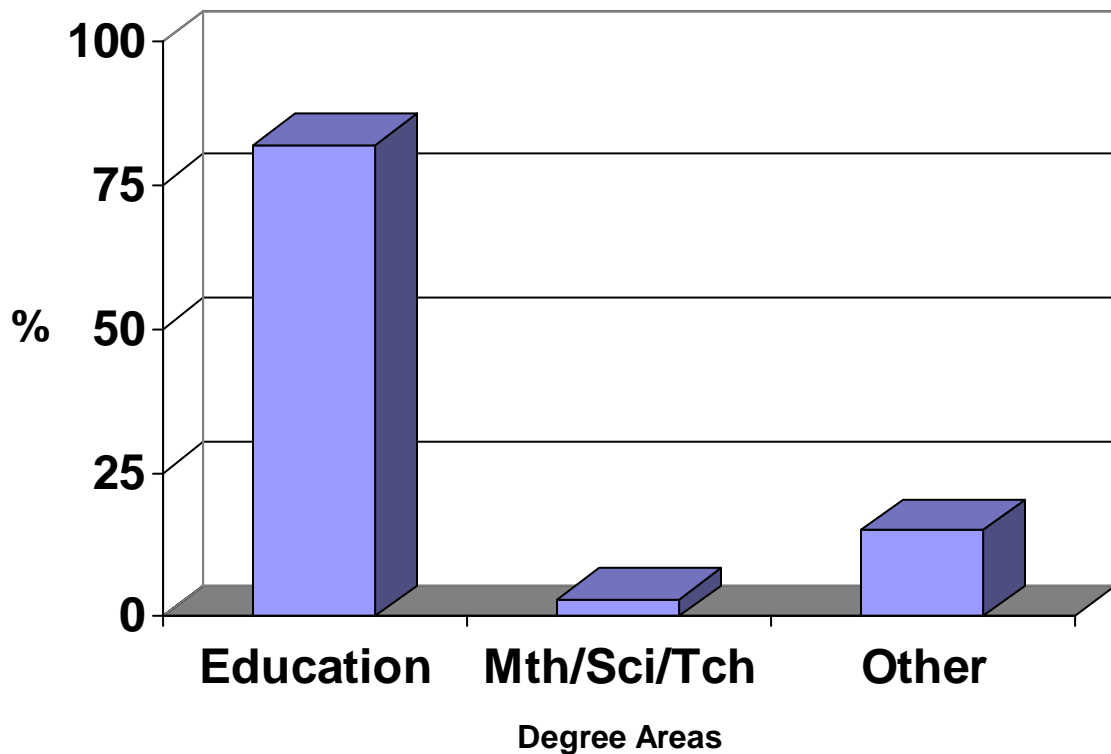
Respondents were all elementary school teachers. Chart 2 displays a fairly even distribution across the grade levels taught by the respondents in Kindergarten through 5<sup>th</sup> grades at between 11% and 16% of the total group. Some teachers marked more than one grade which probably represented exceptional education teachers and some multi-grade groupings in schools or departmentalized structures in the schools.

**Chart 2: Respondents by Grade**



Two of the demographic items asked whether respondents received their undergraduate degree in Florida and the degree field: Education, Math/Science/Technology or some other area. Sixty percent said they received their undergraduate degrees in the state of Florida, leaving 40% who indicated they received their degrees elsewhere. Considering all degree areas including multiple responses, 82% had education degrees, 3% had Math/Science/Technology degrees and 15% had a degree in some other field. The distribution of degree areas is shown in Chart 3.

**Chart 3: Respondents by Degree Area**



Teachers were asked “How much time do you devote to teaching science every week? Chart 4 presents the results for this item. Most respondents (63%) indicated they teach science 1-3 hours per week. Sixteen percent (16%) teach science less than one hour, 5% teach no science at all. Only 15% said they teach more than 3 three hours of science each week.

Elementary schools have varying organizational structures that may impact on these results. Some schools use departmental structures or team teaching that would result in some teachers teaching mostly science and mathematics, and others teaching mostly language arts and social studies. Considering the 35 hours of time in a usual school week, however, devoting only 1-3 hours per week to science represents a low priority for this subject area.

**Chart 4: Time Teaching Science**

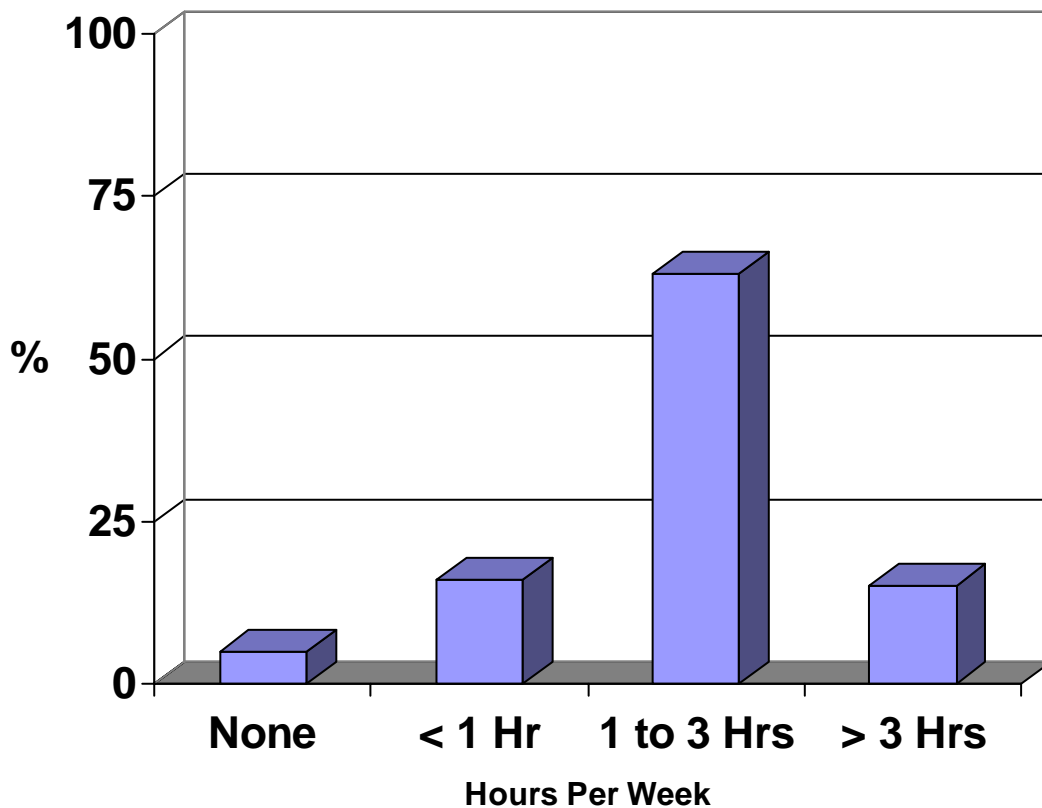
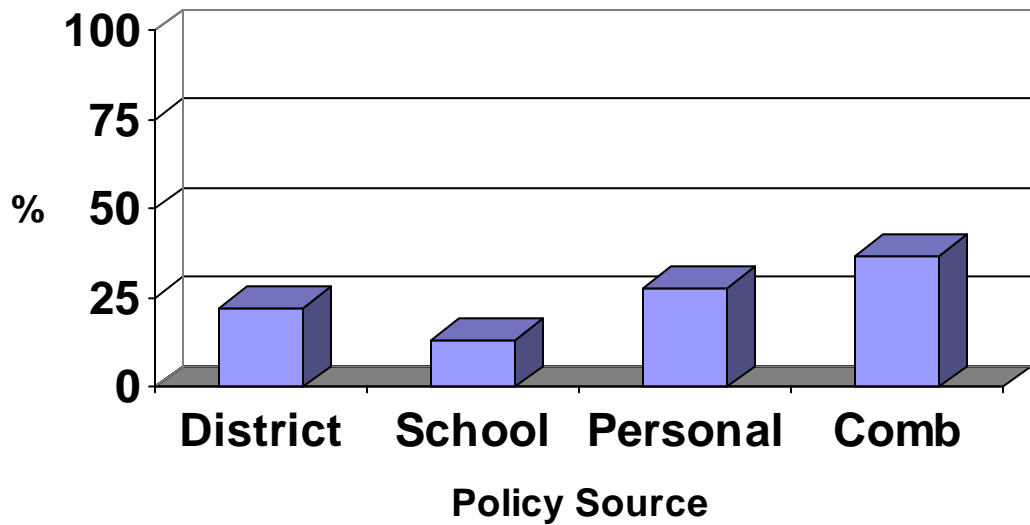


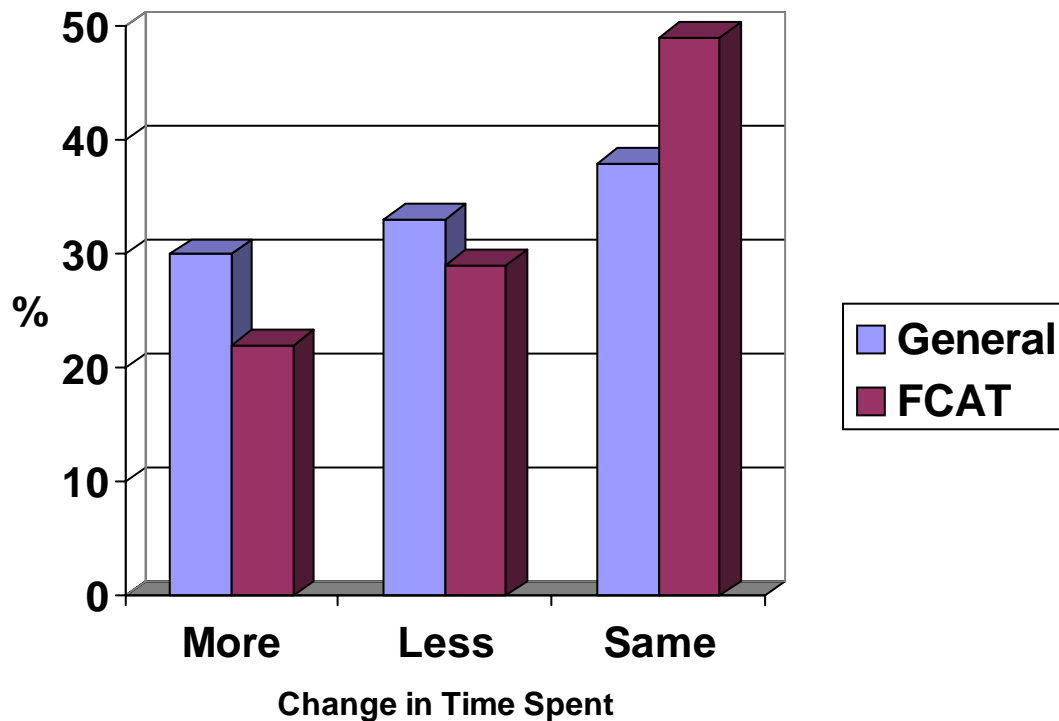
Chart 5 presents responses to the next item on the survey that asked teachers “What determines the amount of time you devote to teaching science?” Options were district policy, school policy, and personal preference. Of the responding teachers, 28% indicated that personal preference determines the amount of time they devote to teaching science, 22% identified the district policies as the determining factor, 13% marked school policies, and 37% marked a combination of these factors or all three factors. In many school districts, schools are given great latitude in the implementation of the science curriculum. Other districts provide strong guidance on the structure and timing for specific content areas.

**Chart 5: Factors Determining Amount of Time Devoted to Science**



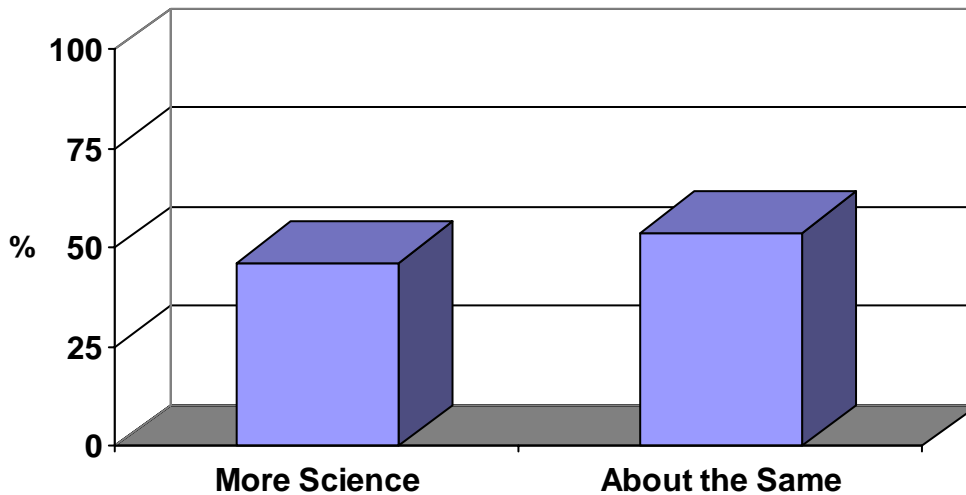
Teachers were asked two questions about perceived changes in the amount of time spent teaching science: one a general estimate and the other as a possible result of statewide testing (FCAT). Chart 6 compares these two perspectives as whether the amount of science instruction increased, decreased or remained the same. While 30% thought the amount of time teaching science increased in general, 22% felt the decrease was attributable to statewide testing. Thirty-three percent (33%) felt time spent teaching science decreased in general; 29% attributed the decrease to FCAT. Thirty-eight percent (38%) said there was no change in general; 49% said there was no change as a result of statewide testing.

**Chart 6: Changes in Amount of Time Spent Teaching Science**



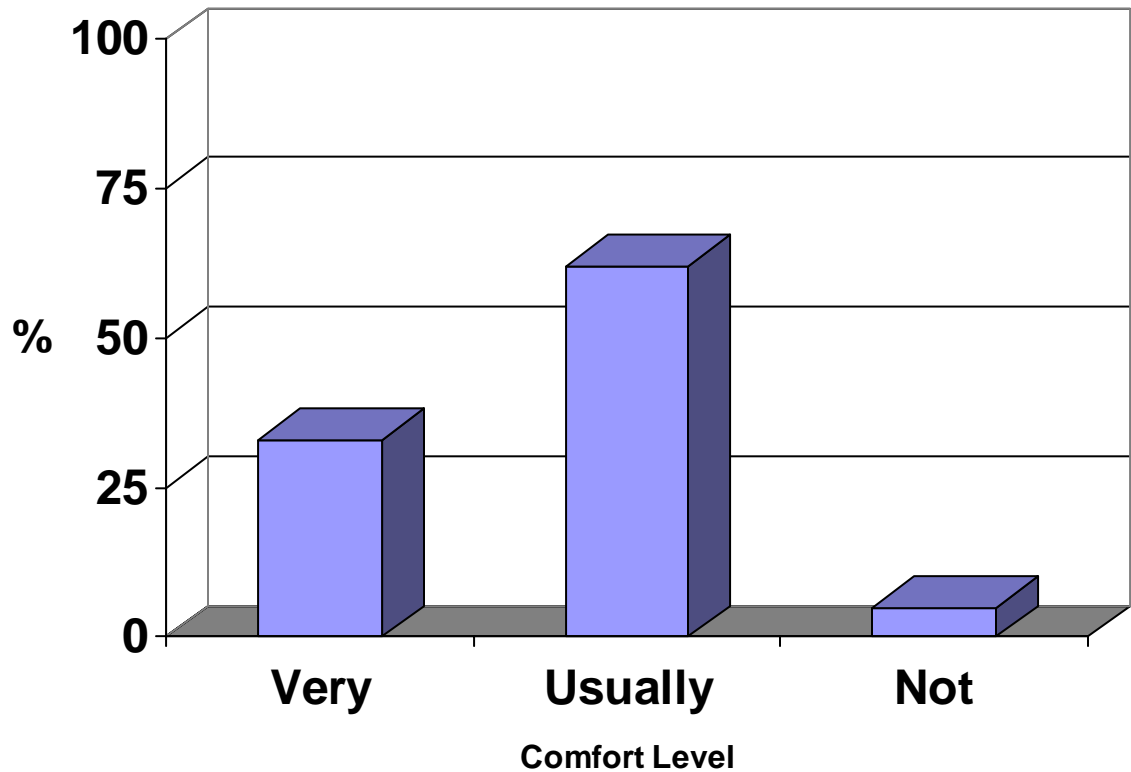
Teachers were also asked “Do you think you should be teaching: more science, less science, about the same science.” As displayed in Chart 7, 46% of the responding teachers believe that they should be teaching more science, 54% indicated they should be teaching about the same science, and no one marked that they should be teaching less science.

**Chart 7: Teacher Perceptions as to the Need for Science**



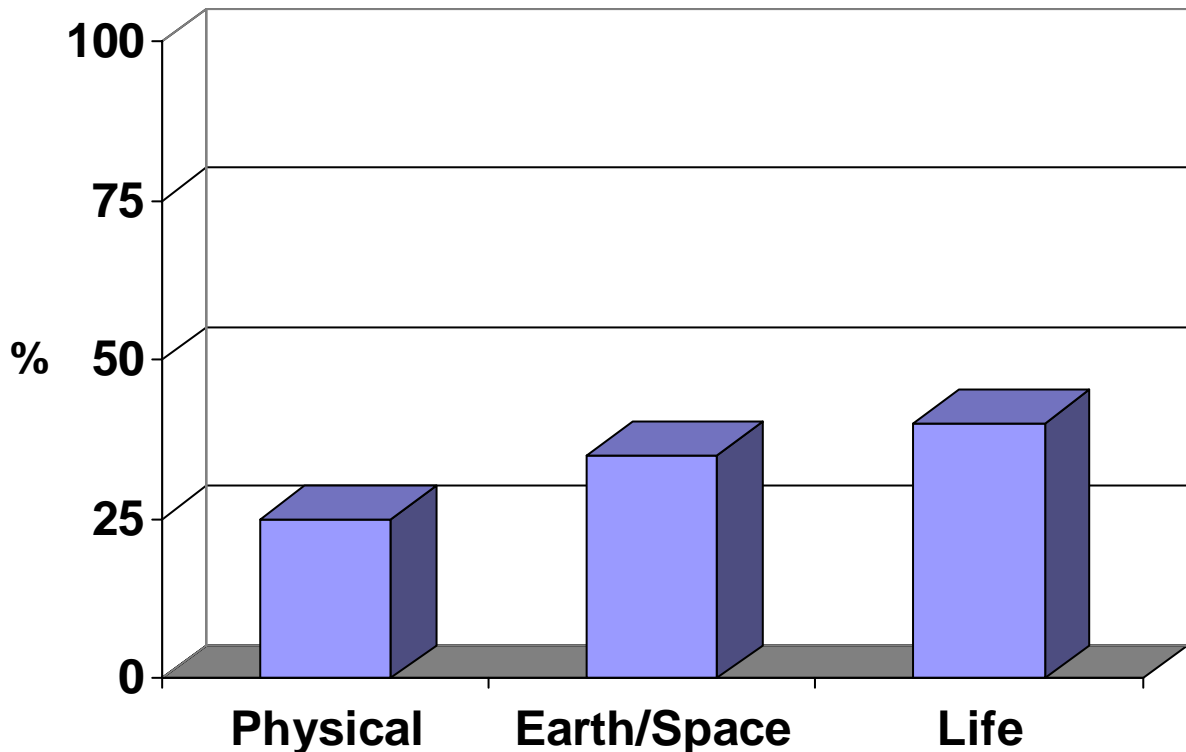
Item 6 on the survey asked teachers “How confident do you feel teaching science? Response options were: very confident, usually confident, and uncomfortable. Of the responding teachers, 33% feel very confident teaching science, 62% are usually confident teaching science, and 5% are uncomfortable

**Chart 8: Confidence in Teaching Science**



Teachers were asked in Item 7 about the areas of science in which they are most comfortable teaching. Considering all responses, including multiple areas, 25% of the respondents indicated they were comfortable teaching Physical Science, 35% chose Earth/Space Science and 40% marked Life Science. These preferences are displayed in Chart 9.

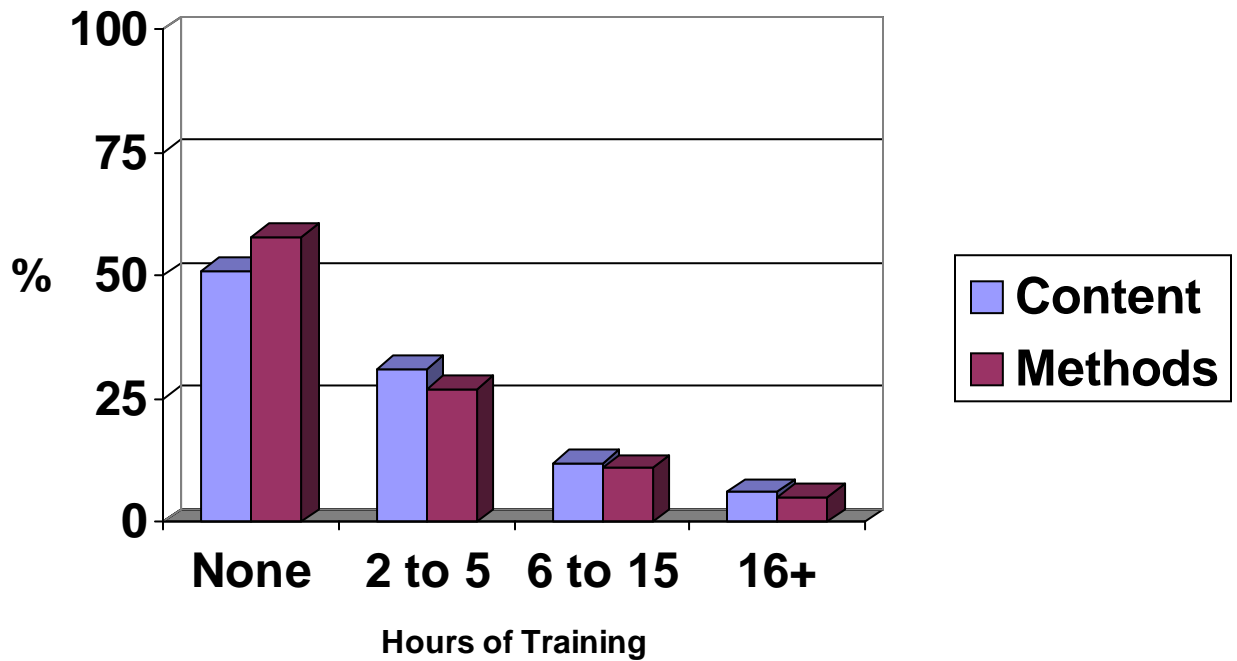
**Chart 9: Most Comfortable Areas of Science**



When individual response patterns were analyzed, it was found that the largest block of responses was for teachers who said they were comfortable teaching all three areas (41%). Only 6% of the teachers picked none of the science areas as ones with which they were comfortable.

Item 8 focused on the number and type of in-service training hours completed in the last five years. Both science content and science methods were addressed. Chart 10 compares response options between the two general types of science in-service. Fifty-one percent (51%) said they had no in-service in science content and 58% said they had no in-service in science methods. Thirty-one percent (31%) said they had between two and five hours of in-service in science content compared to 27% who had between two and five hours of in-service in science methods. Twelve percent (12%) indicated they had between six and fifteen hours of in-service in science content versus 11% who said they had the same amount of in-service in science methods. Of those who indicated they had 16 or more science in-service hours, 6% said it was in content areas and 5% said methods.

**Chart 10: Amount and Type of Science In-Service**



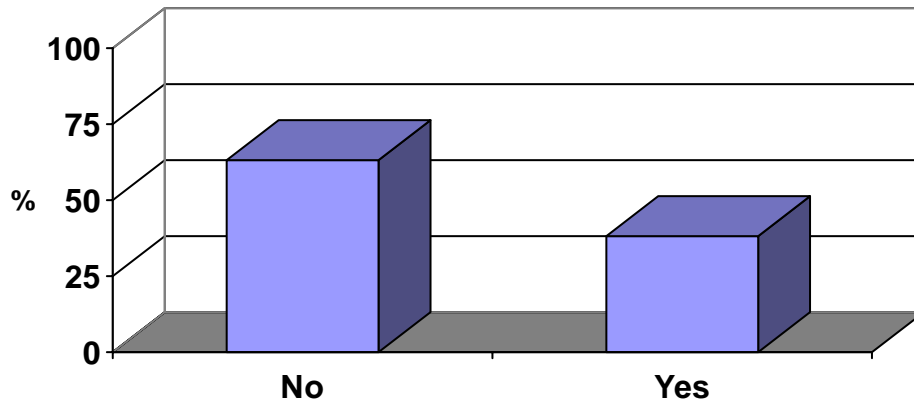
Item 9 asked, “How many of the following undergraduate courses have you taken?” Table 1 shows the percent who took zero through five of the listed courses as undergraduates.

**Table 1: Percent Taking Various Numbers and Types of Undergraduate Science Courses**

| Course   | None | One | Two | Three | Four | Five |
|--|------|-----|-----|-------|------|------|
| Astronomy  | 72%  | 23% | 3%  | 1%    | 0%   | <1%  |
| Biology  | 23%  | 48% | 21% | 5%    | 1%   | 2%   |
| Chemistry  | 53%  | 33% | 9%  | 2%    | 1%   | 1%   |
| Earth Science or Geology   | 42%  | 42% | 12% | 3%    | 1%   | <1%  |
| Marine Science   | 79%  | 15% | 4%  | 2%    | <1%  | <1%  |
| Other (such as human reproduction, health & drugs, science & society, etc) | 39%  | 34% | 14% | 8%    | 3%   | 2%   |

As a follow-up to indicating the number and types of undergraduate science courses taken, Item 10 on the survey asked: “Did the courses you took in your undergraduate education program prepare you to teach the Science Sunshine State Standards? As displayed in Chart 11, almost two-thirds (63%) of the teachers answered “no” and only 38% answered “yes.”

**Chart 11: Preparation for Teaching Science SSS**

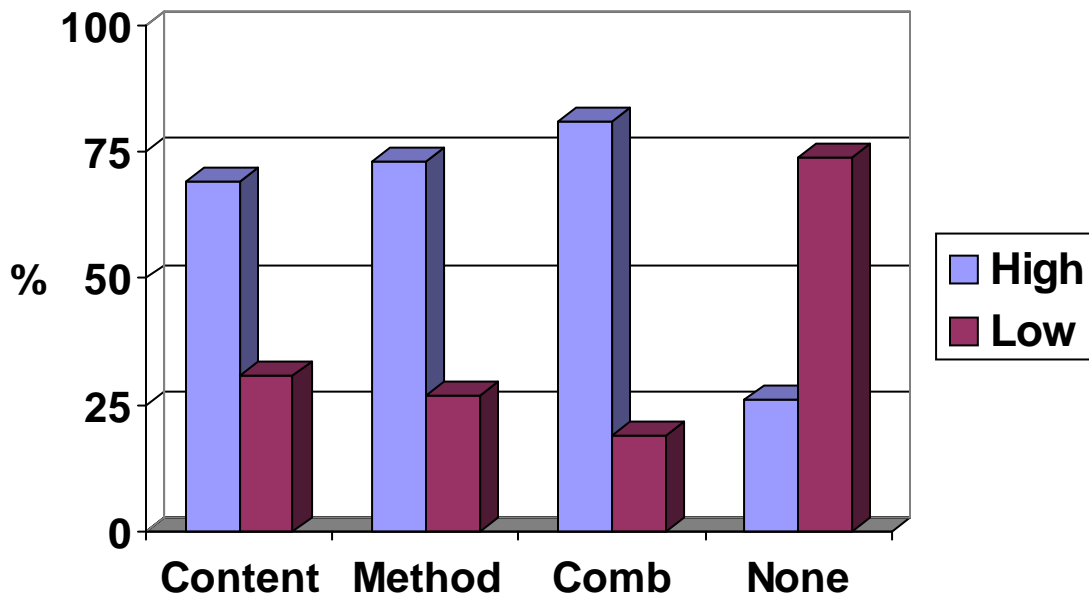


Following this question, teachers were given the opportunity to comment as to why or their undergraduate courses did or did not prepare them to teach Science Sunshine State Standards. General themes mentioned by respondents who answered “yes” included the observations that their undergraduate courses were in fact SSS or objectives based, that they were instructional versus content oriented or that they were process/discovery oriented versus theoretical. Some affirmed that their courses established a useful, broad based foundation. Others said their courses provided specific examples and situations and were designed to be “hands-on” instead of text based.

Among respondents who said that their undergraduate courses did not prepare them to teach Science Sunshine State Standards, many explained that the courses were taken too long ago, before the standards were established. Others explained that they took their courses out of state where the SSS were not relevant. Some said their courses were content based or were not part of a teacher preparation program. Some mentioned that their courses were too general/theoretical or they took too few courses or that the courses they took were not relevant to an elementary school setting. Specific comments are listed in Appendix B.

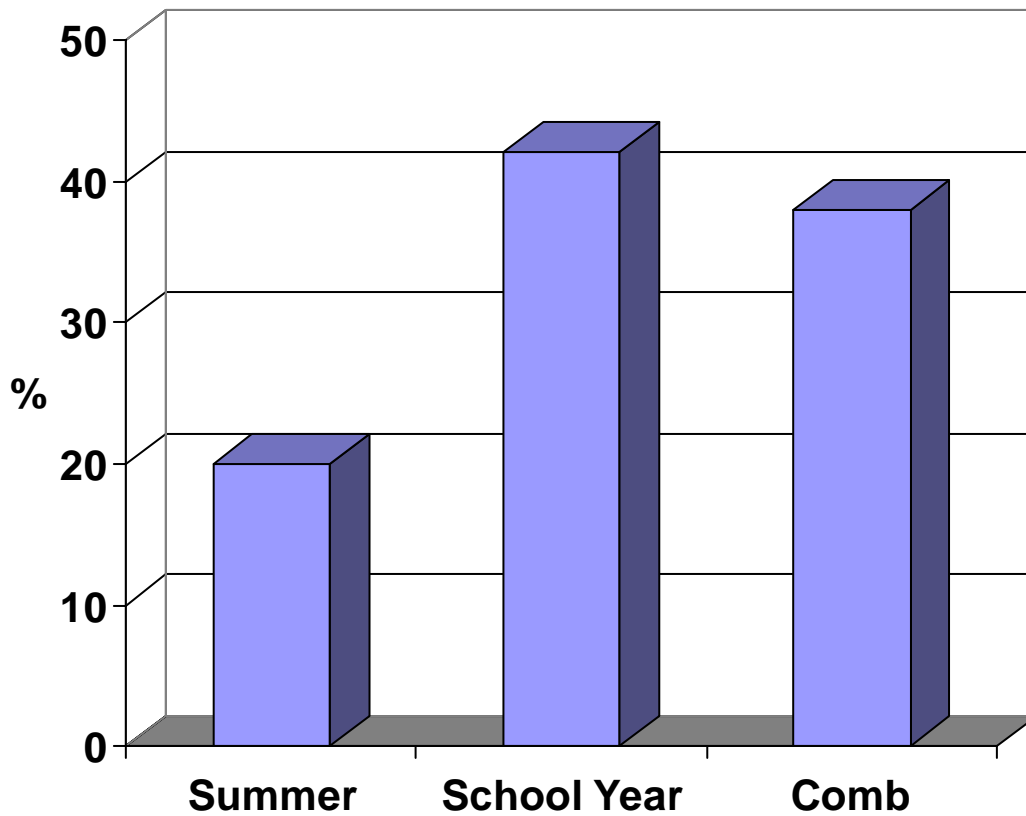
Item 11 asked elementary science teachers to rank various types of compensated science in-service offerings in order of their value for improving their ability to effectively teach science. For purposes of deriving summary information, ranks one and two were combined to represent the highest values and ranks three and four were combined to represent the lowest values. Chart 12 shows that 69% of respondents gave high ranks to science in-service which emphasizes content; whereas, 31% gave it low ranks. Seventy-three percent (73%) of the teachers gave high ranks to science in-service which emphasizes methods; whereas, 27% give it low ranks. A combination of science content and methods appears to be preferential: 81% gave it high ranks and only 19% gave it low ranks. The fact that only one-quarter (26%) of the respondents gave high ratings to “none of the above,” suggests that science content, methods or a combination of the two are the main preferences.

**Chart 12: In-Service Content Preference**



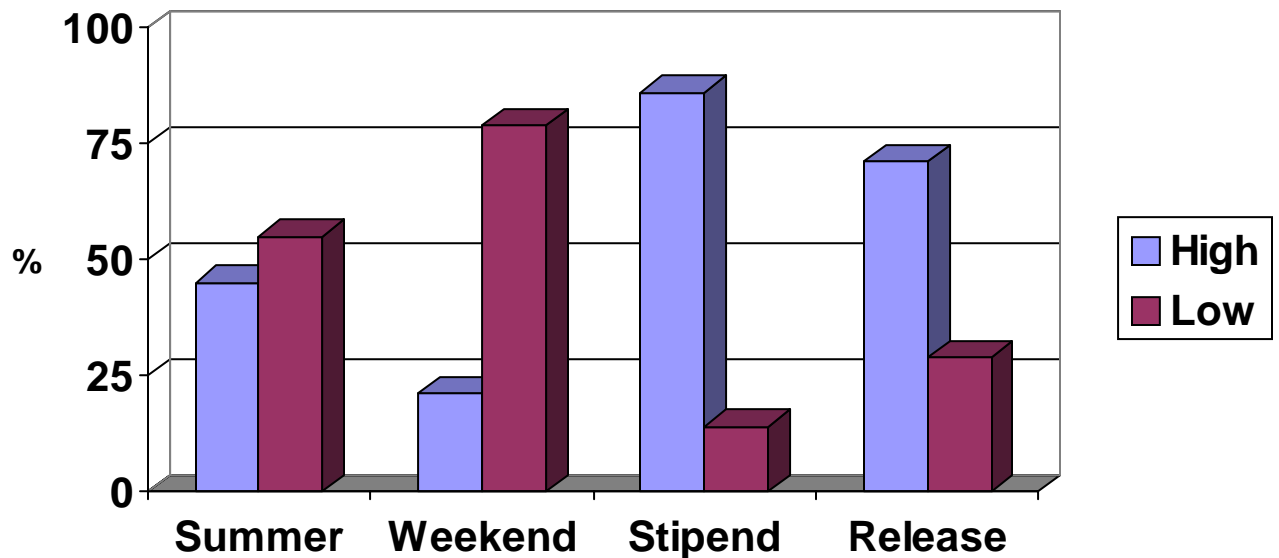
Item 12 asked respondents who chose an in-service approach based on science content, methods or a combination to further indicate their preference for timing: summer and/or during the school year. Chart 13 shows that science in-service held during the regular school year was chosen much more often than summer (42% versus 20%). However, a combination of school year and summer term offerings appears to be a desirable alternative to about 38% of the teachers.

**Chart 13: In-Service Timing Preferences**



Item 13 asked elementary science teachers to rate their preference for several types of compensation for in-service training. For sake of clarity, rating values one and two were combined to represent the highest values and rating values three and four were combined to represent the lowest values. Chart 14 shows that 45% of respondents gave high ratings to summer employment; whereas, 55% gave it low ratings. Only 21% gave high ratings to weekend employment, and 79% gave low ratings to that option. Stipends and release time appeared to be the preferred options. Eighty-six percent (86%) gave high ratings to stipends and only 14% gave it low ratings. Release time received high ratings by 71% of the respondents; whereas, 29% gave it low ratings.

**Chart 14: In-Service Compensation Preferences**



Teachers were also given the option of recommending other types of compensation; however, relatively few were offered. Specific suggestions are listed in Appendix B.

Question 14 asked respondents for their recommendations for improving professional development opportunities in science. There were about 150 responses, nearly one-third of which contained the phrase “hands-on”. They wanted “hands-on” workshops, “hands-on” materials, activities, projects and experiments. There was a clear desire for more manipulatives, kits, science projects, supplies, labs and demonstrations. The survey respondents definitely want more—more materials, offerings, activities, training time, opportunities and time to teach science.

Some respondents mentioned integrating reading, math and other subjects. Some complained that there was too much testing (FCAT) and too much focus on “multiple choice” versus process teaching. A number voiced their desire for current/relevant texts. Also, there was a call for in-service content to be better targeted to specific grade levels.

Some respondents wanted workshops geared for teachers who are not science majors, but who want or need to teach science to their elementary students. They wanted simple lesson plans, projects, experiments and easily available materials—activities that are fun and motivating. There were other respondents who wanted more, and more advanced science content, not teaching methods. There was a desire for more coordination of curriculum to SSS. Some wanted to take better advantage of teacher or locally developed curricula, projects, activities and resources. Specific comments are listed in Appendix B.

## Appendix A

### Participating Schools and Survey Instrument

| District     | School                              |
|--------------|-------------------------------------|
| Brevard      | Riviera Elementary                  |
| Brevard      | Suntree Elementary                  |
| Dade         | Rockway Elementary                  |
| Duval        | Beauclerc Elementary                |
| Duval        | Hendricks Avenue Elementary         |
| Duval        | San Mateo Elementary                |
| Gulf         | Port St. Joe Elementary             |
| Hillsborough | Citrus Park Elementary              |
| Hillsborough | Schwarzkopf Elementary              |
| Hillsborough | West Shore Elementary               |
| Lee          | Pinewoods Elementary                |
| Lee          | Tropic Isles Elementary             |
| Martin       | Crystal Lake Elementary             |
| Orange       | Azalea Park Elementary              |
| Orange       | Eccleston Elementary                |
| Orange       | Lake Silver Elementary              |
| Orange       | Meadow Woods Elementary             |
| Santa Rosa   | Pea Ridge Elementary                |
| Sumter       | Webster Elementary                  |
| Lee          | Cape Elementary                     |
| Dade         | Thena Crowder Elementary            |
| Hamilton     | Central Hamilton Elementary         |
| Duval        | Loretto Elementary                  |
| Brevard      | Mila Elementary                     |
| Brevard      | Mila Elementary                     |
| Hillsborough | Pinecrest Elementary                |
| Orange       | Brookshire Elementary               |
| Brevard      | Cape View Elementary                |
| Martin       | Bessey Creek Elementary             |
| Dade         | Marjory Stoneman Douglas Elementary |
| Santa Rosa   | Chumuckla Elementary                |
| Hamilton     | North Hamilton Elementary           |
| Martin       | Hobe Sound Elementary               |
| Dade         | Hibiscus Elementary                 |
| DeSoto       | Memorial Elementary                 |
| Orange       | Shenandoah Elementary               |
| Santa Rosa   | East Milton Elementary              |
| Martin       | Port Salerno Elementary             |
| Hillsborough | Essrig Elementary                   |
| Dade         | Southside Elementary                |
| Dade         | Coral Reef Elementary               |
| Orange       | Clay Springs Elementary             |
| Lee          | Allen Park Elementary               |
| Dade         | Redondo Elementary                  |
| Hillsborough | Brooker Elementary                  |
| Duval        | John E. Ford Elementary             |



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|              |                             |
|--------------|-----------------------------|
| DeSoto       | West Elementary             |
| Duval        | Crown Point Elementary      |
| Hillsborough | Grady Elementary            |
| Santa Rosa   | Gulf Breeze Elementary      |
| Sumter       | Lake Panasoffkee Elementary |
| Duval        | Pickett Elementary          |
| Gulf         | Wewahitchka Elementary      |

## **Appendix B**

### **Open Ended Comments and Recommendations**

Question 10 asked, “Did the courses you took for your undergraduate degree prepare you to teach Science Sunshine State Standards (SSS)? Why or why not?”

The following are comments made by respondents who answered “yes,” their undergraduate courses prepared them to teach Science Sunshine State Standards:

- + Explained all levels of learning & encouraged teaching to different learning styles.
- + All lesson plans in college were based on SSS.
- + Biology major.
- + Yes. In Kindergarten we exposed students to science and it met those needs.
- + 2nd grade is basic information.
- + Received undergraduate degree in Indiana where standards were very high.
- + 42 hours undergrad in science.
- + The courses helped give me more knowledge on the concepts taught using SSS.
- + Science process skills were evident in all the science classes I've taken since 7th grade jr high school.
- + The courses were developed to include SSS.
- + We actually learned; we did not just put in time finding ourselves.
- + It gave a sound foundation in these subject areas.
- + All my courses were designed around the objectives of each area and I have a confident approach to knowing exactly what it is I need to cover and effectively deliver it.
- + Because they encompassed every science standard listed in the SSS
- + Auburn University has a very comprehensive program.
- + My undergraduate degree is in agriculture. I have a very strong science background.
- + I have a BS in zoology which gives me a solid understanding of the topics and depth of the grade I teach.
- + I love science and so do the kids, so it falls into place.
- + But I also took science for the child, which helped a great deal.
- + Provided basic background information.
- + The science SSS are fairly general & comprehensive. Courses taken in science gave good background for teaching science.
- + Learned basic concepts.
- + Some of the subject matter presented helps but as the years go by, standards have changed.
- + So much info is available to help!
- + At the Kindergarten level the concepts are very basic.
- + Only from a general knowledge standpoint.
- + I had a heavy emphasis on science being pre-med one year & a psychology major for my undergrad degree. I have the knowledge necessary.
- + Because it provided many opportunities to learn how to use discovery--hands-on activities correlated to SSS.
- + It provided specific examples and situations on what to teach.
- + I learned both hands-on and text based.

- + Basic science necessary for first grade mastery was attained.
- + Helping us to learn about it plus combine experiments. Dr X--professor of science at UCF & Rollins had a daughter in my room and she came in each week & taught the class & myself interesting things.
- + They covered general science topics. At elementary level, we're covering basic skills that can be read & taught easily.
- + They followed the standards closely in retrospect.
- + Taught basic info suitable to elementary.
- + Concepts are easily understood.
- + It covered all the sciences--physical/earth/space/and life sciences.
- + It gave general knowledge of the subject area.
- + They provided general knowledge and understanding.
- + I was blessed to have instructors who were aware of the direction science was taking in my state and they felt obligated to prepare me for the future.
- + Set the basis for later information and instructional application.
- + Great science education/also pre-med student CUNY/State Univ of NY Stony Brook
- + From teaching science in elem prepared me for the level children learn science.
- + Actual preparation takes place with experience but I was given a basic course.
- + All were introductory courses that covered an overview of the course. This basic knowledge gave me a foundation to start form and build upon.
- + Because I took a wide variety of courses and they are advanced which prepares one to teach elementary--easier.
- + Somewhat--geology was very helpful in learning to id rocks and minerals as well as doing 'hands-on' work. Biology was more difficulty to apply because it was much harder than the skills we teach at my grade level.
- + Good general knowledge base.
- + I feel very comfortable teaching 1st grade science. Now if it was 5th grade I might not feel as prepared.

The following are comments made by respondents who answered “no”, their undergraduate courses did not prepare them to teach Science Sunshine State Standards:

- Too long ago.
- UGA Graduate.
- Undergraduate courses were in Illinois.
- I was not living in Florida when I graduated.
- I learned nothing in my college science class!
- I follow the special Sunshine State Standards (SSS) with my ESE students.
- There are not correlated with the SSS where I took the above classes.
- Was not a requirement.
- I took the methods course offered by FIU and it was very general in its scope.
- There were no SSS when I was an undergraduate.
- It was long ago.
- At the time that I took these courses the district was not teaching toward the science SSS. Plus I took these courses at Valdosta State Georgia.
- Out-dated material was studied and ineffective teaching techniques were used when compared to modern technology and hands-on materials available presently.
- It was a basic Biology I & II course--not an education course.
- They were basic undergraduate classes--not methods--Special Ed. Program.
- The classes were not a part of my major coursework.
- Not recognized in 1982.
- Science was not emphasized and the format of SSS is very different.

- 11 years ago the SSS were different. After graduation I was prepared to teach science accordingly but I have learned to teach science using the teacher manual & experience.
- Too long ago
- It was not at the level I am teaching.
- I don't go as in-depth with 1st grade as I had to in college.
- My main undergrad courses were with sex repro and health/drugs. We have plenty of supportive curriculum for health/drugs. I need help with other sciences.
- I did not take these courses in Florida.
- Courses were designed to give general information and not specific for different grade level experiences.
- Not geared to teaching concepts at elementary level.
- A lot of the courses dealt w/ content beyond elementary. It was for our knowledge but wasn't content that would be taught in elementary science. I learned about AIMS, GEMS, etc in grad school where I was getting a master's in science ed.
- Taken in another state in the 60's; could not be able to reflect those standards or the science data of the present time.
- Too long ago & it wasn't stressed for education degree.
- However I took courses for teaching physical, earth & life sciences at the masters level.
- Went to school up north; different standards. Received my undergraduate in business.
- None of these was hands-on. Science should be hands-on & experimental in nature.
- They didn't exist when I was an undergrad.
- It was a long time ago--concentrated concepts at college level; not geared towards elementary.
- We just didn't cover much science.
- Undergraduate courses out of state.
- No application.
- I didn't take many courses.
- Not enough courses.
- They were very general and taught at college level.
- To a degree I must say that they did but it was so little that I don't feel that I benefited from it much.
- I am not certified in science. I bring in science as it applies to geography.
- I went to college in Georgia. There were no SSS there.
- The courses were not designed to teach us how to teach science.
- Not in Florida.
- It has been too many years ago.
- That was a long time ago & was not focused on SSS.
- Took biology 20 yrs ago.
- It was strictly theory.
- I took these courses in the early 70's.
- Business major
- Only took what was needed for elementary ed.
- I learned the concepts not how to teach those concepts to children.
- Textbook learning--boring & dull. I learned so much from the Discover Science method of teaching.
- My classes were 30 years ago.
- Not the same content as the SSS.
- In content area--not method.
- I graduated in Pennsylvania.
- College level material is not related to elem ed.
- I do not recall taking a science course in undergraduate school.
- College too vague in science criteria.
- They were science courses geared to everyone in general studies. They were not

- education geared science courses.
- There should be some physics.
- It's been so long ago since I got me degree. I don't know.
- Because I wasn't familiar with SSS.
- We were not familiar with SSS at the time.
- It was not a SSS curriculum.
- It was general science. I didn't receive any special training to use in my classroom.
- Min. interest, plus standards were less.
- It's been a long time. I don't remember.
- There are so many ranges to be taught & not enough time to learn & teach, especially in ESE settings.
- Not enough content taught. Also not enough methods. One course cannot cover it all!
- The standards were mentioned, but never a focus of the course.
- Because I took these classes as general classes, not as part of my education courses.
- Content did not parallel SSS.
- They taught me content but it was not useful info for teaching Kindergarten science. It's hard to break down high level science for K.
- I'm not sure. It has been many years and I'm uncertain of our science materials.
- Not geared to classroom teaching.
- Graduate education science classes were good.
- No, I would have liked to learn about science experiments you can do with Kindergarten.
- School doesn't know about SSS.
- There were no SSS at that time.
- Believe it or not there are several skills/concepts that I remember from elementary, jr & sr high school. So college did not help much as far as preparation.
- Most were theoretical in nature and didn't prepare students for teaching science.
- I did not answer because my undergraduate degree was so long ago, I really don't know.
- The science taught to teachers is general. It does not take into consideration the state they will be teaching in; plus it was over 15 years ago.
- They were not education courses.
- The college curriculum was not aligned to the SSS.
- Undergraduate was 30 years ago. There was one science class required--not even science for elem. All classes and in-service since.
- I have to learn the content of subjects in science as I go along. The courses I took gave general information and methods but not the information I need to answer/discover the questions asked in class!
- It was learning 'general' knowledge--which is not the same as 'teaching' science. Would love more hands-on in-service.
- Doesn't bring it down to a lower level and show manipulatives to use.
- There were not meant for teaching science. They were courses for nursing.
- I took physics not listed above and it taught nothing on how to teach students--just laws about physics.
- Didn't show how to apply for Elem Ed. children. Was content only.
- They were very general & though I gained some knowledge, I don't feel it was enough to teach.
- The science courses I took at the undergraduate level did not prepare me to teach science because the process of learning and exploring was not present.
- These classes were not geared towards teaching but more content specific classes for college students.
- I went to school in Pennsylvania.
- Did not have SSS.

- I took it in NJ 25 years ago.
- The SSS were not in effect--indirectly I received preparation but not directly addressing the SSS.
- I have the foundation knowledge but need additional strategies to meet the needs of students in the elementary classroom.
- SSS were not in effect when I took these courses.
- Long time ago--no such thing as standards.
- Really can't remember. Took them 20 years ago.
- In school in the 60's and 70's--very developmental & experimental approach. 'Feel good' philosophy taught/ 'anything goes'.
- I'm a speech/language pathologist.
- I didn't get my degree in Florida. We didn't know of these standards. As a teacher now in Florida I don't feel we are taught these standards either. We should have workshops to learn how to teach them.
- Basic science class.
- Methods have changed.
- Too long ago!
- Non-education courses.
- The county needs help--not the teachers!
- The background knowledge helps to enhance and create plans to teach more effectively.
- My undergrad is in psychology.
- I went to school in the 70's and don't remember a lot of my undergraduate work.
- SSS weren't established then.
- The biology course in college did not relate to 1st grade science objectives.
- It was advanced but gave me a basis to help understand--the courses didn't apply to the standards--too general.
- My degree was not in education.
- When in college you plan & teach for the perfect theoretical classroom. I haven't found this in the public schools.
- Not enough hands-on & in field experience.
- Needed more hands-on.
- Elementary science is different than college science.
- Had never heard of them.
- Taken at University of Mississippi '81-'83.
- These were college level core requirements.
- Did not cover content areas that we are expected to teach.
- School attendance before standards applied.
- Standards are ridiculous.
- I wasn't in the "Education Track".

Question 13 asked respondents to rate their preference for a list of compensated science in-service training alternatives and provided an open option for "other". The following is a list of the few suggestions that were offered:

Flexpoints.

Twice a week/once a month.

In-service days.

After school.

I do not want any in-service in teaching science. I want adequate texts & other materials to put to use what the standards state.

I do not believe in science in-service. I believe in sharing with other district teachers

during early release.  
Just do it on an in-service workday.  
Early release.  
In-service days  
Sub provided half day  
During school day; training days. Schedule more teacher work days during the year.  
Employ teachers for two weeks in the summer to solely attend in-service and paid at daily rate.  
As compensation I would like to receive monies towards my professional purchase of science materials.

Question 14 asked respondents for their recommendations for improving professional development opportunities in science. The following is a list of their specific comments.

- Hands-on.
- Show teachers that they can teach reading with science topics. Teachers don't have to lose instructional reading time on science.
- Stop FCAT! It's out of control and not letting us teach our students!
- In-service training during in-service days.
- Incorporate science with math with evaluations that meet requirement by state—especially for data required to fit in students' cums.
- More hands-on. More manipulatives. Field trips. Science project/context.
- Better books and state adopted basals.
- Hands-on workshops.
- Hands-on. Workshops. Lab work.
- Hands-on workshops--lab demonstrations.
- Present more in-service on Science that is related to SSS.
- To offer ideas/methods etc. at the Kindergarten or Primary level.
- Reduce amount needed to be taught at each grade level. Tell teachers exactly what they need to teach.
- Materials for ESE.
- Offer workshops at or close to the school with equipment provided.
- Proper science books. Longer school day; more than the 180/185 days of school. There is not enough time to teach. Science and Social Studies fall by the 'no time' to Teach these subjects. No business would be successful with this formula.
- Teachers are too pressured with basics and/or test taking preparedness for students. In general, science is not a priority in the year 2000 in Duval County FL.
- In-service geared for gr level science to continue.
- Pre-service for new textbooks materials etc.
- I would like to see a reading program developed so that science could be taught during Language Arts time. Then we would have enough time to teach science.
- Whatever is taught at the in-service should be practical for today's classrooms.
- Gear classes to non-science minded people. Separate intermediate & primary during in-service. Provide materials the teacher can take back and work with immediately—that are SSS stuff.
- Need new science book and hands-on furnished equipment.
- We need a new health/science book
- Workshops in which we actively participate in the activities & experiments we can do with our students. We also learn best by 'doing'!!!
- We need more age appropriate labs! Materials that are easy to gather. Labs that work—too many don't or material too \$\$.
- More workshops.
- Teach science process skills involved in science projects.
- Send teachers to learn science in a science department rather than through

- education—teacher training--programs.
- Time set aside to plan to implement new ideas
  - Teach ways to do science based on GLE's instead of text. The required test is based on the text and not the GLE's.
  - Work with local university to offer after school content/methods courses taught by a good science teacher for credit.
  - Resources/supplies. Curriculum with books/experiments that go with SSS. Training/workshops.
  - Provide us with hands-on materials & we'll make it work.
  - We need hands-on training that can be easily transferred to student lessons.
  - Hands-on--ideas--lots of materials & information.
  - Motivating, hands-on workshops such as aims -- or targeted to grade level
  - Give updated books to teachers.
  - We need to have more in-service and to awake the need for science.
  - In house training. Science labs with specimens. Human body/internal parts, mannequins, microscopes, vials, petri dishes.
  - Have grade level learning opportunities instead of multi grades so that the content you attend will be most beneficial and allow funds to cover all aspects of materials needed from books to hand-on materials.
  - Correlate the curriculum with SSS.
  - Get the politics out of education first. Then be sure competent personnel in key positions.
  - Have someone work with us in classrooms who can teach us to better utilize materials we have and if more is available--order appropriate materials. Ideally middle school students should have science lab time.
  - Keep an active science lab for students at attend once to twice a week.
  - More in-service.
  - Teachers in each grade level should get together during planning and slowly improve the curriculum.
  - Do away with them. They are not cost effective & do little for our students.
  - Workshops which utilize hands-on approach and teach us how to intertwine science into our other content areas. Workshops which focus on 'time management'.
  - Take away FCAT.
  - Science should be taught as a hands-on experience. Currently teachers are limited by lack of equipment, supplies and facilities. The best science teachers would still be hampered by these limitations.
  - For the elementary level science should be integrated with all subjects.
  - More lab equipment is needed. We could check it out from someone. My first graders would love it!
  - Offering more science related in-service.
  - More optional in-service on how to teach science. More materials--I personally don't have science books or manipulatives.
  - Be realistic about the SSS. With FCAT math reading & now science coming up there truly isn't enough time in the day to cover the material & genuinely teach it. Introduce—yes, teach & learn--no.
  - In-service training.
  - Provide early childhood workshops on Wednesday afternoons.
  - I would like a comprehensive science text, materials, program that address the SSS in a systematic and organized way. Presently I must assemble appropriate lessons from a variety of sources to teach SSS.
  - Hands-on workshops.
  - More teacher/student guided textbooks. More hands-on experiments. More equipment, lab microscopes, materials etc. A smaller number of students/class.
  - Hands-on experiences for children's level. Appropriate.
  - In-service training.
  - We got together as a grade level over the summer & developed our own science units

- based on what we would be teaching during the upcoming year.
- Material availability.
  - Hands-on workshop to better familiarizes teachers with new textbook.
  - Have districts introduce, teach and maintain across the levels an accurately based science program. Consistency is the key to success and high excellence. We'll be able to expect more from students.
  - Workshops with many hands-on activities.
  - More hands-on in-service approaches that incorporate SSS in science learning.
  - All day workshops--2 to 4 hours is not enough to get what you need from an in-service of this nature. Need to be geared towards appropriate grade levels.
  - Offer more.
  - More in-service/workshops on how to teach science.
  - Give me a textbook that has all the standards in it highlighted so I don't have to search for material.
  - Early release.
  - Training should correlate with SSS. Use in-service days & early release days.
  - A useful and current curriculum provided.
  - Complete kits of materials for each class. Sufficient instructional manuals, videos, etc for teachers. More in-service in other schools.
  - In-service monthly on current methods.
  - Updated textbooks--our text is from '86. Technology training on how to obtain scientific data & info. Teacher resources: hands-on manipulatives & experiments, etc to use in classrooms paralleling state standards.
  - Experiment driven course. It's easy to Xerox dittos but hard to come up with supplies and labs that perform observation experiments. Kits would be very helpful.
  - Great in-service training & more materials.
  - Make science more 'comfortable' for teachers--less threatening. Have materials organized and available. Have enough materials for all teachers not shared on grade level.
  - I am afraid we will not be given the materials or \$ necessary to have a hands-on science opportunity in the classroom.
  - Better workshops offered to all teachers.
  - Send teachers to more science workshops.
  - Develop lessons for in-service training for special area teachers.
  - More staff training geared to both the SSS and the teaching methods.
  - Reduce workload and give teachers more time to teach.
  - More time!!!
  - Hire a full time aide to run science--set it up--lab for Foss. Then teachers would come in every week & use the lab with students.
  - More courses should be offered targeting specific grade levels and modeling how successful lessons can be conveyed. Books & materials used should be the same as ones we use at our schools.
  - Provide in-service training and hands-on materials for teachers and students. Lengthen school day so time is available. Departmentalize grades--2 thru 5--so teachers have time to adequately prepare.
  - Providing qualified personnel to teach the courses. Providing materials needed to teach the lessons. Making training meaningful.
  - More hands-on opportunities and integrated curriculum.
  - In services available on grade level or primary/intermediate providing correlation to CISC/SSS.
  - More money for science lab.
  - Make workshops and materials available to all the teachers who would like to participate.
  - More kit-based hands-on instruction.
  - Realistic expectations for 'fitting' it all in.
  - Providing fun easy hands-on activities that take very little preparation.

- Dr X coming in & teaching in-service development as she stated she would be glad to do.
- In-service that gives ideas and lesson plans for science lessons that meet the SSS. . . deal with the specific strands of science in 1st grade and provide lesson plans.
- Hands-on approach--not seminar approach.
- There isn't any in-service offered on methods in science. Teachers need to know how to teach science with language arts and science so they don't feel it's a separate subject.
- Need science books & workbooks for lower grades.
- More workshops devoted to hands-on activities
- Unit themes that correlate with grade level standards.
- Breaking it down to K-2; 3-5.
- Careful study regarding what is appropriate to teach at an elementary level. We must teach children to read & write first.
- More of theme involvement in application of concepts/topics. Community resources made known.
- More training in grade level specific content areas for science instruction.
- College professors come to the school site to teach science along with the classroom teacher. Videotape successful science teaching. Use local people & showcase what really works.
- Make it applicable to real life situations—ie, talk about the environment in the Everglades not in a concrete building.
- I would like to see science made fun & motivating for younger students thereby reducing those barriers that are associated with the science curriculum.
- More funds for purchasing grade level science hands-on activities. Science workshops in the school.
- More courses needed and follow-up workshops.
- Correlate hands-on experiments with text related content.
- I would make plenty of in-services so that many teachers can attend.
- Science should be a hands-on experience. Many experiments take several days—sometimes weeks to complete therefore adequate time & accommodations for the scientific method should be allotted.
- At the college/university level--prepare education students better by having a more comprehensive science curriculum.
- More school site in-service training.
- Primary field trips. Primary simple science experiments. Conduct at least one per grading period.
- Hands-on workshops designed for specific age groups/grade levels.
- More exposure to what is actually required in SSS/FCAT to the lower grades. This way we have a better understanding of what is required of students in the upper grades.
- Provide teachers that have a fear of science a variety of simple experiments that provide great learning opportunities.
- I would recommend that more in-service training be given.
- Divide in-service training according to grade levels in nearby schools.
- Provide 2 per month after school 1 hr programs with stipend paid to teach specific courses that are shown to be weak areas in scientific knowledge.
- More time being new teacher.
- Implementing what is voted on in this survey.
- Specific standards-based in-service with designed--scripted--lesson plans per grade level.
- We need 'hands-on' experience during workshops.
- Offer a stipend for summer training.
- Variety of course offerings.
- Ridiculous--check your own accountability.
- Providing adequate materials will show the faculty the district's commitment to science and increase the desire for training on the new materials. We basically have nothing!
- I think it's a shame that all emphasis is placed on reading writing and arith. When all of



- the above skills could be easily incorporated into a decent science curriculum.
- Offer more elem. science training on professional development days.
  - We need equipment and supplies to teach science in our classrooms. Teachers have to spend a lot of their personal money to fund the science program. We also need a countywide science curriculum.
  - The county needs to adopt a science text/workbook for all grades and send us to training specifically for that book.
  - This state is putting too much emphasis on test scores. It has drastically changed the quality of how we teach all subjects. This is not a multiple choice world. Children learn hands-on. It's a hands-on world.
  - Provide in-service on how to use simple items for demo's and experiments. Discuss a simple lesson plan structure to teach science.
  - Hands-on activities to require 'little'--I mean 'little' prep time.
  - More in depth study written so they can be taught with less time. Too much information is given in adopted books that's not necessary.
  - More training more understanding of job of elem. school science teachers as connects to middle and high school.
  - Interesting science workshops and a stipend.
  - Help with SSS.
  - Incorporate ESE.
  - Have teachers trained fully prior to a new series coming out.
  - More in-service days for teachers.
  - I love the AIMS program. If these activities could be used to teach SSS benchmarks, it would be wonderful!
  - Have in-service specifically for science. Most cover reading or math. Science suffers in favor of FCAT practice.
  - Give teachers time to teach science the way we know how to!
  - Make it so the teacher can use the training in the classroom.

## Appendix C

### Statistical Results

Table 1: Districts and Schools Responding

| District     | # of Schools | # of Surveys | % of Total |
|--------------|--------------|--------------|------------|
| Brevard      | 2            | 34           | 6.1%       |
| Dade         | 6            | 107          | 19.3%      |
| DeSoto       | 2            | 29           | 5.2%       |
| Duval        | 4            | 67           | 12.1%      |
| Gulf         | 1            | 19           | 3.4%       |
| Hamilton     | 2            | 26           | 4.7%       |
| Hillsborough | 4            | 50           | 9.0%       |
| Lee          | 2            | 45           | 8.1%       |
| Martin       | 3            | 52           | 9.4%       |
| Orange       | 4            | 72           | 13.0%      |
| Santa Rosa   | 3            | 51           | 9.2%       |
| Sumter       | 1            | 2            | .4%        |
|              |              |              |            |
| Total        | 34           | 554          | 100%       |

**Table 2: Demographic Variables**

| <b>Item Content</b>       | <b>Options</b> | <b>Frequency</b> | <b>Percent</b> | <b>Valid %</b> |
|---------------------------|----------------|------------------|----------------|----------------|
| Years Teaching            | 0 - 1          | 24               | 4.3            | 4.4            |
|                           | 2 - 3          | 64               | 11.6           | 16.0           |
|                           | 4 -10          | 153              | 27.6           | 27.8           |
|                           | 11 +           | 310              | 56.0           | 56.3           |
|                           | (missing)      | 3                | .5             | --             |
| Years Teaching in Florida | 0 -1           | 31               | 5.6            | 5.8            |
|                           | 2 - 3          | 75               | 13.5           | 14.1           |
|                           | 4 -10          | 152              | 27.4           | 28.6           |
|                           | 11 +           | 273              | 49.3           | 51.4           |
|                           | (missing)      | 23               | 4.2            | --             |
| All Grade Levels Taught   | K              | 192              | 34.7           | --             |
|                           | 1              | 273              | 49.3           | --             |
|                           | 2              | 292              | 52.7           | --             |
|                           | 3              | 288              | 52.0           | --             |
|                           | 4              | 245              | 44.2           | --             |
|                           | 5              | 239              | 43.1           | --             |
|                           | Other          | 190              | 34.3           | --             |
| Grade Teaching Now        | K              | 74               | 13.4           | 14.9           |
|                           | 1              | 80               | 14.4           | 16.1           |
|                           | 2              | 89               | 16.1           | 17.9           |
|                           | 3              | 66               | 11.9           | 13.3           |
|                           | 4              | 70               | 12.6           | 14.1           |
|                           | 5              | 79               | 14.3           | 15.9           |
|                           | Other          | 39               | 7.0            | 7.8            |
|                           | (missing)      | 57               | 10.3           | --             |

**Table 2: Demographic Variables (continued)**

| <b>Item Content</b> | <b>Options</b>     | <b>Frequency</b> | <b>Percent</b> | <b>Valid %</b> |
|---------------------|--------------------|------------------|----------------|----------------|
| Undergrad in FI?    | Yes                | 334              | 60.3           | --             |
|                     | No                 | 220              | 39.7           | --             |
| Degree Area         | Education          | 450              | 81.2           | 82.1           |
|                     | Math/Sci/Tech      | 12               | 2.2            | 2.2            |
|                     | Other              | 65               | 11.7           | 11.9           |
|                     | Ed+Math/Sci/Tch    | 2                | .4             | .4             |
|                     | Ed+Other           | 15               | 2.7            | 2.7            |
|                     | Math/Sci/Tch+Other | 2                | .4             | .4             |
|                     | All Three          | 2                | .4             | .4             |
|                     | (missing)          | 6                | 1.1            | --             |

**Table 3: Survey Items**

| <b>Item Content</b>             | <b>Options</b>       | <b>Frequency</b> | <b>Percent</b> | <b>Valid %</b> |
|---------------------------------|----------------------|------------------|----------------|----------------|
| Science Teaching Hours per Week | None                 | 30               | 5.4            | --             |
|                                 | Less Than One        | 90               | 16.2           | --             |
|                                 | One to Three         | 351              | 63.4           | --             |
|                                 | More than Three      | 83               | 15.0           | --             |
| Teaching Time Determined by:    | District Policy      | 115              | 20.8           | 21.8           |
|                                 | School Policy        | 70               | 12.6           | 13.3           |
|                                 | Personal Preference  | 148              | 26.7           | 28.1           |
|                                 | Dist & School        | 28               | 6.9            | 7.2            |
|                                 | Dist & Personal Pref | 45               | 14.4           | 16.1           |
|                                 | Sch & Personal Pref  | 24               | 4.3            | 4.6            |
|                                 | All Three            | 87               | 15.7           | 16.5           |
| (missing)                       | 27                   | 4.9              | --             |                |

**Table 3: Survey Items (continued)**

| <b>Item Content</b>  | <b>Options</b>       | <b>Frequency</b> | <b>Percent</b> | <b>Valid %</b> |
|--|----------------------|------------------|----------------|----------------|
| (The following two questions were supposed to be answered ONLY by those respondents with two years or more teaching experience.) |                      |                  |                |                |
| Change in Time Spent, in General   | Increased            | 165              | 29.8           | --             |
|  | Decreased            | 181              | 32.7           | --             |
|  | No Change + Miss     | 208              | 37.5           | --             |
| As a result of FCAT  | Increased            | 121              | 21.8           | --             |
|  | Decreased            | 161              | 29.1           | --             |
|  | No Change + Miss     | 272              | 49.1           | --             |
| (All respondents were eligible to answer the remaining questions.)   |                      |                  |                |                |
| Science Teaching   | More                 | 253              | 45.7           | --             |
|  | Less                 | 0                | 0              | --             |
|  | About the Same       | 301              | 54.3           | --             |
| Science Teaching Confidence  | Very Confident       | 178              | 32.1           | 33.0           |
|  | Usually Confident    | 335              | 60.5           | 62.2           |
|  | Uncomfortable        | 26               | 4.7            | 4.8            |
|  | (missing)            | 15               | 2.7            | --             |
| Areas of Comfort   | Physical Science     | 11               | 2.0            | --             |
|  | Earth/Space Sci      | 31               | 5.6            | --             |
|  | Life Science         | 75               | 13.5           | --             |
|  | Phy+Earth/Space      | 16               | 2.9            | --             |
|  | Phy+Life Science     | 35               | 6.3            | --             |
|  | Earth/Space+Life     | 130              | 23.5           | --             |
|  | All Three            | 225              | 40.6           | --             |
|  | None or Missing      | 31               | 5.6            | --             |
| In-Service Hours: Science Content  | None w/in Last 5 Yrs | 281              | 50.7           | --             |
|  | 2 – 5 Hrs            | 173              | 31.2           | --             |
|  | 6 – 15               | 66               | 11.9           | --             |
|  | 16 +                 | 34               | 6.1            | --             |
| In-Service Hours: Science Methods  | None w/in Last 5 Yrs | 321              | 57.9           | --             |
|  | 2 – 5 Hrs            | 147              | 26.5           | --             |
|  | 6 – 15               | 59               | 10.6           | --             |
|  | 16 +                 | 27               | 4.9            | --             |

**Table 3: Survey Items (continued)**

| <b>Item Content</b>                          | <b>Options</b> | <b>Frequency</b> | <b>Percent</b> | <b>Valid %</b> |
|--|----------------|------------------|----------------|----------------|
| Number of Courses Taken as an Undergraduate: |                |                  |                |                |
| Astronomy                                    | None           | 400              | 72.2           | --             |
|  | One            | 128              | 23.1           | --             |
|  | Two            | 17               | 3.1            | --             |
|  | Three          | 7                | 1.3            |                |
|  | Four           | 0                | 0              | --             |
|  | Five           | 2                | .4             | --             |
|  |                |                  |                |                |
| Biology                                      | None           | 128              | 23.1           | --             |
|  | One            | 263              | 47.5           | --             |
|  | Two            | 116              | 20.9           | --             |
|  | Three          | 27               | 4.9            |                |
|  | Four           | 8                | 1.4            | --             |
|  | Five           | 12               | 2.2            | --             |
|  |                |                  |                |                |
| Chemistry                                    | None           | 294              | 53.1           | --             |
|  | One            | 184              | 33.2           | --             |
|  | Two            | 52               | 9.4            | --             |
|  | Three          | 11               | 2.0            |                |
|  | Four           | 8                | 1.4            | --             |
|  | Five           | 5                | .9             | --             |
|  |                |                  |                |                |
| Earth Sci/Geology                            | None           | 233              | 42.1           | --             |
|  | One            | 234              | 42.2           | --             |
|  | Two            | 64               | 11.6           | --             |
|  | Three          | 17               | 3.1            |                |
|  | Four           | 4                | .7             | --             |
|  | Five           | 2                | .4             | --             |
|  |                |                  |                |                |
| Marine Science                               | None           | 435              | 78.5           | --             |
|  | One            | 82               | 14.8           | --             |
|  | Two            | 20               | 3.6            | --             |
|  | Three          | 12               | 2.2            |                |
|  | Four           | 2                | .4             | --             |
|  | Five           | 3                | .5             | --             |
|  |                |                  |                |                |
| Other Courses                                | None           | 216              | 39.0           | --             |
|  | One            | 187              | 33.8           | --             |
|  | Two            | 76               | 13.7           | --             |
|  | Three          | 43               | 7.8            |                |
|  | Four           | 19               | 3.4            | --             |
|  | Five           | 13               | 2.3            | --             |

**Table 3: Survey Items (continued)**

| <b>Item Content</b>                                | <b>Options</b>    | <b>Frequency</b> | <b>Percent</b> | <b>Valid %</b> |
|--|-------------------|------------------|----------------|----------------|
| Did Courses Pre-prepare for Sci SSS?               | Yes               | 206              | 37.2           | --             |
|  | No                | 348              | 62.8           | --             |
| Rank the Following Types of Compensated In-Service |                   |                  |                |                |
| SSS Content  | 1 (Most Helpful)  | 159              | 28.7           | 37.1           |
|  | 2                 | 135              | 24.4           | 31.5           |
|  | 3                 | 98               | 17.7           | 22.9           |
|  | 4 (Least Helpful) | 36               | 6.5            | 8.4            |
|  | (missing)         | 126              | 22.7           | --             |
| Teaching Methods                                   | 1 (Most Helpful)  | 145              | 26.2           | 33.8           |
|  | 2                 | 168              | 30.3           | 39.2           |
|  | 3                 | 87               | 15.7           | 20.3           |
|  | 4 (Least Helpful) | 29               | 5.2            | 6.8            |
|  | (missing)         | 125              | 22.6           | --             |
| Combination  | 1 (Most Helpful)  | 258              | 46.6           | 57.8           |
|  | 2                 | 103              | 18.6           | 23.1           |
|  | 3                 | 51               | 9.2            | 11.4           |
|  | 4 (Least Helpful) | 34               | 6.1            | 7.6            |
|  | (missing)         | 108              | 19.5           | --             |
| In-Service Delivery Preference                     | Summer            | 104              | 18.8           | 20.2           |
|  | School Year       | 217              | 39.2           | 42.1           |
|  | Combination       | 194              | 35.0           | 37.7           |
|  | (missing)         | 39               | 7.0            | --             |

**Table 3: Survey Items (continued)**

| Item Content  | Options            | Frequency | Percent | Valid % |
|---|--------------------|-----------|---------|---------|
| Rate the Following Types of Compensated for In-Service Training |                    |           |         |         |
| Summer Employment   | 1 (HighPreference) | 126       | 22.7    | 30.7    |
|   | 2                  | 60        | 10.8    | 14.6    |
|   | 3                  | 77        | 13.9    | 18.7    |
|   | 4 (Least Helpful)  | 148       | 26.7    | 36.0    |
|   | (missing)          | 143       | 25.8    | --      |
| Weekend Employment  | 1 (HighPreference) | 50        | 9.0     | 12.3    |
|   | 2                  | 35        | 6.3     | 8.6     |
|   | 3                  | 52        | 9.4     | 12.8    |
|   | 4 (Least Helpful)  | 269       | 48.6    | 66.3    |
|   | (missing)          | 148       | 26.7    | --      |
| Stipend   | 1 (HighPreference) | 338       | 61.0    | 70.1    |
|   | 2                  | 78        | 14.1    | 16.2    |
|   | 3                  | 34        | 6.1     | 7.1     |
|   | 4 (Least Helpful)  | 32        | 5.8     | 6.6     |
|   | (missing)          | 72        | 13.0    | --      |
| Release Time  | 1 (HighPreference) | 143       | 25.8    | 45.0    |
|   | 2                  | 84        | 15.2    | 26.4    |
|   | 3                  | 44        | 7.9     | 13.8    |
|   | 4 (Least Helpful)  | 47        | 8.5     | 14.8    |
|   | (missing)          | 236       | 42.6    | --      |