

2008–2009 Summaries

Challenge Grant for the Gifted

Collaborative Curriculum Projects

This is one of many publications available through the Florida Department of Education designed to assist school districts, state agencies that support educational programs, and parents in the provision of special programs for exceptional students. For additional information on this publication, or for a list of available publications, contact:

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Introduction

The Challenge Grant Program for the Gifted was established in 1981 to encourage public schools and districts to implement exemplary programs that appropriately challenge gifted students. Projects funded under this program are designed to improve the quality of existing programs, initiate a model or demonstration program, or expand student participation in existing programs. Project activities support the improvement and further development of provisions for enhanced and more rigorous curriculum and services for gifted students in a school, district, or group of districts.

Since 1981, funds for the Challenge Grant have been awarded on a competitive basis for local district projects that address identified priority areas. The purpose of this funding project was to support innovation to meet the instructional needs of gifted students.

The Sunshine State Standards identify complex classroom objectives for all students that likely require a redesign of instruction to ensure that the needs of the gifted learner are being met. Furthermore, gifted students often have deeper interest in a topic that may go beyond traditional classroom instruction or resources.

The Collaborative Curriculum Projects are intended to enhance the academic achievement of gifted students through the innovative redesign of instruction and collaboration. Collaboration is defined by the Merriam Webster On-line Dictionary as working jointly with others or together in an intellectual endeavor. This requires intellectual engagement beyond audience participation. It is expected that this collaboration will enhance instruction and thus the academic performance of the students by introducing new information, skills, talents, and perspectives to the instruction. It is expected that collaboration will go beyond traditional classroom methodologies such as pairing gifted students for research projects.

Collaboration may be coordinated with

- general education classrooms
- classrooms for students with disabilities
- other schools or school districts
- professionals in a particular field who are willing to become mentors and share expertise
- colleges or universities
- museums
- laboratories

These collaborative projects may involve face-to-face interaction or coordination through the use of technology such as the internet.

Funds are provided primarily for curriculum development, instructional planning, and the implementation of redesigned curriculum. However, funds may also be used for professional development (including release time for planning or training in an innovative or exemplary program) and resources not currently provided by the school district that are necessary to meet instructional objectives.

Grants of up to \$10,000 were awarded for nine projects for the 2008-09 school year. Participation in this project is open to all school districts in the State of Florida. Funding is competitive and based on the recommendations of a review team.

The purposes of this publication are to provide information to Florida school district administrators and teachers about the grant opportunity, and share information about the grant projects that have been funded in the past.

Information about each project was submitted by the project director and is presented in the following format:

I. Project Rationale and Goals

Describe the need for the program

II. Project Implementation

What was taught? How was it taught? What learning experiences were provided? Clarify how this was a redesign on instruction.

A. Project Activities

B. Curriculum Content Focus

C. Sunshine State Standards Addressed

D. Instructional Methodology Used

E. Nature of the Collaboration

Describe the collaborative activities and their purpose and a roster of participants and personnel involved. Clearly describe the student population in terms of how many met gifted eligibility and at what grade levels. How many students took part? Describe the role of other participants.

III. Evaluation

How were students assessed? What were the results? What was the impact on participants?

How was the project evaluated? What were the results? Identify why or why not outcomes were achieved. Describe any continuation plans.

A. Assessment of Student Performance

B. Project Evaluation

IV. Dissemination

How was information about the project and the results disseminated? What was the audience?

V. Budget

Specify items in the program budget and how it was used.

VI. Contact Information

For further information about the Collaborative Curriculum Challenge Grants Projects, please contact the Florida Department of Education, Bureau of Curriculum and Instruction, 424 Turlington Building, 325 West Gaines Street, Tallahassee, Florida 32399, Phone: (850) 245-0423, Fax (850) 245-0826.

**Collier County School District
Manatee Middle School
Project Title: *Rigor Plus***

I. Project Rationale and Goals

A. Project Rationale

The intent of this project is to prepare Collier County Public Schools (CCPS) Manatee Middle School (MMS) students to effectively engage, communicate, and understand global issues while facilitating important skills such as critical thinking, problem solving, creativity, innovations, collaboration, and communication.

B. Project Goals

Students will demonstrate improved achievement in

- Expository writing
- Research procedures
- Exploration of critical, real-world issues
- Writing/speaking in a manner which establishes a persuasive tone
- Utilization of technology and multi-media
- Knowledge of positive and negative effects of human action on Earth's systems
- Identification of relationships between two sets of numbers in real-world situations
- Ability to critically examine the complexity of knowledge

The specific goals, objectives, and outcomes for *Rigor Plus* are listed below in Table 1.

Table 1 Alignment: Goals, Objectives, & Outcomes			
Project Alignment	Goal	Objectives	Outcomes Achieved
1. A.	Writing/ Holistic District Rubric	The group average writing proficiency will increase at least one (1) level as measured utilizing the six (6) level district holistic writing rubric.	grade 6 - 73% grade 7 - 74% grade 8 - 77% average 75%
1.B.	Writing/ Holistic, Letter Grade	80% of students will improve one (1) <u>letter grade</u> or greater in their traditional Language Arts class grade from the beginning of the school year (first semester mid-term grades) to the end of the school year.	grade 6- 81% grade 7- 79% grade 8 - 78%, average 79% 21% maintained letter grades of A or B.
1.C.	Content Focus	50% of the students will achieve a level four (4) on the Content Focus component of the six (6) level district writing rubric.	grade 6- 92% grade 7- 82% grade 8- 95%
1.D.	Organization	50% of the students will achieve a level four (4) on the Organization component of the six (6) level district writing rubric.	grade 6- 82% grade 7 - 90% grade 8- 96%

1.E.	Word Choice/ Vocabulary	50% of the students will achieve a level four (4) on the Word Choice/ Vocabulary component of the six (6) level district writing rubric.	grade 6- 72% grade 7- 84% grade 8- 90%
1.F	Conventions	50% of the students will achieve a level four (4) on the Conventions component of the six (6) level district writing rubric.	grade 6- 76% grade 7- 88% grade 8- 92%
2.A.	Informed decision-making: select and organize information to conduct research.	50% of students will improve achievement one (1) level or greater on the (4 level rubric) in their informed decision-making - select, collect, and organize for systematic research.	grade 6- 68% grade 7- 88% grade 8- 98%
2.B.	Informed decision-making: select, collect, and organize information to conduct research	80% of students will self-report one (1) level or greater increase (4 level rubric) in their ability to select, collect, and organize information to conduct research.	grade 6- 82% grade 7- 98% grade 8- 100%
2.C.	Cite sources from print and media texts	50% of students will achieve a minimum of one (1) level increase (4 level rubric) in their ability to correctly cite sources in print and media texts.	grade 6- 68% grade 7- 82% grade 8- 94%
2.D.	Cite sources from print and media texts	80% of students will <u>self-report</u> one (1) level or greater increase (4 level rubric) in their ability to utilize print and media sources.	grade 6- 92% grade 7 - 98% grade 8- 100%
3.A.	Knowledge and articulation of real-world issues	50% of students will achieve a minimum of one (1) level increase (4 level rubric) in knowledge and articulation of real-world issues.	grade 6- 92% grade 7- 98% grade 8- 100%
3.B.	Knowledge and articulation of real-world issues	80% of students will <u>self-report</u> one (1) level or greater increase (4 level rubric) in their knowledge of critical real-world issues and their ability to articulate/ debate those critical issues.	grade 6- 92% grade 7- 98% grade 8- 100%
4.A.	Ability to speak and write in a persuasive manner	50% of students will demonstrate one (1) level increase (4 level rubric) in their ability to write and speak in a persuasive manner.	grade 6-74% grade 7- 82% grade 8- 90%
5.A.	Ability to utilize technology and multimedia	50% of students will demonstrate one (1) level improvement (4 level rubric) in their ability to utilize technology and multi-media.	grade 6- 84% grade 7- 92% grade 8- 100%

6.A.	Knowledge of Human Action on Earth's Systems	50% of students will demonstrate a minimum of one (1) level increase (4 level rubric) in their knowledge of the consequences of Human action on Earth's systems.	grade 6- 84% grade 7- 92% grade 8- 100%
6.B.	Knowledge of Human Action on Earth's Systems	80% of students will <u>self-report</u> one (1) level or greater increase (4 level rubric) in their knowledge of human action on Earth's systems.	grade 6- 100% grade 7- 100% grade 8- 100%
7.A.	Sets of related numbers in real-world context.	50% of students will demonstrate one (1) level improvement (4 level rubric) in their ability to utilize sets of numbers to create tables, charts, and graphs.	grade 6- 74% grade 7- 82% grade 8- 90%
7.B	Sets of related numbers in real-world context.	80% of students will self-report one (1) level or greater increase (4 level rubric) in their ability to utilize sets of related numbers in real-world context.	grade 6- 100% grade 7- 100% grade 8- 100%
8.A.	Ability to create, adapt, and assess multi-faceted questions	100% of students will demonstrate evidence of skills to create, adapt, and assess multi-faceted questions.	grade 6- 100% grade 7- 100% grade 8- 100%
8.B.	Research and exploration of multiple fields	100% of students will demonstrate evidence of skills in conducting research and exploration of multiple fields.	grade 6- 100% grade 7- 100% grade 8- 100%
8.C.	Critical Thinking Skills	50% of the students will achieve a level four (4) on the Critical Thinking Skills component of the six (6) level district writing rubric.	grade 6- 100% grade 7- 100% grade 8- 100%
8.D.	Authentic products and performances	100% of students will demonstrate evidence of their ability to develop and deliver authentic products/performances.	grade 6- 100% grade 7- 100% grade 8- 100%

II. Project Implementation

A. Project Activities/ Deliverables

1. Brochure: A brochure presenting the overview (goals, general objectives, end products, sponsorship, etc.) of *Rigor Plus* was developed and disseminated to parents, MMS staff, school-level administration, and district-level administration: directors and coordinators. The brochure served as the official announcement and "kick-off" of *Rigor Plus*. It was disseminated on September 9, 2009.

The Brochure met the standards in the following manner:

- Readability appropriate for audience
- Appropriately organized
- Appropriate for duplication

- Content complete and accurate
- Attractive and user friendly
- Appropriate for audience
- Grammatically correct
- Peer review conducted
- Includes copyright and funding information
- Reviewed by district Communications Committee
- Sufficient copies provided
- Translated into languages spoken by parents

2, 3, 4. Curriculum, Lessons Plans and Instructional Materials

The gifted specialist developed numerous documents through collaboration with the media specialist and the gifted teaching team to deliver direct instruction and modeling to successfully implement the curriculum, lessons plans, and instructional materials necessary.

Rigor Plus Schedule of Instruction: See Tables 2-6 below.

(1) PREPARATION & BUILDING THE FOUNDATION: Introduction to critical, real-world issues through small group discussions and brainstorming. See Table 2 below.

Table 2			
Timeline and Lesson Focus	Strategies and Sunshine State Standards Utilized	Materials List	Outcomes
August 21 and 28, 2008: What do we know? versus What do we believe?	<ul style="list-style-type: none"> • Pre/Post assessment • Integrating Technology • Active & Collaborative Learning LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.6.4.1	<ul style="list-style-type: none"> • Dictionary.com • Knowledge vs. Belief chart • United Streaming Pollution Video • Power Point • Pre/Post assessment 	Pre-assessment grade 6: 81% grade 7: 85% grade 8: 87% Post-assessment grade 6: 94% grade 7: 94% grade 8: 96%
September 6, 2008 & September 13, 2008: Why do we believe our ideas? Factual beliefs versus emotional beliefs	<ul style="list-style-type: none"> • Integrating Technology • Discussion format LA.8.6.3. LA.8.6.3.3, LA.8.5.2.2, LA.8.5.2.3, LA.8.1.6.9	<ul style="list-style-type: none"> • Power Point • “Origination of Beliefs” chart • Reflection Sheet 	Informal assessment and observations of students was conducted to guide the discussion regarding their understanding of <i>Beliefs coming from learned facts and beliefs coming from emotions.</i>
September 20 and 27, 2008: How do we verify what we believe?	<ul style="list-style-type: none"> • Integrating Technology • Active & collaborative learning LA.8.6.3.3, LA.8.5.2.2, LA.8.1.6.9	<ul style="list-style-type: none"> • Power Point • “School, Home, and Community Resources” chart 	Informal assessment and observations of students conducted to guide discussion regarding their understanding of a

			variety of resources
October 4 & 11, 2008: Media Specialist presentation and Media Resource Scavenger Hunt	Pre/Post assessment Integrating Technology Active & Collaborative Learning LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.6.4.1, LA.8.2.2.4	Destiny Power Point Pre/Post assessment	Pre-assessment of library resources grade 6: 74% grade 7: 78% grade 8: 77% Post-assessment of library resources grade 6: 91% grade 7: 94% grade 8: 95%
October 18, 2008: Laureate students visit to present the research model and expectations	<ul style="list-style-type: none"> Integrating Technology Discussion format LA.8.6.4.1	<ul style="list-style-type: none"> Power Point Laureate brochure 	Informal assessment and observations of students conducted to guide discussion regarding understanding of Rigor Plus expectations and future participation opportunities in the Laureate Program
October 25 & November 1, 2008: Let's explore topics! Selection of sample topics for debate	<ul style="list-style-type: none"> Integrating Technology Active Learning LA.8.6.2.1, LA.8.6.2.2, LA.8.6.3.2, LA.8.6.3.3, LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9	<ul style="list-style-type: none"> Destiny SIRS Knowledge Source Topic Selection Sheet 	Informal assessment and observations of students conducted to guide students through exploring topics and issues within the topics
November 8-December 20, 2008 Debate Teams: Effects of Medical Testing on Animals or Alternative Energy Sources in replacement of Fossil Fuel Usage	<ul style="list-style-type: none"> Integrating Technology Active & collaborative learning LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.2.2.1, LA.8.2.2.2, LA.8.2.2.3, LA.8.2.2.4, LA.8.2.2.5, LA.8.5.2.1, LA.8.6.2.1	<ul style="list-style-type: none"> Destiny SIRS Knowledge Source Two-column note taking Post assessment 	Student Self assessment grade 6: 84% grade 7: 89% grade 8: 87% Teacher assessment of students grade 6: 93% grade 7: 95% grade 8: 97%

(2) CHOOSING A TOPIC SUITABLE FOR THE LEARNER: How to choose a topic and narrow it down to form a thesis statement. See Table 3 below.

Table 3			
Timeline and Lesson Focus	Strategies and Sunshine State Standards Utilized	Materials List	Outcomes
January 10, 2009: Community experts visit to present a variety of topics in small group settings	Discussion format LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.6.4.1	<ul style="list-style-type: none"> Multi media presentation formats Handouts 	Information discussion and teacher /presenter observation of students
January 17, 2009: Choose formal research topic and narrow topic into subcategories	<ul style="list-style-type: none"> Discussion format Integrating technology Independent learning LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.2.2.1, LA.8.2.2.2, LA.8.2.2.3, LA.8.2.2.4, LA.8.2.2.5, LA.8.3.1.1, LA.8.6.4.1	<ul style="list-style-type: none"> Topic narrowing sheet SIRS Knowledge Source Destiny 	Topic narrowing sheet grade 6: 95% grade 7: 96% grade 8: 98%
January 24, 2009: Creating a thesis statement	<ul style="list-style-type: none"> Lecture Integrating technology Collaborative learning Independent learning LA.8.1.6.5, LA.8.2.2.2	<ul style="list-style-type: none"> SIRS Knowledge Source Thesis Sheet 	Thesis Accuracy grade 6: 89% grade 7: 94% grade 8: 97%
January 31, 2009: Understanding prior knowledge and how it relates to the topic	<ul style="list-style-type: none"> Integrating technology Discussion format LA.8.6.3.2, LA.8.6.3.3, LA.8.5.2.2, LA.8.5.2.3, LA.8.1.6.9	<ul style="list-style-type: none"> PowerPoint “Origination of Beliefs” chart Reflection Sheet 	Informal assessment and observations of students conducted to guide discussion regarding understanding of individual topics.

(3). WHERE DO I BEGIN TO EXPLORE? Focus on the task: How to research and find information relating to the topic. See Table 4 below.

Table 4			
Timeline and Lesson Focus	Strategies and Sunshine State Standards Utilized	Materials List	Outcomes
February 7, 2009: Discovering resources for	<ul style="list-style-type: none"> Pre/Post assessment Integrating technology Active & collaborative learning 	<ul style="list-style-type: none"> Destiny PowerPoint Pre/Post assessment 	Pre-assessment of resources grade 6: 74% grade 7: 78%

individual student topics	LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.6.4.1, LA.8.2.2.4		grade 8: 77% Post-assessment of resources grade 6: 91% grade 7: 94% grade 8: 95%
February 14, 2009: Taking notes and organizing information	<ul style="list-style-type: none"> Integrating technology Collaborative learning LA.8.3.1.1, LA.8.3.1.2, LA.8.3.1.3, LA.8.3.2.1	<ul style="list-style-type: none"> CCPS Study Skills On-line Note Taking Resources 	Note taking grade 6: 100% grade 7: 100% grade 8: 100%
February 21, 2009: How to cite content and data from articles, websites, films, magazines, etc.	<ul style="list-style-type: none"> Integrating technology Active learning LA.8.3.5.2	<ul style="list-style-type: none"> MLA Flip Chart SIRS Knowledge Source 	MLA Flip Chart grade 6: 100% grade 7: 100% grade 8: 100%
February 28-March 27, 2008: Creating citation cards and bibliography	<ul style="list-style-type: none"> Integrating technology Active learning Independent learning LA.8.1.6.1, LA.8.1.6.2, LA.8.1.6.3, LA.8.1.6.5, LA.8.1.6.9, LA.8.6.4.1	<ul style="list-style-type: none"> SIRS Knowledge Source Citation Card Format Sheet Bibliography chart 	Completion of 5 citation cards (minimum) grade 6: 100% grade 7: 100% grade 8: 100% Completion of 5 Citations (minimum) grade 6: 100% grade 7: 100% grade 8: 100%

(4) **RESEARCH:** Collecting information relevant to topic and thesis statement. See Table 5 below.

Table 5			
Timeline and Lesson Focus	Strategies and Sunshine State Standards Utilized	Materials List	Outcomes
April 10-April 24, 2009: Documentation and presentation of scientific data, charts, and tables in written product	<ul style="list-style-type: none"> Discussion format Independent learning Active & collaborative learning LA.8.6.1.1, LA.8.6.1.2, LA.8.6.1.3	<ul style="list-style-type: none"> Rigor Plus Papers Computers Media and Internet Resources Excel 	Presentation of data grade 6: 86% grade 7: 92% grade 8: 95%

(5). THE FINAL PRODUCT: Organization and presentation of information. See table 6 below.

Timeline and Lesson Focus	Strategies and Sunshine State Standards Utilized	Materials List	Outcomes
<p>May 1-May 22, 2009</p> <p>Writing/editing of the Rigor Plus papers</p>	<ul style="list-style-type: none"> • Collaborative learning • Independent learning <p>LA.8.3.2.2, LA.8.3.2.3, LA.8.3.3.1, LA.8.3.3.2, LA.8.3.3.3, LA.8.3.3.4, LA.8.3.4.1, LA.8.3.4.2, LA.8.3.4.3, LA.8.3.4.4, LA.8.3.4.5, LA.8.3.5.1, LA.8.3.5.2, LA.8.3.5.3, LA.8.4.2.2, LA.8.4.2.3, LA.8.4.3.1, LA.8.4.3.2</p>	<ul style="list-style-type: none"> • <i>Rigor Plus</i> papers • Computers • Media and internet resources • Excel • 6-point rubric 	<p>Self editing and revision of paper</p> <p>grade 6: 91%</p> <p>grade 7: 93%</p> <p>grade 8: 96%</p>
<p>May 26-28, 2009</p> <p>Oral presentation using multi-media, charts, tables, and persuasive techniques</p>	<ul style="list-style-type: none"> • Oral presentation <p>LA 8.5.2.1, LA.8.5.2.2, LA.8.5.2.3, LA.8.5.2.4, LA.8.5.2.5, LA.8.6.1.1, LA.8.6.2.1, LA.8.6.2.2, LA.8.6.2.3, LA.8.6.2.4, LA.8.6.3.2, LA.8.6.3.3, LA.8.6.4.1, LA.8.6.4.2</p>	<ul style="list-style-type: none"> • Presentation cards • PowerPoint • Presentation boards 	<p>Peer evaluation</p> <p>grade 6: 94%</p> <p>grade 7: 91%</p> <p>grade 8: 90%</p> <p>Teacher evaluation</p> <p>grade 6: 95%</p> <p>grade 7: 96%</p> <p>grade 8: 96%</p>

C. Sunshine State Standards Addressed

Language Arts

- LA.8.1.6.1 use new vocabulary that is introduced and taught directly
- LA.8.1.6.2 listen to, read, and discuss familiar and conceptually challenging text
- LA.8.1.6.3 use context clues to determine meanings of unfamiliar words
- LA.8.1.6.5 relate new vocabulary to familiar words
- LA.8.1.6.9 determine the correct meaning of words with multiple meanings in context
- LA.8.2.2 Nonfiction Standard: identifies, analyzes, and applies knowledge of the elements of a variety of nonfiction, informational, and expository texts to demonstrate an understanding of the information presented
- LA.8.3.1 Prewriting Standard: will use prewriting strategies to generate ideas and formulate a plan
- LA.8.3.2 Drafting Standard: will write a draft appropriate to the topic, audience, and purpose
- LA.8.3.3 Revising Standard: will revise and refine the draft for clarity and effectiveness
- LA.8.3.4 Editing for Language Conventions Standard: will edit and correct the draft for standard language conventions
- LA.8.3.5 Publishing Standard: will write a final product for the intended audience
- LA.8.4.2.2 record information (e.g., summaries, procedures, instructions, experiments, rubrics, how-to manuals, assembly instructions);
- LA.8.4.2.3 write specialized informational/expository essays (e.g., process, description,

	explanation, comparison/contrast, problem/solution) that include a thesis statement, supporting details, an organizational structure particular to its type, and introductory, body, and concluding paragraphs
LA.8.4.3	Persuasive Standard: develops and demonstrates persuasive writing that is used for the purpose of influencing the reader
LA.8.5.2	Listening and Speaking Standard: effectively applies listening and speaking strategies
LA.8.6.1	Informational Text Standard: comprehends the wide array of informational text that is part our day to day experiences
LA.8.6.2	Research Process Standard: uses a systematic process for the collection, processing, and presentation of information
LA.8.6.3.2	demonstrate the ability to select and ethically use print and nonprint media appropriate for the purpose, occasion, and audience to develop into a formal presentation
LA.8.6.3.3	distinguish between propaganda and ethical reasoning strategies in print and nonprint media
LA.8.6.4	Technology Standard: develops the essential technology skills for using and understanding conventional and current tools, materials and processes

Florida Frameworks for Gifted implemented:

- **Multifaceted questions:** Teachers encouraged students to explore critical questions and issues which they will face in their adulthood. Teachers learned to facilitate more and lecture less as students became more independent in their pursuit of answers.
- **Research/exploration:** Teachers delivered direct instruction re how to conduct research. District high school students presented their experience in conducting research to enhance motivation and interest among *Rigor Plus* student. Teachers allowed for more collaboration and interest based, active learning among students rather than the previously used lecture style of teaching.
- **Authentic products/ performances:** Not only did teachers stress the authenticity of the product, but gifted district high school students gave credibility to the process of learning through research. Lessons on note-taking, paraphrasing, summarizing, and citing author words properly were embedded in the Language Arts curriculum to support *Rigor Plus*.
- **Creative/critical thinking:** Initially teachers modeled debate pros/cons of critical real-world issues. Teachers introduced students to new concepts for exploration while links and connections were emphasized. Students learned that the issues they were exploring have challenged other thinkers, and these issues will continue to be challenges for the world community in the future. Students were supported toward independence.
- **Leadership:** Through whole group and small group discussions and collaborations, each individual student was encouraged to lead the conversation, to analyze, synthesize, and provide a model for others to emulate. Students also experienced leadership roles during debate sessions.
- **Participatory role:** Students learned from one another, and they challenged one another in their thinking. They debated ideas and exposed surface thinking to replace it with a depth of knowledge. Students with similar topics were encouraged to explore their topics through discussion. Students with opposing views learned to debate, not argue.
- **Critical examination of the complexity of knowledge:** As students continued to research, they discovered the complexity of knowledge. They learned that answers to real-world critical issues are rarely simple, that great minds have wrestled with the same topics they were exploring. As the school year progressed, students had time to contemplate their views and refine their thinking. They were given time for reflection and prediction making. While

Rigor Plus promoted the learning of many skills, it empowered students to become independent learners, pursuing an understanding of critical issues which will face them in adulthood. **D. Instructional Methodology Used**

Prior to *Rigor Plus*:

- Student research was conducted randomly by teacher choice without support documents.
- Students were not given the opportunity to select meaningful research topics (relevant curriculum) reflective of their individual areas of interest (differentiation).
- Students, as individual learners with varying interests, had not been encouraged, guided, and supported in researching critical, real-world issues on varying content area topics.
- Students rarely experienced teacher flexibility in researching topics of interest outside of the standard curriculum.
- Students rarely experienced advocacy and assistance to contact outside experts i.e. newspaper reporters, professors, etc.
- Resources (books in the media center) on topics of interest were limited.
- Local and regional experts in student areas of interest were rarely invited to present topic overviews and interact with students.
- Students had not previously explored the complexity of knowledge, depth of knowledge, and critical thinking in a selected topic of interest.
- Lecture format was the primary mode of instruction, rather than modeled interaction, collaborative learning, and active learning formats.
- Student point of view was not solicited to support meaning-making. Students were not guided to internalize and re-shape or transform new information.
- Student self-assessment was rarely utilized. Students were seldom encouraged to consider their knowledge and skill level and measure it pre and post. Reflection on learning was also limited.
- Students had little experience in observing and sharing their teachers' energized interest as they, the teachers, learned new concepts along with their students.

E. Nature of the Collaboration

Rigor Plus demonstrates the power of collaboration at the:

- District level- high school students presented to students relative to their experiences with writing and research, upper-level administration demonstrated interest and support.
- Building level- gifted specialist, teaching team, media specialist, and administrators were all involved in the process
- Community and regional level- content area experts presenting details and concepts about the students selected topics of interest.

PARTICIPANTS	NUMBER
Gifted students Grade 6: 12; grade 7: 11; grade 8: 13	36
Teachers of gifted	10
General education teachers	1
Administrators	3
Community members	10
Other participants	1
Total number of participants	61

Personnel

- One (1) gifted endorsed specialist: assisted with alignment of *Rigor Plus* goals to the current grade level curriculum, held weekly Gifted *Rigor Plus* sessions, and monitored gifted student progress.
- Nine (9) gifted endorsed members of teaching team: Collaboratively developed grade appropriate lessons which supported and implemented *Rigor Plus* goals, *Florida's Sunshine State Standards*, and *Florida Frameworks for K-12 Gifted Learners*, as well as providing daily academic support and guidance for gifted students in the classroom.
- One (1) school-level media specialist: Provided learning experiences connected to MMS media center and outside resources. The media specialist also selected and cataloged purchased multi-media materials, which supported *Rigor Plus*.
- Two (2) school-level administrator, MMS Principal and APC: Provided staff development opportunities for the teachers of the gifted by providing them time to work with the gifted specialist. The administrative team also supported the program and communicated program progression to parents during EP meetings.
- One (1) district-level grant manager: Provided organizational support relative to scheduling community presenters, CCPS Laureate student, and other support activities.
- One (1) high school level gifted endorsed Laureate coordinator: Escorted high school Laureate students to MMS for a presentation regarding the benefits of *Rigor Plus* as well as introducing future opportunities for continued learning in the Laureate Program.
- One (1) district-level gifted coordinator: Provided guidance and vision relative to the overall project goals.
- Ten (10) local and regional expert community presenters: Presented information pertaining to topics of interest selected by students via a "Topics of Interest Survey".

III. Evaluation

See Tables 2-6 above. Project *Rigor Plus* was assessed by portfolio, traditional essay letter grades based on the six (6)-level district holistic writing rubric, and student self-assessment rubrics. The inclusion of portfolios documented overall gains, quality, and quantity of work.

A. Assessment of Student Performance

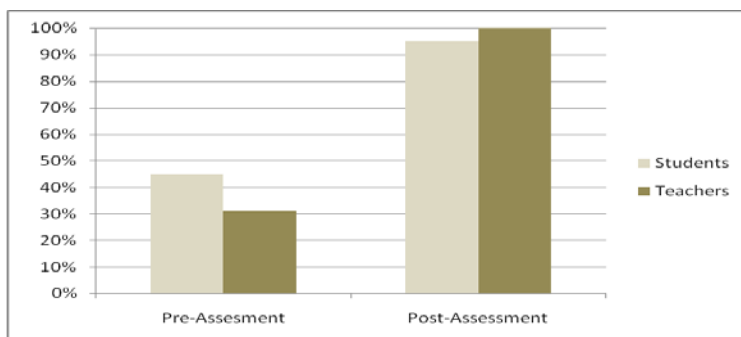
1. Research Assessment Rubrics:

Two rubrics were developed to assess the research knowledge of students. The Student Self-Assessment rubric was used as a pre and post assessment to gain an understanding of how the students perceived their abilities as researchers initially and how their perceptions of their abilities changed after experiencing *Rigor Plus*. The Teacher Evaluation of Students Research rubric was also used as a pre and post assessment to gain insight of what the teachers observed on a daily basis in regards to the student's proficiency in research skills.

Pre-assessment results: The results showed that less than one-half (45%) of students ranked their skill-level as *regularly or always* proficient in Research Skills. Teacher feedback confirmed that student self-assessment was consistent with teacher assessment of student skills.

Post-assessment results: At the conclusion of the *Rigor Plus*, 95% of student ranked themselves as *regularly or always* proficient in Research Skills while teachers ranked 100% of the gifted students as *regularly or always* proficient in Research Skills. See Table 7 below:

Table 7- Student and Teacher Pre and Post Assessment of Research Knowledge



2. Teacher evaluation (letter grade) based on six (6) – level district holistic writing rubric was assessed in September 2009 to establish baseline data of the gifted students’ abilities to write a persuasive paper. The post data was collected in May 2009. See Table 8 below for results.

Teacher Persuasive Writing Letter Grade Evaluation Results

Table 8

	Gained 1 letter grade	Consistency in High Level Achievement	Regression
Grade 8	78%	22%	0%
Grade 7	79%	21%	0%
Grade 6	81%	19%	0%

Other on-going evaluations are as described below:

1. On-going evaluation of lesson design utilized *Florida’s Framework for K-12 Gifted Learners, and the Checklist for Challenge and Rigor*.
2. On-going evaluation of lesson design and student learning utilized *Florida’s Science Content SC. D.2/3., Florida’s Major Initiatives, Technology Integration*, as well as *Florida’s K-8 Mathematics Standards MA.8.A.1.3*
3. On-going evaluation of lesson design and student learning utilized *Florida’s Grade 8 Reading Process Standards: See Tables 2 – 6 above*.

Continuation plan:

The teaching team has expressed their desire to re-create and refine the *Rigor Plus* model for the 2009-2010 school year. The team developed a 30-page Research Guide in response to their realization that middle level teachers and students were in need of an instructional tool to support research. The Research Guide has been disseminated to the gifted coordinator for district use.

The thirteen 8th grade students have enrolled in the Laureate program which is a continuance of *Rigor Plus*. Nine of these students plan to continue researching their Rigor Plus topic, hoping to go even further in depth into the topic.

B. Project Evaluation

Impact on participants:

Teachers observed a consistent level of engagement and enthusiasm among students for their selected topic of interest during the yearlong process. Students demonstrated pride in their accomplishments with the final oral presentation which was video-taped. The thirteen 8th grade students have enrolled in the Laureate program which is a continuance of *Rigor Plus*.

The gains in achievement significantly influenced teachers throughout the yearlong, systematic process. Because teachers recognized the learning which was achieved, they have chosen to implement *Rigor Plus* next year. Measurable gains are shown in the Tables 2-8 above.

Gains were achieved because the:

Gifted endorsed teaching team

- implemented best practice direct instruction and modeling.
- embraced the concept of *student choice* in research topics.
- collaborated through both vertical and horizontal articulation.
- made adjustments when students learning needs presented themselves.

Students were engaged

- with enthusiasm and persistence due to choice topics and flexible teaching practices.
- due to the authenticity of process and product.

IV. Dissemination

The *Rigor Plus* model has been discussed on a Collier County Public School (CCPS) television program for the local community, featured in the local newspaper, and shared with upper-level administration on several occasions. The *Rigor Plus* model overview and results will be submitted as a presentation proposal to the Florida Association for Gifted state level conference committee. *Rigor Plus* specialist Laura Mendicino would conduct the presentation.

V. Budget

Items	Cost
Research Materials	\$2,339.24
Supplies	\$960.57
Video Supplies	\$118.00
Hardware	\$2,132.55
Summer Team Planning & Video Editing Stipends	\$3,847.64
Total	\$9,398.00

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**Florida State University School
Florida High School**

Project Title: *Real World Chemistry Integration*

I. Project Rationale and Goals

A. Project Rationale

The *Real World Chemistry Integration* program was intended to provide students with an understanding of the relevance of chemistry in today's society. Students today require more than generalized conceptual instruction in Science, specifically in Chemistry. Students that do not see the practical application of curriculum have little interest in learning. Honors and gifted students become relatively bored with many standard instructional approaches and require didactic stimulation to maintain their interest and engagement in the classroom. This project was needed to provide rigorous and relevant courses for gifted and honors students that exceed the present available curriculum.

This program focuses on utilizing the learned material in practical ways such as using the investigative component of the scientific process, identifying unknown chemicals or drugs, using the latest in fingerprinting and blood typing technology as well as the use of spectroscopy and DNA analysis. Relevant data demonstrates that instructional redesign and innovative programs such as this are necessary to impact science education at all levels. In the 2007 FCAT scores in Science students state-wide, including Florida High School only averaged 50% of the mean points earned in Physical and Chemical Science. Review of the FCAT mean score in Grade 11 Science demonstrates that FSU School has had a mean score increase of only 6 points over the last three years and maintains only a 50% achievement at level 3 and above.

B. Project Goals

The intent of the *Real World Chemistry Integration* program was to demonstrate the practical application of science and promote interest in science learning for honors and gifted students. This will be accomplished through a didactic approach to learning which provides an organized process to stimulate and maintain student engagement.

Goal 1

Provide educational opportunities for honors and gifted students by integrating practical application of chemistry with advance chemistry courses in high school so that they more readily see the application and use of chemistry in the broad spectrum of general scientific knowledge. Identify and illustrate basic principles and the foundational concepts central to understanding of chemistry. Identify and apply investigative methodologies that are used in the fields of forensics and other practical fields of chemistry.

Goal 2

Identify and generate significant questions within the field of chemistry as they relate to the various specialties covered. To evaluate and refine these questions as they apply not only to chemistry but across other scientific and non-scientific disciplines.

Goal 3

Utilize a variety of research tools and methodologies relating to scientific skills associated with the individual areas of concentration. Examples include identifying unknown chemicals or drugs, fingerprinting process and analysis, blood typing technology, spectroscopy, process of DNA analysis, crime scene and emergency operations management. Use and manipulate information sources through practical scenario based exercises where students will use learned skills in management of simulated events such as crime scenes. These simulation exercises will promote the students understanding and recognition of bias and the reliability in the process of research in real world application. Students shall demonstrate the application of ethical standards of research and analyses as they are assessed during simulations by developed and assessed by professionals from the various areas of concentration.

Goal 4

Using simulation exercises students will identify and investigate complex problems within the individual areas of concentration. Students will generate supportive arguments from multiple perspectives of complex issues as they present the results of their investigations. During the investigative process students will analyze the relevance, reliability, and usefulness of data to draw conclusions and forecast effective solutions for various problems within the various areas of chemistry. Students will use and evaluate various problem-solving methods to determine effectiveness in solving real-world problems for the various areas of concentration.

Goal 5

Students will be exposed to divergent views through guest lectures in the various disciplines. Students will develop leadership traits and qualities as they work in small groups during many of the simulation exercises. The extensive use of group work will promote leadership skills as the students organize to achieve project goals.

Goal 6

Students will be able to identify personal strengths and weaknesses as they are exposed to the challenges of group work and simulation exercises in order to maximize learning. The combination use of advanced chemistry curriculum will promote the students' responsibility for learning, including identifying needs and setting reasonable goals. Students will be instructed in the process of plan design for their respected areas of science in order to address obstacles, achieving goals and develop their personal interest

Goal 7

Working closely with professionals from the prospective fields students will be able to develop products that communicate expertise in the related fields and disciplines. All simulation exercises will provide for the production of work products that synthesize information from multiple sources and illustrate solutions to real-life problems.

II. Project Implementation

A. Project Activities

This program's integration required a one year period to develop in which the Chemistry II course was modified using present state instructional curriculum. The course was delivered over a 10 month period and met the requirement for one (1) high school credit of science. The activities were in addition to the standardized Chemistry II curriculum.

In Chemistry II the forensic-based program students would follow the following sample format:

Cycle 1

- Days 1-5 - Lecture on Gas Laws Day 6 Small group activity -practical lab on gas laws
- Day 7 Small group activity - gas laws lab development research
- Day 8 Small group study on gas laws
- Day 9 Small group -gas laws practice test discussion and review
- Day 10 Group presentations of gas laws lab development research

Cycle 2

- Days 1-5 -Fingerprinting instruction
- Day 6 Small group - practical lab on fingerprint analysis
- Day 7 Small group - practical exercise obtaining fingerprints (crime scene simulation)
- Day 8 Small group research project – identifying important cases that changed the use of fingerprinting in criminology (PowerPoint development)
- Day 9 -Open research day
- Day 10 Group presentations

Students in the Chemistry II program accumulated the following knowledge, skills and abilities in addition to state mandated chemistry curriculum:

1. Crime scene operations and management, Crime Scene photography, legal consideration of forensics, and chain of evidence
2. Blood typing
3. Blood spatter analysis
4. Fingerprinting and identification
5. Qualitative analysis of unknown chemicals and drugs
6. Spectroscopy
7. Ballistics
8. Trace evidence
9. DNA analysis
10. Arson investigation
11. Forensic Anthropology
12. Criminal psychology

Students worked together in groups as teams and group work represented 50% of their overall grade in this program. Individual testing represented the other 50% of their course grading. Group-based research was an integral component of the instructional process, requiring the utilization of computer based research, the development and presentations of their results in powerpoint formats and the development of industrial specific level reports of their research both in and out of the laboratory.

B. Curriculum Content Focus

This proposed program incorporates several Florida State Board of Education (SBE) Strategic Imperatives.

- Imperative 2
 - met by the instruction of higher level chemistry with its associated practical application.
 - met by providing innovative instructional format
 - met by providing an instructional format similar to college level courses emphasizing research and development.

met by providing practical application of higher level science in conjunction with exposure to professionals in the various areas of concentration.

This program addressed the reading and math/science initiatives of the Department of Education 9-12 Bodies of Knowledge.

C. Sunshine State Standards Addressed

Science

Nature of Science

Standard 1: The Practice of Science - Methods and Processes

Standard 2: The Characteristics of Scientific Knowledge - Scientific Inquiry

Standard 3: The Role of Theories, Laws, Hypotheses, and Models

Standard 4: Science and Society

Physical Science

Standard 8: Matter

Standard 10: Energy

Standard 12: Motion

This program also addressed the National Association for Gifted Children (NAGC) Gifted Program Standards for Curriculum and Instruction:

Guiding Principle 1: Differentiated curriculum for the gifted learner must span grades pre-K-12.

The program provides for adaptation and addresses the unique learning needs of gifted learners by providing a unique instructional format that focuses on simulation exercises and group based work.

Guiding Principle 3: Instructional pace must be flexible to allow for accelerated learning of gifted learners as appropriate.

The program provides for the flexibility in individual student progression through the curriculum through group work, personal research-based projects and both individual and group exercises

Guiding Principle 5: Learning opportunities for gifted learners must consist of a continuum of differentiated curricular options, instructional approaches, and resource materials.

The program provides a variety of curricular experiences through interaction with professionals from the individual areas of concentration. The student is provided independent and group research projects and various instructional options and material during the research components of the program.

D. Instructional Methodology Used

The instructional program used a non-traditional and innovative approach to instruction that focused on group-based student development. Students were divided into teams of three based on results of assessment testing to ensure each team had a broad spectrum of knowledge and abilities. The format was based on a 10 day instructional cycle. During the first five days students received direct instruction in the area of focus. These 10 day instructional cycles alternated between advanced chemistry and the instructional focus of the program, such as fingerprinting or blood spatter analysis.

The second 5-day component of the cycle encompassed group work in which teams alternated between various activities.

E. Nature of the Collaboration

Participants

Total Students (grades 10-12)	38
Gifted students (grades 10-12)	15
Honor students (grades 10-12)	<u>23</u>
Total:	76

Personnel

Administrators	1
General Faculty	1
ESE Faculty	1
Parents	6
Collaborating faculty/experts	18

Collaborating faculty/experts were representatives of local agencies included in the design process of the curriculum as they relate to the practical application component of the curriculum. For example, specialists in fingerprint technology and DNA analysis were consulted during curriculum development before instruction was given to the students. These agencies' personnel were also involved in the program through interaction with students as guest lecturers as well as evaluators for the scenario-based events at the completion of each semester's work. Guest lectures and technical expertise in criminology were provided by:

- Florida Department of Law Enforcement
- Tallahassee Police Department
- Leon County Sheriffs Office
- Department of Alcoholic Beverages and Tobacco
- Tallahassee Community College
- Leon County Courthouse

III. Evaluation

A. Assessment of Student Performance

Evaluation of curriculum content was based on the practical demonstration process, with precision and accuracy as primary evaluation criteria. Students enrolled in this program applied their knowledge of logic, reasoning, and research methods to an investigation or simulation exercise and produced a project in a form compatible with the topic. Student's presented in groups the results of these projects using multiple forms of technology.

Evaluations were performed by not only observing individual students but also the program itself by carefully observing the class during the course or during a unit to determine whether or not students were progressing satisfactorily. Each student maintained a folder containing descriptions of projects in progress or completed lists of things that were identified, researched and read, and written papers that had been graded. These folders allowed the teacher to do a simple check of the accomplishments of each student.

B. Project Evaluation

Program evaluations were conducted based on in-class assessments in the form of examinations and quizzes on content. However, such tests were only a component of the evaluation process. Program evaluation was conducted through external tests, from standardized achievement tests (Science FCAT) or advanced placement tests. However, such tests were only a component of the evaluation process. Evaluation was conducted by having students evaluate the course while they are participating in it. Although student surveys may exhibit some bias, they were worthwhile because gifted students were able to cite strengths and weaknesses of the programs in which they participated.

IV. Dissemination

Project Website: <http://www.fsus.fsu.edu/academics/science/ForensicSciences/>

V. Budget

Simulation training		\$3,125.00
Simulation furnishings		\$ 873.00
Trace evidence supplies		\$1,764.16
Finger print supplies		\$2,218.20
Instructional textbooks		\$ 875.00
General forensic supplies		\$1,144.64
<i>Total</i>		\$10,000.00

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Highlands County School District

Project Title: *The Arts Exploration Project*

I. Project Rationale and Goals

A. Project Rationale

The *Arts Exploration* Project for gifted students intends to expose students in a rural area to a combination of activities and events in the fine arts, performance art, and visual arts. Highlands County, Florida, has a population just below 100,000 people, with approximately 13% (2004) of the population below poverty level. Sixty percent of the students participate in the free and reduced lunch program. Many families rarely travel outside the county. With limited cultural experiences within our county and limited arts programs in the schools, the gifted students would benefit from activities and events that will increase their appreciation and understanding of the arts.

B. Project Goals

The intended learning goals for students include:

- the examination and creation of 2D and 3D media,
- innovative visual problem solving and creative skill development,
- critical thinking skills,
- an understanding of the different categories of the arts,
- observation and response to various performances.
- development of a student portfolio with original works of art.

II. Project Implementation

A. Project Activities

The *Arts Exploration* Project provided for the creation of a “Creative Expressions” unit that provided elementary and middle school students with a year of fine arts including visual arts and performing arts experiences.

Elementary

The student’s studies began with the performing art of **story telling**. Students saw demonstrations of stories being told and then chose a story of their own to tell. A story telling festival allowed the students to demonstrate their abilities by bringing stories to life for parents, students and administration on their school campus. The students traveled to classrooms throughout the campus to share their talents. The students then traveled to a local middle school where artists from Marcia P. Hoffman’s Performing Arts Institute’s “Artists on the Road” program brought their expertise to our county for students to interact with professionals in the field of fine arts. The artists focused on the aspects of creativity, imagination and clarification of self image. Through the language of creative drama, they uncovered basic building blocks needed for students to find their own voices and share them in front of and with their peers. Through the use of storytelling, students mapped out story elements, organized their thoughts and ideas and brought original stories to life.

The story telling unit focused on several essential skills such as:

- Projection – projecting one’s voice so that everyone in the audience can hear and understand;
- Expression – using one’s voice, facial expression, and gestures to make the story come alive with character and action;
- Eye contact – making sure to look at members of their audience so they feel involved in the story. Students also learned about stage presence – how they position themselves and how to connect with their audience. They taped their performances and were evaluated using a rubric.

A *Visual Art Exploration* experience provided the students with five different visual arts experiences. The students traveled to a local venue where numerous art teachers and a small flock of volunteers interacted with the students. The students were involved in five workshops: wire sculpturing, water color painting, cartooning, block printing and construction of a musical instrument.

Throughout classroom units, fine arts were introduced in many different forms including the following:

- Designed Native American story telling dolls, listening dolls, and worry dolls to use during the story telling unit.
- Constructing weaving mats, instruments, mirror pouches, egg blowing – all visual arts from a variety of cultures to use during both story telling and music units.
- Crafted music stories with watercolor during music unit.
- Created photo stories and made into photo books for each child.

Middle School

The middle school students participated with cartoonist, Ian Beck, from the Marcia P. Hoffman’s Performing Arts Institute. The students soon realized that if you can hold a pencil, you can draw and create characters, giving the drawings emotions, movement and attitudes.

Skills developed through the use of a pencil were:

- Self expression,
- Telling stories,
- Creating characters by using imaginations.

The middle school students also participated with the director of the Marcia P. Hoffman Center for Performing Arts Artist on the Road Series. Nicole Haumesser introduced the art of improvisation and the skill of thinking quickly. Participating with a partner or a group, the students learned to react to previous statements made by other performers, react to situations without any planning, and using creative thinking to create a humorous experience for others.

Skills developed through the activity included:

- Creative problem solving,
- Self-expression skills,
- Strengthening higher level thinking skills.

The middle school students participated in art classes with Professor Cathy Futral and her teaching assistants at South Florida Community College. The students attended sessions on sketching and charcoal drawing of still life. The students also visited the South Florida

Community College Museum of Florida Art and Culture to learn more about photography and see the touring exhibit, “Where Two Roads Meet,” by photographers Peter Schreyer and Rick Lang. Expertise in the fine arts exhibit provided knowledge of:

- Art careers
- Areas of art
- Sessions on sketching, and
- Charcoal drawing of still life.

All Students

The students’ study continued with Photography. The students began with learning to use digital cameras to “be” photo directors and tell stories through their cameras. Materials provided through the grant allowed students to study Ansel Adams, a great American photographer, and how he used photography as art and documentation. Students built photograph collections to use in a variety of ways. They selected favorite photos to become part of a photography exhibit that were displayed in the community.

The photography unit focused on several essential skills. Such as:

- They participated in photo journalism and wrote poems to go along with their photographs – combining word and art.
- They learned an important part of photography is observation, learning to observe close-up and panoramic scenes, how to capture it in a photo, and what to add to tell the story.
- They created their own Ansel Adams “like” pictures and matted them. Some students constructed collections of their photographs.

The students were exposed to different genres of music from classical to jazz. They listened to a variety of samples of and responded to them through drawing, the creation of Power Point presentations, and Photostory presentations. Guests, such as a ballet dancer and a water color artist, visited the students and taught them simple steps of both arts.

The Southeastern University Opera Department from Lakeland, Florida, performed at a local middle school. The students enjoyed the performance of *Die Fledermaus* written by Johann Strauss in the 1800’s. The operetta was performed with both music and narration. The experience was for all the elementary and middle schools levels. The performance provided an appreciation of the arts and opened a world of opportunities to our rural area students.

B. Curriculum Content Focus

The focus of the Arts Exploration Project was to explore a variety of different genres within fine arts, performing arts, and visual arts. The Arts Exploration Project included a collection of hands-on activities, performances, and workshops in a variety of instructional settings. Elementary students participated in visual arts activities including photography, wire sculpting, print making, and water color painting.

Photography was taught using direct instruction of the elements of black and white photography and examples through books and internet resources. Wire sculpting, print making, and water color painting were instructed during rotations at the Visual Arts Exploration Day. Art students from the local high school, the high school art teacher, Steve VanDam, parent volunteers, teacher volunteers, and teachers of the gifted provided guided learning activities throughout the event.

Students were able to see examples, receive instruction, and then create a project individually. Guest speaker Wade Carter, a local mural artist, shared with some classes about technique and a careers in the field of visual arts.

The students participated in performing arts activities through classroom projects and attending performances with the Artist on the Road series with Marcia P. Hoffman Center for Performing Arts and Southeastern University Opera Troupe. Teachers of the gifted facilitated a variety of projects including music and story telling. The story telling study culminated with students performing their stories before a variety of authentic audiences. Storytelling also incorporated creative drama and the skills were reinforced through interaction with the Artists on the Road performers. Southeastern University's Opera Troupe performed two acts of an operetta for the students to culminate the unit on music styles. Guest speakers/performers included Liz Polk for creative drama/dance and Cameron Menzie for creative drama.

Instruction in performing arts took place through direct instruction, cooperative learning, guest speakers, hands on learning, and PowerPoint and Photostory presentations.

Middle school students participated in visual arts activities including photography, sketching and drawing, and cartooning.

Photography for the middle school students was taught as the elementary photography was, with the focus on elements of black and white photography along with examples from books and the internet. Students were able to work collaboratively with other students to edit and evaluate photographs. Students also visited the Museum of Florida Arts and Culture in Avon Park with curator Dr. Molly Doctorow. While instructing students on techniques of photography, she had students critique a current photographic exhibit by Florida artists and replicate one of their choice.

While attending the field trip to the Museum of Florida Arts and Culture, the students also attended classes within South Florida Community College and completed sketching and drawing activities with instruction from the art professor Cathy Futral and student teaching assistants. They were able to tour the art class facility including the photography lab. Guided instruction was provided by the professor and teaching assistants.

The students participated in performing arts activities through classroom projects and attending performances with the Artist on the Road series with Marcia P. Hoffman Center for Performing Arts and Southeastern University Opera Troupe. Ian Beck from the Artist on the Road Series instructed and demonstrated how to cartoon. Nicole Haumesser instructed on the art of improvisation. During these presentations, students participated with hands-on learning activities through drawing and group/individual performances. In classroom experiences, gifted students were instructed through direct and guided instruction, collaborative learning activities, hands-on activities, and using technology resources including the internet and Powerpoint presentations. Students exhibited photography products to authentic audiences.

Careers in art were addressed with both groups. Elementary students explored different careers through Visual Arts Exploration Day with Janet King and Alice Hanson. They discussed the difficulties of having a career in art and how to be successful in the field. Middle school students discussed art careers and college preparation with cartoonist Ian Beck from the Artist on the Road Series. Students also learned about the availability of art classes in post-secondary education while attending the South Florida Community College field trip. Middle school students

explored a variety of careers in art through direct instruction, guided instruction, independent study, and technology resources. Teachers used a variety of online resources including the following:

- <http://www.toondoo.com> (A website used to create unique cartoons).
- <http://www.anseladams.com>-The Ansel Adams Gallery
- <http://www.activitytv.com>-Activity TV
- <http://artsedge.kennedy-center.org>-Arts Edge
- http://teacher.scholastic.com/activities/bhistory/history_of_jazz.htm -History of Jazz

C. Sunshine State Standards Addressed

Visual Arts

- | | |
|----------|--|
| VA.A.1.3 | understands and applies media, techniques, and processes |
| VA.C.1.3 | understands the visual arts in relation to history and culture |
| VA.D.1.3 | assesses, evaluates, and responds to the characteristics of work of art |
| VA.E.1.3 | makes connections between the visual arts, other disciplines, and the real world |

Music

- | | |
|----------|--|
| MU.B.2.3 | understands music in relation to culture and history |
| MU.D.1.3 | listens to, analyzes, and describes music |
| MU.D.2.3 | evaluates music and music performance |

D. Instructional Methodology Used

The identified gifted students of Highlands County were involved in the study of the fine arts in several different areas including visual arts and performing arts. The curriculum for gifted students in Highlands County is very limited in the areas of the fine arts.

Frameworks for Gifted:

Student Outcomes Program Goal 3: The student identified as gifted will be able to conduct thoughtful research/exploration in multiple fields.

- The identified gifted students were instructed in many different areas of technology and thoughtful research:
 - Introduction to Photostory: For the storytelling and photography portion of the grant, Photostory enabled the students to organize their work in a meaningful way.
 - Podcasting was introduced for storytelling and music and later presented in classes, posted on websites and shared on morning TV programs.
 - Power Points and/or board displays were also made to view and share photos taken by each student. The internet was used extensively in the study of Ansel Adams at both the elementary and middle school level as well as resource books, Ansel: 400 Photographs; The Camera; & Examples: The Making of 40 Photographs, all by Ansel Adams. Other resources include; Renaissance in the Classroom: Arts Integration and Meaningful Learning, Putting the Arts in the Picture: Reframing Education in the 21st Century, and The Ansel Adams Guide: Basic Techniques of Photography-Book One.

- Student Outcomes Program Goal 4: The student identified as gifted will be able to think creatively and critically to identify and solve real-world problems. The identified gifted students were exposed to many critical and higher level thinking activities during The Art Exploration Project unit. Throughout the unit the students solved logic problems, participated in simulations and critiqued real world problem solving activities through developing an understanding of different cultures. Further development of that understanding was in the creativity component as the students produced a final product or presentation representing each culture.

Student Outcomes Program Goal 5: The student identified as gifted will be able to develop and deliver a variety of authentic products/performances that demonstrate understanding in multiple fields/disciplines.

- The identified gifted students have developed podcasts, photo stories, slide shows, and photos. Students presented to other classes, fellow students, parents, the School Board of Highlands County and administrators. Final products and presentations were shared extensively through performances, classroom visitations, parent open houses, and displays at various locations on and off campuses. Examples: listening dolls, worry dolls, Kente Weaving, instrument making, opera masks, tangrams, cartooning, printmaking, wire sculpting and water coloring. Through the use of rubrics by student and teacher assessments were made to show understanding in each field and discipline of the grant. Mastery of at least 80% was demonstrated by over 80% of the students.

E. Nature of the Collaboration

Collaborative Partners:

1. Cathy Futral, professor of art at South Florida Community College
Ms. Futral helped coordinate the field trip for students to attend the demonstration of the sketching and drawing classes. She collaborated with Gail Melendy in planning, preparation, and expected outcomes for students.
2. Dr. Molly Doctorow, curator of the Museum of Florida Art and Culture
Dr. Doctorow provided information on the photography exhibit and how it could relate to the different age groups of students. She provided educational materials and resources, provided direct information about artist's schedules, and provided a direct link to the artist on display.
3. Steve VanDam, teacher of art Sebring High School
Jack VanDam, teacher of art Sebring High School
Mr. S. VanDam and Mr. J. VanDam provided detailed instructions and demonstrations on projects for the Visual Arts Exploration, including block printing, wire sculptures, and cartooning. They provided examples, demonstrated the projects for the teachers, and gave direct instruction on materials needed.
4. Gail Melendy, district resource teacher of the gifted
Molly Stephens, district resource teacher of the gifted
Laura Murray, district resource teacher of the gifted
Heidi Stivender, district resource teacher of the gifted
Patricia Carter, district resource teacher of the gifted
Dawn Schommer, teacher of the gifted Hill Gustat Middle School
Patricia Gutierrez, teacher of the gifted Sebring Middle School
Jeannie Penrod, teacher of the gifted Sebring Middle School
Mason Whidden, teacher of the gifted Avon Park Middle School
The gifted teachers collaborated extensively on unit planning, material selection, activity experiences, field trips, and lesson plans.

5. Rebekah Kogelschatz, general education teacher Lake Placid Middle School
Mrs. Kogelschatz instructed an inservice for middle school teachers on grant expectations, grant requirements, materials, websites and resources. Ideas for lessons were also provided to the teachers.
6. Nicole Haussemer, director Artist on the Road Series, Marcia P. Hoffman Center for Performing Arts
Ms. Haussemer collaborated with Gail Melendy as to which artists would best suit the intended audience, goals and objectives for the performances, and intended outcomes for the students.
7. Dr. Ed Bryant, director Southeastern University Opera Troupe
Dr. Bryant collaborated with Gail Melendy as to which opera would be best for the intended audience and the history of the opera selected.
8. Janet King, artist at Visual Arts Exploration
Alice Hansen, artist at Visual Arts Exploration
Ms. King and Ms. Hansen were instructors at the Visual Arts Exploration. They introduced water colors as a career. They collaborated with the gifted teachers as to the types of materials needed, intended audience and student participation.
9. Heidi Christian, teacher/director at Visual Arts Exploration
Karen Angel, teacher/director at Visual Arts Exploration
Ms. Christian and Ms. Angel oversaw the construction and embellishment of a musical instrument at the Visual Arts Exploration. They collaborated with the teachers of the gifted as to the types of materials needed, intended audience and student participation.
10. Kristine Sebring, paraprofessional Cracker Trail Elementary
Ms. Sebring collaborated with Heidi Stivender regarding her collection of Ansel Adams prints, and provided examples for the students.
11. Darlene Cloud, music teacher Memorial Elementary
Ms. Cloud collaborated with Gail Melendy regarding music selections, music history and cultural influences.
12. Mark Hilburn, Technology Resource Teacher at Sun 'n Lakes Elementary
Darla Olson, paraprofessional Sun 'n Lake Elementary
Mr. Hilburn and Ms. Olson provided Mollie Stephens technical support and resources for a variety of technical endeavors, including podcasting and photo editing.

Participants

Participants	Number	Participants	Number
Gifted Students	228	Teachers of Gifted	9
Administrators	10	General Education Teachers	5
Community Members	42	Parents	80
		Other Participants	n/a
Total Participants	346		

Student Population

Grade	Students participating
Kindergarten	1
Grade 1	20
Grade 2	22
Grade 3	31
Grade 4	41
Grade 5	28
Grade 6	30
Grade 7	27
Grade 8	28

Personnel (Staff involved in the project):

Dr. Ruth Heckman, Coordinator of Advanced Academics

Teachers of the gifted:

Gail Melendy, Molly Stephens, Laura Murray, Heidi Stivender, Patricia Carter, Dawn Schommer, Patricia Gutierrez, Jeannie Penrod, Mason Whidden,

General education teacher:

Rebekah Kogelschatz

Art teachers:

Steve VanDam, Jack VanDam

Music teacher:

Darlene Cloud

Paraprofessionals:

Kristine Sebring, Darla Olson

Technology Resource Teacher: Mark Hilburn

III. Evaluation

A. Assessment of Student Performance

Students were assessed through the use of a pretest/posttest, storytelling rubric, photography rubric, musical journal response and short answer response. All gifted students in the county attended the hands-on Art Exploration with the exception of 3 students who were absent. While attending the Art Exploration, 100% of the students completed four projects that they were able to take home. A total of 90% of the students provided a visual interpretation of the four different musical styles through musical art. Students experienced two acts of the Operetta, *Die Fledermaus* presented by the Southeastern University. They also participated in Creative Drama presented by the Marsha P. Hoffman group. Students studied the photography of Ansel Adams and created their own 8x10 Ansel Adams-like photo. These were matted and displayed. The intense study in Fine Arts translated into the students increasing their knowledge in the areas of drama, photography and music measurably.

Measurable goals from the grant application:

- **Mastered:** 90% of the gifted elementary students will participate in visual arts hands-on activities during a one day Visual Arts Exploration field trip.
 - All gifted students participated except for those absent from school.
- **Mastered:** Gifted students will create one or more products within the visual arts activities, including the Visual Arts Exploration (elementary) or the field trip to South

- Florida Community College (middle school), using critical thinking and problem solving skills.
 - Elementary students created up to five products in Visual Arts Exploration and middle school students created two products at the South Florida Community College field trip.
- **Mastered:** Students will listen to four different musical styles, including opera. Seventy-five percent of the students will provide a visual representation of their interpretation of the musical piece in a final portfolio.
 - Over 75% of the students created a visual representation using Photostory, podcasts, or drawings relating to different musical styles.
- **Mastered:** The gifted students will observe and/or participate in two performances.
 - Students participated in an opera performance by Southeastern University Opera Troupe and creative drama, improv, cartooning, and storytelling with Artists on the Road Series through Marica P. Hoffman Center for Performing Arts.
- **Mastered:** The gifted students will understand the art of photography. This will be demonstrated by the students creating one project by taking and editing a black and white photo and including it in the final portfolio.
 - Ninety percent of the students created a black and white photograph for portfolio.
- **Mastered:** Ninety percent of the gifted students will listen and discuss career information with 2 artists and performers.
 - Students listened and discussed career information with guest speakers, artists at the Visual Arts Exploration, and the performers from Marcia P. Hoffman.
- **Not mastered:** Ninety percent of the elementary gifted students will be introduced to the relationship of art to history and culture and through a hands-on art exhibit of historical art pieces at a one day Visual Arts Exploration field trip.
 - The relationship of art to history was addressed through classroom activities and was not a part of the Visual Arts Exploration field trip.

B. Project Evaluation

Overall, the project was evaluated according to post test results. Students were given a pre-test in September, 2008 to determine current knowledge. Students were given the post test in May, 2009 with the same questions. Students were considered to have mastered the content if they scored an 80% on the post test according to a rubric created.

All students made measurable improvements on the posttest as compared to pretest. The posttest was made up of questions from each of the areas being studied. Eighty-four percent of the students scored 80% or better on the post test. Students completed a self-evaluation photography rubric along with the teacher completing the same rubric. Listening doll rubrics were also completed to go along with the storytelling unit. Students completed journal responses and short answer responses during their music studies. Ninety-five percent of the students successfully completed the evaluation rubrics. Outcomes were achieved due to the student's involvement in the hands-on activities. They were able to develop a feeling of ownership in their projects which increased the likelihood of the child's success.

The projected outcomes were achieved. Not only did the majority of the students master the posttest content, but also the majority of the students participated in the following activities:

- examination and creation of 2D and 3D media,
- use of innovative visual problem solving and creative skill development,
- increase critical thinking skills,
- understand of the different categories of the arts,

- observe and respond to various performances.
- develop a student portfolio with original works of art.

IV. Dissemination

- District and school wide newsletters
Information on current and future activities was shared with all gifted elementary students, parents, teachers, and administrators through a district-wide monthly newsletter. Newsletter articles also appeared in several school based publications throughout the year.
- Middle School inservice- September 24, 2008
Middle school teachers attended a one day inservice to create materials, review resources, and make a year long plan to include activities within their curriculum areas.
- District School Advisory Committee- November 3, 2008
Gail Melendy and students presented work samples from selected classroom activities and the field trips that had been attended.
- District Curriculum Team Meeting- November 20, 2008
Gail Melendy shared the project that was included in the Arts Exploration Project. She shared a PowerPoint that gave an overview of the activities that would be implemented throughout the year.
- Website: <http://highmail.highlands.k12.fl.us/~kogelscr1>
Resources for middle school teachers, including website resources and lesson plans, were posted on a website for teacher reference. Student work samples were also posted for teacher and student review.
- Photo exhibits in each school
Student's photographs were displayed in each school as a permanent or temporary exhibit.
- Story Telling Festivals- November 2008
Parents, students, administration, and staff were invited to attend the Story Telling Festivals in two separate schools. Students displayed their listening dolls, storytelling dolls, mats, Thai kites, dream catchers, and other works of art to coincide with the stories.
- Parent Open House Events- Spring 2009
Parents and families were invited to attend Open Houses in each elementary school to see exhibits of student portfolios.
- Results of the program will be shared at <http://highmail.highlands.k12.fl.us/~kogelscr1>

V. Budget

Items	Cost
Bus transportation to field trips	\$1,530.55
Substitute teachers for field trips	\$585.00
Artists & venue for performances	\$2,350.00
Books & reference materials	\$787.91
Travel to Orlando meeting	\$92.42
Supplies & equipment for photography & visual arts	\$4,032.73
TOTAL	\$9,378.61

VI. Contact Person

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Lee County School District

Project Title: Gopher the Cache!

I. Project Rationale and Goals

A. Project Rationale

Fifth grade gifted students in Lee County receive one day per week of service in a gifted resource room for approximately five hours. Sixth grade gifted students may or may not have any gifted science instruction. Lack of financial resources for gifted students provides limited opportunity for advanced learning and collaboration with peers in real world investigations in Lee County Schools. This brief contact time with the endorsed teacher of the gifted sharply limits the appropriately differentiated curriculum and instruction that these students need in order to advance in a meaningful way in their learning experience.

Gifted students have a need for rigor in their curriculum in order to demonstrate adequate yearly progress as measured. Fifth and sixth graders have shown over the past three years that they have reached a plateau in their informational reading and math measurement from the Florida Comprehensive Assessment Test (FCAT). Lee County middle school students have generally shown weaknesses in reading in the content area, math problem solving, and science lab skills.

There is a need for assistance with long-term population monitoring of the gopher tortoise on community purchased and owned conservation lands in Lee County because municipal government agencies do not have adequate staff or budgets for those efforts. Additionally, university scientists have recognized a need to validate public contributions of ecosystem research.

Because funding to train teachers in complex science skills is not available in the gifted or school budgets, there is a need to find a source for this. Teacher stipends for curriculum writing about using technology in local community studies are also not available.

By serving their community via contributing to ecosystem research on the gopher tortoise with Florida Gulf Coast University, Cape Coral Friends of Wildlife, and the Environmental Education Program of Lee County, gifted fifth and sixth graders will be involved in advanced study that emphasizes sophisticated technological and science skill development. These opportunities are real-life experiences that provide students with service learning because they contribute to the ecosystem research as well as providing an opportunity to train their peers in the use of Global Positioning System (GPS) receivers and its connection to relevant mapping activities.

B. Project Goals

Gopher the Cache draws on the increasing use of GPS receivers, the growing popularity of geocaching, the new dimensions of EarthCaching, and the relevance of local environmental studies to offer a curriculum with authentic, multi-disciplinary tasks as primary outcomes. Geocaching combines GPS technology and outdoor field experiences in which students locate caches by use of this technology. EarthCaching is supported by the Geological Society of America and National Geographic Education Foundation and enhances geocaching by adding new knowledge and insights about the location itself. This project will introduce gifted students

to the experts in the field as well as community leaders in addressing a community concern. Students will transform the new information and skills they have learned into the design of school based EarthCache and GPS experience for their peers with an impact on seven elementary and middle schools.

Student Performance Goals

1. Target group of gifted students will increase self-sufficiency through use of GPS and digital camera technology
2. Peer group of general education students will increase self-sufficiency through use of GPS and digital camera technology
3. Target group of gifted students will increase collaboration skills through the EarthCaching experience
4. Peer group of general education students will increase collaboration skills the EarthCaching experience
5. Ground-truthing with Florida Gulf Coast University and Cape Coral Friends of Wildlife data collection on gopher tortoises by gifted students

II. Project Implementation

Teacher Training

- A cadre of six teachers of the gifted attended a six hour inservice training on the use of the Global Positioning System receivers and Florida Learn and Serve on August 7 led by Florida Learn and Serve teacher.
- Cadre of six teachers of the gifted attended a six hour inservice training on Saturday, August 16 on field investigations and mapping with the GPS and geographic information systems for specific data collection, mapping, and measurement pertinent to long-term natural history studies led by FGCU, Lee County Staff Development, and Lee County Environmental Education Program trainers.
- Cadre of six teachers of the gifted attended a three hour inservice training on Monday evening, August 18, on the development of photo stories, digital photography, and developing EarthCaches in the computer lab led by staff development trainers.

Curriculum Development

- Cadre of six teachers of the gifted provided fifteen hour supplemental contract to develop lesson plans and activities for use with the fifth and sixth grade gifted students they teach incorporating what they have learned through inservice training. These lesson plans will be shared, along with the GPS units and digital cameras, with future gifted resource classrooms.

A. Project Activities

Students will:

- use GPS receivers to learn about coordinate systems and geospatial technology;
- teach peers in general education that same information;
- interact with technology through field studies to develop earth literacy specific to their bioregion;
- visit and explore a local publicly owned upland park to collect information regarding features of upland habitats that support gopher tortoise populations;
- create detailed maps delineating habitat features;
- use GPS receivers to create EarthCache sites for their school campus which will highlight unique environmental features;

- collaboratively produce photo-stories to document their investigation of gopher tortoise population issues and habitats;
- share their field findings with Cape Coral Friends of Wildlife, Inc. and Florida Gulf Coast University; and
- publish and present information about their project

B. Curriculum Content Focus

Gopher the Cache emphasized science curriculum, augmented reading of non-fiction materials, and provided math applications with multidisciplinary exploration of a local multi-dimensional challenge. It is our belief that students exposed to more sophisticated materials, technology, and instruction in a real-life investigation of a community issue with the assistance of experts in the field will demonstrate academic gains in science, math, and reading in the content areas as evidenced by pre- and post-tests.

C. Sunshine State Standards Addressed

Math

- MA.5.G.5.3 solve problems requiring attention to approximation, selection of appropriate measurement tools, and precision of measurement
- MA.5.S.7.2 differentiate between continuous and discrete data, and determine ways to represent those using graphs and diagrams

Social Studies

- Geography grade 5: Standard 1: understand the world in spatial terms
- Geography grade 6 Standard 1: understand how to use maps and other geographic representations, tools, and technology to report information

Science

- Processes that Shape the Earth
- Standard 1: recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth
- Standard 2: understands the need for protection of the natural systems on Earth
- The Nature of Science
- Standard 1: uses the scientific processes and habits of mind to solve problems

Reading/Language Arts

- LA.6.2.2.3 organize information to show understanding (e.g. representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting).

National Technology Foundation Standards for Students

- Technology research tools: Use technology to locate, evaluate, and collect information from a variety of sources, use technology tools to process data and report results
- Technology problem-solving and decision making tools: Use technology resources for solving problems and making informed decisions, employ technology in the development of strategies for solving problems in the real world.

D. Instructional Methodology Used

This project addresses the National Association for the Gifted Children's (NAGC) Gifted Program Standard: Gifted education services must include curricular and instructional opportunities directed to the unique needs of the gifted learner. *Gopher the Cache!* was a redesign of instruction allowing students who are gifted to acquire multidisciplinary content knowledge through real world investigation of the habitat and natural history of the gopher tortoise, then transform the information into a personal presentation of data submitted to Florida Gulf Coast University and Cape Coral Friends of Wildlife. Students delved more deeply into the natural history of their own community and created an EarthCache which they shared with classmates from general education whom they trained to use the GPS technology.

- The project addresses the **Florida Frameworks for K-12 Gifted Learners** Goal 3: the student identified as gifted will be able to conduct thoughtful research/exploration in multiple fields. *Gopher the Cache!* was a redesign of instruction allowing gifted students to use a variety of research tools and methodologies as they worked with experts on their field trips to observe and record data about gopher tortoise habitat at the Charlotte Harbor Preserve in Cape Coral. Students communicated results of their research using established tools within the field of study of the biologists and experts from Florida Gulf Coast University, Lee County Environmental Education Program, the City of Cape Coral, the Gopher Tortoise Council, and the Cape Coral Friends of Wildlife.
- The project addresses the **Florida Frameworks for K-12 Gifted Learners** Goal 5: the student identified as gifted will be able to think creatively and critically to identify and solve real-world problems. *Gopher the Cache!* was a redesign of instruction allowing gifted students to identify and investigate a problem and generate supportive arguments from multiple perspectives of a complex issue. Through their interviews and discussion with the biologists and experts students recognized that there were multiple sides to the land use issues and preservation of lands to protect the gopher tortoise. Students considered diverse viewpoints, and synthesized their explorations into the creation of EarthCaches to teach visitors of the natural history and significance of bioregions within their community.

E. Nature of the Collaboration

Through our partnership with the staff of the Environmental Education Program of Lee County School District, the non-profit organization Cape Coral Friends of Wildlife- including their wildlife biologists and city planners, the Staff Development Center of Lee County School District's resource teacher, an associate professor of biology from Florida Gulf Coast University, and six very energetic and enthused teachers of the gifted from the school district we were able to offer our gifted students an opportunity to have real intellectual interaction with professionals as they worked as citizen scientists on a local area of concern.

The Florida Gulf Coast University associate professor trained the cadre of teachers of the gifted in natural history and gopher tortoise habitat issues. The resource teacher from Lee County Staff Development trained the teacher cadre in the use of GPS receivers, developing photostories with digital photos, and EarthCaching. Our resource teachers from Lee County Environmental Education trained the teacher cadre in site investigation and GIS mapping.

Our primary strategy was to first train our cadre of teachers to develop lesson plans for use with their own gifted students in the investigation of a real problem. These lesson plans and technology will be shared with other teachers of the gifted in the district next year. The cadre

taught their gifted students to use GPS and digital cameras to observe and record data. Students then used the skills of the experts to learn about gopher tortoise habitat in an on site investigation with the Environmental Education resource teachers and wildlife biologists from the City of Cape Coral and Cape Coral Friends of Wildlife at the Charlotte Harbor Preserve State Park. The data collected by students was used in presentations to the Cape Coral Friends of Wildlife meeting on May 12, 2009. It was shared with the associate professor of biology at Florida Gulf Coast University for publication in her ongoing community based long term ecological research program of the gopher tortoise habitats in Southwest Florida.

- The second part of our project involved the gifted students developing an EarthCache to spread awareness of the sensitive nature of the ecology of their community. Students developed EarthCaches at the J.N. “Ding” Darling Wildlife Refuge on the subtropical barrier island of Sanibel to focus attention on not only the gopher tortoise but also other species.
- Our gifted students then collaborated with their general education peers to teach them the use of the GPS and digital cameras. The general education peers used these new skills to investigate the EarthCache that the gifted students developed showcasing a significant environmental feature of their own school campus.

Participants

Participants	Number	Participants	Number
Gifted Students		Teachers of Gifted	
Grade 5	29	Grade 5	3
Grade 6	67	Grade 6	3
General Education Students		General Education Teachers	
Grades 4-6	138	Grades 4-6	17
ESE Students		ESE Teachers	
Grades 4-6	14	Grades 4-6	2
Administrators		Parents	14
• Department Director	1		
• Principals	6		
• Assistant Principals	6		
Community Members:		Other Participants:	
Cape Coral Friends of Wildlife	26	School-based Media Specialists	6
Gopher Tortoise Council	2	School-based Technology Specialists	6
City of Cape Coral Environmental biologists	2		
Florida Fish and Wildlife Speaker	1		
Division of Forestry Speaker	1		
Jungle Pete Eco-Safari Wildlife biologist	1		
Ding Darling Wildlife Refuge Park Ranger	1		
Environmental Education Staff	4		
Curriculum and Staff Development Staff	2		
Florida Gulf Coast University Biologists	2		
Total Participants	354		

III. Evaluation

A. Assessment of Student Performance

Pre- and Post-Testing: Students were assessed with the pre- and post-test questions written by the FGCU professor, the environmental education program resource teacher, and the curriculum services resource teacher. The test covered how the gopher tortoise interacts with its environment, the nature and use of global positioning systems, local natural history, and geography. Each question item was matched to one of the standards addressed as noted in the Curriculum Content Focus of this report. The test was comprised of fifty multiple choice questions provided to the students in a pre- and post-test format using the district's online achievement series platform. The 96 students obtained an average pre-test score of 37% and an average post-test score of 87%.

Collaboration Assessment: Gifted students worked as a team to develop an EarthCache as a part of this project. When their EarthCache was complete, students completed *Collaboration Assessment Score Sheets* downloaded from The Geological Society of America's website, *EarthCaching-An Educator's Guide. 2007*. A perfect score on the collaboration assessment scoresheet is 36. Each group, meeting together, evaluated the individual members of the team coming to a consensus on the points assigned to each. Students were scored 1-4 points on the elements of research, information sharing, punctuality, duty fulfillment, participation, sharing, listening, cooperation, and making fair decisions. At the completion of our project our students' average score was a 34.

B. Project Evaluation

The success of *Gopher the Cache* was determined quantitatively by the pre-and post-test scoring using the achievement series online testing. The success of the project was evaluated qualitatively through student teams assessing their own collaborative learning through the Collaboration Assessment Scoresheet. The goal of increasing self-sufficiency in the use of GPS and digital camera technology integrated into a real field investigation using the skills of the experts was evidenced by the average post test score of 87%. Students replicated data they observed and recorded in the upland habitat of the gopher tortoise and shared it with the Cape Coral Friends of Wildlife as well as experts at FGCU. Students trained general education students in the use of the technology and facilitated their investigation of the EarthCaches created by the gifted students, including the use of digital photography and collaboratively developed photostories to document the investigations.

As a result of this project we now know that we can use a classroom set of GPS units, digital cameras, and EarthCaching to increase the quantity and quality of educational options for gifted learners. Gifted students who participated in this project learned to use GPS units in an integrated way as tools for their study of natural history of their local environment, organizing their endeavor around the challenges facing the gopher tortoise. Their use of digital cameras and the creation of photostories to convey their learning is evidence of the quality of this experience. The cadre of teachers each developed sets of lesson plans to support the use of this technology with gifted students in an integrated investigation of a real world problem. In August, gifted teachers in Lee County will be trained in the use of the technology as well as be introduced to the lesson plans developed. Our cadre of teachers will present this training. A kit has been assembled for check out from the gifted office for use with the gifted students in the schools. The kit contains digital cameras, GPS units, and lesson plans.

IV. Dissemination

- Florida Association for Gifted newsletter
- Florida Association for Gifted Region 6 Meeting, Fort Myers
- Florida Association for Gifted State Conference/SENG National Conference, Orlando, July 18, 1009
- Cape Coral Friends of Wildlife, monthly meeting, May 12, 2009
- Lee County Gifted Teachers Pre-School Inservice Training, August 18, 2009
- Lee County School District Gifted Website (Posted after August 2009)

V. Budget

<u>Item</u>	<u>Cost</u>
Teacher Training Stipends	\$775.09
Supplemental contract for Teachers to Write Curriculum	\$3609.38
In-County Travel for 3 Environmental Education Field Trips sing their buses	\$720.00
Out of County Travel for Grantee Meeting	\$400.97
Non-capitalized Computer Hardware: GPS Units, Digital Cameras, SD Cards	\$3331.50
Batteries	\$78.41
Total:	\$8915.35

VI. Contact Person

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CRABALICIOUS



N 26 27.090 W 082 06.783

After you find all 5 of the Earth Caches that are located within the Refuge, please visit the “Ding” Darling Education Center to receive a FREE gift. After verifying with the staff that you visited the 4 out of the 5 EarthCaches and have the answers to the questions, you will receive a Roseate Spoonbill pathtag! You still need to log into the site to get credit for these “finds” however. **Please remember that no collecting or leaving of anything is allowed at a Natural Wildlife Refuge.**

The J.N. “Ding” Darling National Wildlife Refuge was created to safeguard and enhance the pristine wildlife habitat of Sanibel Island, to protect endangered and threatened species, and to provide feeding, nesting, and roosting areas for migratory birds. Today, the refuge provides important habitat to over 220 species of birds.

A political cartoonist with an eye toward conservation, Jay Norwood “Ding” Darling was instrumental in the effort to block the sale of a parcel of environmentally valuable land to developers on Sanibel Island. At Darling’s urging, President Harry S. Truman signed an Executive Order creating the Sanibel National Wildlife Refuge in 1945.

The refuge was renamed in 1967 in honor of the pioneer conservationist. The refuge consists of over 6,400 acres of mangrove forest, submerged seagrass beds, cordgrass marshes, and West Indian hardwood hammocks. Approximately 2,800 acres of the refuge are designated by Congress as a Wilderness Area.

The Blue Crab is a very interesting, delicious animal. Here are some fun facts from National Geographic:

Type: Invertebrate

Diet: Omnivore

Average lifespan in the wild: 1 to 3 years

Size: 4 in (10.2 cm) long; 9 in (23 cm) wide

Weight: 1 to 2 lbs (0.45 to 0.9 kg)

Group name: Cast

Did you know? Female blue crabs mate only once in their lives.

“The blue crab is a funny site to behold, walking sideways along the sand using its three middle pairs of legs, while its front bright blue pincer claws are used to defend itself and grasp prey. The species earns part of its Latin name, *Callinectes*, or “beautiful swimmer” from its hind appendages, which are broad and flat like paddles and make the crab a remarkable swimmer indeed.

The blue crab, one of the most valuable crustaceans in the United States, is aptly described by its scientific name, *Callinectes sapidus* (*Calli* -- beautiful; *nectes* -- swimmer; and *sapidus* -- savory). Blue crabs have five pairs of legs and the first pair is equipped with pincers. They have a hard shell or

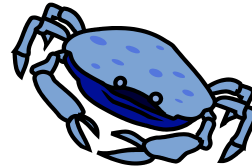
exoskeleton which is brownish-green or dark green and drawn out on each side into a long spine. The underside of the body and legs are white. Male and female claws are various shades of blue on top and the tips of the female's claws are bright red.

Blue crabs are found along the Atlantic and Gulf coasts. A shallow water crab, it can live in salt, fresh and brackish waters of bays, sounds, channels and river mouths.”

The above information is from the site: <http://www.foodreference.com>.

To get credit for the find, please email <mailto:dingdarling@fws.gov> a picture of you with GPS in hand showing the correct co-ordinates and the answers to the following questions:

- 1.) How do you determine if a Blue Crab is male or female?
- 2.) What is the Refuge limit for catching blue crabs per person, per day?
- 3.) How many of the crabs that you catch can be female?



Now, if you were able to find 4 of the 5 of the EarthCaches located in the Refuge, go back to the “Ding” Darling Education Center to get your Roseate Spoonbill pathtag!



BAYSHORE EARTHCACHES

GRADE 5:

N 26 42.807

W 081 50.488

1. What kind of trees are around this location?
2. How high is the walkway from the ground at the highest point?
3. How many pilings hold up the bridge? (Pilings go INTO the ground.)
4. What is the distance between the top and bottom railing boards?
5. What 3 materials were used to create this location?
6. How many screws are in 3 planks (boards) of the boardwalk?
7. What is the distance between the top and bottom railing boards?
- 8.

Answers:

1. Pine and live oak
2. approximately 27 inches
3. 22 total (both sides)
4. 10 inches
5. lumber (wood), metal (screws and bolts), recycled plastic
6. 10 in each board, so 30 total
7. 10 inches

GRADES 1 & 2:

N 26 42.897

W 081 50.454

1. What is the name of this plant?
2. Is this a native or invasive plant?
3. Will this plant keep growing? What will happen to the other plants around it?
4. Can people eat the berries? Why or why not?
5. What color are the berries?
6. Why are they called Brazilian Peppers?

Answers:

1. Brazilian pepper
2. invasive
3. They will get crowded out and die because the pepper takes its habitat
4. No, they are toxic to people
5. red
6. They came from Brazil

GUEST SPEAKERS



Toni Westland, Park Ranger at Ding Darling Wildlife Refuge.



Jungle Pete from Eco-Safari, Wildlife biologist.



Colleen Mitchell from the Division of Forestry.



Mr. Hansen from the Florida Fish and Wildlife Conservation Commission.

Collaboration Assessment Score Sheet

Each group, meeting together, will evaluate the individual members of the team. The team should reach consensus on a fair and equitable evaluation for each individual member of the team. If impasse occurs, the instructor should be invited to mediate.

	Time	Member name	Member name	Member Name	Member Name
Contribute	Research & gather Information				
	Share Information				
	Be Punctual				
Take Responsibility	Fulfill Team Role's Duties				
	Participate in Science Conference				
	Share Equally				
Value Others' Viewpoints	Listen to Other Teammates				
	Cooperate with Teammates				
	Make Fair Decisions				
	Total				
	Average				
	Score				

Source: *EarthCaching - An Educator's Guide*. 2007. The Geological Society of America

Marion County School District

Project Title: *Water Wonderland*

I. Project Rationale and Goals

A. Project Rationale

The challenge to elevate science experiences for gifted learners while increasing awareness of local environmental issues motivated the design of *Water Wonderland*, a 2008-2009 Challenge Grant for the Gifted Collaborative Curriculum Project. Prior to implementation, the text-based Earth Science curriculum lacked connections for gifted learners to Florida's unique geologic structures and resources, and did little to encourage gifted learners toward becoming leaders in environmental causes.

The *Water Wonderland* enhanced curriculum focused on gifted learners as independent researchers discovering Earth's systems through scientific inquiries. Students were linked to real-world practitioners of environmental sciences, many within agencies that present scientific evidence and influence policy-making. Ultimately, *Water Wonderland* motivated gifted learners to exercise natural leadership skills as stewards advocating for protection of local ecosystems and Planet Earth as a whole.

B. Project Goals

Water Wonderland goals guided gifted learners:

1. To interpret curriculum content according to individual strengths, interests, and needs for challenge.
2. To advance scientific processes in directed, guided, and independent inquiry, both individually and as team members.
3. To gain awareness of issues through collaborations with experts in environmental sciences and related fields.
4. To analyze scientific evidence related to environmental issues and synthesize results in projects of their own designs.
5. To acknowledge the interconnectivity of Earth's ecosystems and limitations of resources, and generate creative solutions to environmental problems.
6. To recognize the cumulative impact of individual behaviors, adopt green lifestyles, and lead as Earth's stewards.

II. Project Implementation

A. Project Activities

Through a series of directed and guided inquiries, the teacher aligned hands-on labs to standards for Earth Science. Modeling proper science procedures and lab safety prior to student engagement, the teacher fostered learning necessary for scaffolding later when students were granted greater inquiry autonomy. Student learning was indicated through participation and documentation in lab journals of scientific inquiry procedures including observations and predictions, data organized in graphs, tables, and charts, and interpretation of results to form supported conclusions. Further interactive engagement was provided through *Project Wet*, a

curriculum designed by St. Johns River Water Management District. These activities directly connected students to local implications of environmental abuses.

Focuses for directed and guided inquiry activities included:

- Phase changes of water
- Molecular polarity
- Water cycle simulation
- Karst topography, Florida limestone, and sinkholes
- Weathering, erosion, and deposition
- Modeling watersheds and the Florida aquifer

Student engagement in a teacher directed *Facing the Future* sustainability simulation provided background for an Internet inventory with graphics reflecting lifestyle choices of student families. When compiled, the inventory projected how many planets were necessary for all humans to live as each family lived. No matter how many green behaviors the particular family practiced, a minimum of two planets was required for all Earth's inhabitants to replicate American consumption. Students researched reasons and contrasted differences in lifestyles of countries where fewer resources were consumed. These realizations not only stimulated discussion and debate, but led to the One Earth theme for the *Water Wonderland* project.

Again using an interactive website, the carbon footprint metaphor was introduced. Students analyzed variables in each person's carbon footprint according to number of meat-based meals, amount of air travel, proximity to stores and school, size of home, amount of lawn, and other indicators. Students considered methods to lessen their carbon footprints. Practices included buying local fruits and vegetables, eating vegetarian diets, switching to Energy Star appliances, driving hybrid cars, and using alternative energy rather than fossil fuels. The total energy saved in Marion County Schools by simply shutting down computers on weekends and unplugging computers during breaks highlighted how small changes can have large cumulative impacts.

The One Earth theme led students to consider, debate, and defend their views based on individual values. Although student positions varied, stated behavior modifications could be divided into three camps:

1. Maintain current lifestyle practices with minor behavior changes.
2. Conserve resources, even if behavior modifications prove inconvenient.
3. Change to green lifestyles and advocate for policies that may reverse current trends, thus rescuing endangered species and threatened ecosystems.

Students identified peers with like environmental views and concerns, dividing into collaborative One Earth research teams. Using the Internet and print resources, teams embarked on research of chosen environmental issues looking for trends and contradictory views. Teams shared sustainability questions reflecting current data, interpretations, and long-term projections.

Following the inquiry procedures established during guided inquiry, students independently reproduced, simulated, or modeled Earth processes that reinforced their chosen environmental issues. During this portion, the teacher acted as facilitator assisting in gathering investigative materials and ensuring lab safety. Otherwise, students were free to discover without intervention unless assistance was requested. Through documented observations and analysis of collected data, environmental inquiries demanded abilities to gather empirical evidence, make inferences, and project long-term trends.

Based on student interests and preferences, teams were given the latitude to choose beyond water conservation to inquiries on destruction of animal habitats and ecosystems, deforestation, composting and organic farming, recycling, biodegradable versus photo-degradable materials, among others. Students collaborated to form objective, evidence-based action plans to address problems recognizing the resistance of human beings to changes in their current lifestyles. Disagreements highlighted the nature of science as open to interpretation, just as controversies surface in the broader scientific community.

As a curriculum redesign, *Water Wonderland* expanded gifted student experiences beyond standard curriculum, ultimately to presentations showcasing advances in awareness, values, and acceptance of responsibilities for the present and future health of life on Earth. Ascending levels of intellectual demand led students to independent inquiry based on their own project designs in preparation for the One Earth event. Each team designed a station to share their research. The sharing was as varied as the selected environmental topics. Some teams supported their presentations with PowerPoint images, charts, and other graphics. Some teams chose to communicate with displays and brochures. Since lasting experiences are best preserved through active participation, each team planned an interactive component that highlighted the station's environmental issue. Prior to the One Earth event, teams presented station content and activities to gifted classmates as if they were guests. Gifted peers provided each team with feedback and suggestions for station improvements.

As hosts of the One Earth event, gifted learners displayed leadership skills communicating passion and expertise while guiding peers in hands-on activities that included: simulating a variety of sources of non-point pollutants, layering mini-compost piles to add natural material to enrich soils and decrease erosion, modeling the filtering process in the Florida aquifer, sorting materials during a recycling game, encouraging water conservation by modeling global percentages of fresh versus salt water, simulating eco-system relationships, and others.

Participation in *Water Wonderland* enlightened gifted learners on agencies dedicated to safeguarding Earth's resources and fragile ecosystems. Reports published by the St. Johns River Water Management District provided detailed lithologic, geophysical, and chemical data from the local watershed and connected aquifer. Students learned how springs discharge water from the Upper Floridian aquifer into rivers and streams that eventually flow into the Atlantic Ocean. Divisions of the state into water management districts increased student awareness of concentrated efforts to conserve local and state resources

B. Curriculum Content Focus

The targeted learners receive gifted services through their science course, specifically Earth Science, at the sixth grade level. Sixth graders of 2008-2009 will be tested on the Science Florida Comprehensive Assessment Test during their eighth grade year. By then, the FCAT will reflect the Next Generation Sunshine State Science Standards, therefore *Water Wonderland* addressed those benchmarks and Big Ideas at the independent levels appropriate for gifted learners.

C. Sunshine State Standards Addressed

Science

SC.6.N.1.1: Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments,

identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

Grade 6

Big Idea 1.D Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

Grade 6

Big Idea 2.C. Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

SC.8.N.4.1 Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.

D. Instructional Methodology Used

Florida Frameworks for Gifted Learners

Student Outcomes Program Goal 4: By graduation, the student identified as gifted will be able to think creatively and critically to identify and solve real-world problems.

Objective 1: The student will identify and investigate a problem and generate supportive arguments from multiple perspectives of a complex issue.

Objective 2: The student will analyze the relevance, reliability, and usefulness of data to draw conclusions and forecast effective solutions.

Objective 3: The student will use and evaluate various problem-solving methods to determine effectiveness in solving real-world problems.

Through *Water Wonderland* science inquiries, students developed concerns guided by individual values and interpretations. Experts in related environmental sciences provided real-world connections to issues and careers while shaping attitudes and guiding research for final projects. Since selected topics reflected issues of global concern with long-range impacts and challenges, experts shared methods for communicating urgency without creating either alarm or apathy. Gifted learners engaged in analysis, synthesis and evaluation to develop feasible, proactive problem solutions that were communicated in final project presentations, One Earth stations, and through ongoing environmental advocacy.

Student Outcomes Program Goal 5: By graduation, the student identified as gifted will be able to assume leadership and participatory roles in both gifted and heterogeneous group learning situations.

Objective 1: The student will accept divergent views to positively effect change.

Objective 2: The student will identify leadership traits and qualities as they appear in different individuals and situations.

Objective 3: The student will manifest significant leadership skills and organize group(s) to achieve project goals.

One Earth stations allowed gifted learners to share their expertise on environmental issues, communicating and educating heterogeneous groups of students invited to the One Earth event.

State Board of Education Strategic Imperatives Addressed:

- **Increase the supply of highly effective teachers**

In preparation for implementation of *Water Wonderland*, the lead teacher pursued various professional development opportunities including The Teacher Summer Water Institute presented by The St. Johns River Water Management District. The teacher attended the Heart of Florida Science and Math Conference where agencies and educators presented ideas and best practices for expanding environmental education.

- **Improve student rates of learning.**

As memorable learning is best achieved through active engagement, the simulations, models, project-based learning, and contacts with experts in environmental sciences reinforced student learning for greater conceptual understanding and concept retention.

E. Nature of the Collaboration

Gifted learners selected environmental issues for problem-based research interpreted as team collaborations. Success in meeting common team goals demanded that students gain team-building skills by exercising peer negotiation, tapping individual strengths for leadership, and accepting responsibilities for effective support when others took the lead.

- Students with strengths in science led during environmental inquiries.
- Students with strengths in mathematics guided inquiry measurement techniques and interpretations of results, and ensured accuracy in presentation of supporting data in related tables, graphs, and charts.
- Students with strengths in technology applications demonstrated their expertise in Internet research and creation of digital products.
- Students with strengths in language arts, communication, and oral language provided leadership in research, organization, and text composition, and advised team members on presentation improvements.
- Student artists guided team aesthetic choices and created displays.

During visits, interviews, and email exchanges, experts collaborated with student team members motivating real-world practices. Students came to recognize that models and simulations are widely applied by scientists when projecting Earth processes too large for direct inquiries. Student perceptions of models as toys were altered, thus influencing student inquiry designs. With greater confidence in results, students used models and simulations to generate valid conclusions, to make inferences on future trends, and to support plausible problem solutions.

Expanded collaborations within the enhanced *Water Wonderland* curriculum provided gifted learners connections to agencies that have the ability to influence policies on land development and preservation of resources. Resulting insights, atypical of the traditional types of experiences available to gifted learners, increased student commitments and sense of learning ownership. In addition, interactions with proactive environmentalists assisted students in creating proposals for sustainability. Students recognized that the human race is facing one of the greatest collaboration

challenges of all time and concluded that: *Working together there is hope for sustaining quality of life on Planet Earth.*

Participants

Water Wonderland Participants	
Participants	Number
6 th Grade Gifted Students	45
General Education Students	75
Administrators	2
Community Members / Collaborators	15
Teacher of the Gifted	1
General Education Teacher	1
Total Participants	139

Personnel

Environmentalists / Collaborators	Guidance and Expertise Provided
Florida Museum of Natural History	Beneficial insects in gardening
Florida Farm Bureau	Organic farming and natural fertilizers
Dixie Limerock	Environmental protections in mining
St. Johns River Water Management District	Modeling the Florida aquifer, watersheds, waterway interconnectivity
Ocala Municipal Golf Course	Facility water conservation efforts
Florida Division of Forestry	Protecting and replanting forests
Southeastern Livestock Pavilion	Drought resistant plantings
UF/IFAS Center for Aquatic and Invasive Plants	Invasive plant species and impact on ecosystems

III. Evaluation

A. Assessment of Student Performance

Prior to implementation of activities, gifted students were assessed on their mastery of specific concepts and processes as related to environmental sciences and project goals, along with attitudes on green lifestyles. Pre-assessment items were designed to assess student knowledge and awareness of:

1. Environmental issues
2. Scientific processes including models and simulations in real-world practices
3. Methods for effective peer and expert collaborations
4. Cumulative impact of each individual's lifestyle on sustainability of Earth resources; green lifestyle practices
5. Ideas on leadership and abilities of students to influence others through problem-based project design
6. Stewardship efforts

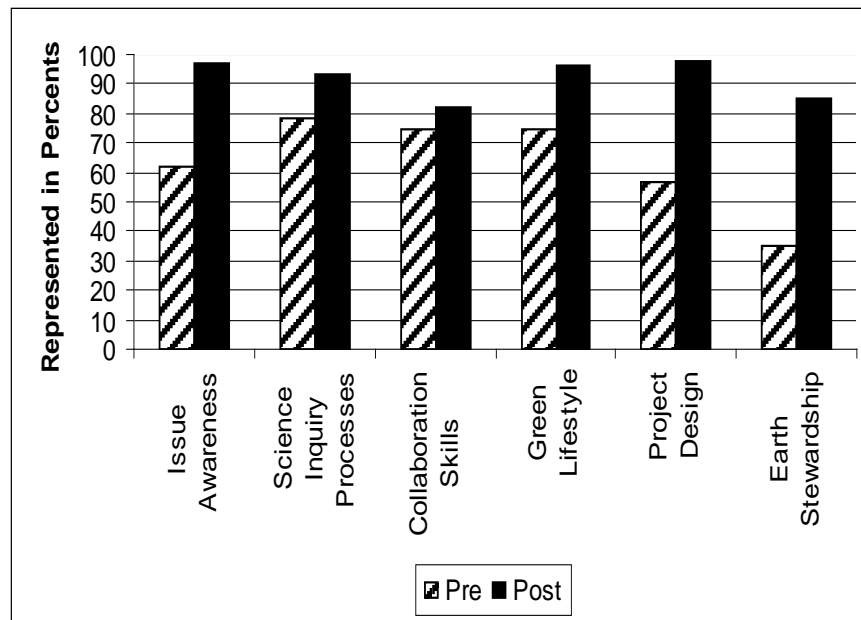
Since *Water Wonderland* encompassed hard sciences (Earth and Environmental Sciences and scientific methods during guided, directed, and independent inquiries) along with soft sciences (changes in human behavior and attitudes), post-assessment methodology varied accordingly.

Post-assessment required ongoing measurements through a variety of instruments as described:

1. Increase in awareness of local and global environmental issues as measured by test grades and performance rubric indicators
2. Increase in abilities to apply scientific processes in problem solving inquiries as measured by quality lab write-ups, performance rubric indicators, test grades, and teacher observation checklists
3. Increase in knowledge of green lifestyles that contribute to sustainability as measured by teacher inventory of performances during discussions and debates and student project evaluations
4. Abilities to engage in effective collaborations as measured by performance rubric indicators of research and final products, documented content of interactions with experts with evidence of influence on project design, and self and peer evaluations
5. Demonstration of abilities to communicate expertise through project design and sharing with guests as measured through performance rubric indicators and student self and peer evaluations
6. Increase in commitment to Earth stewardship as measured by student responses on project evaluations

B. Project Evaluation

Pre and Post Assessment Comparison of Water Wonderland Student Learning Gains



The importance of the goals for *Water Wonderland* are reinforced by the National Oceanic and Atmospheric Administration (NOAA) in their policy statement:

“We find ourselves at a crossroads where many of our nation’s most critical scientific and environmental challenges are occurring when we are not well prepared to address them. Global climate change, rising sea levels, changing

weather patterns, collapsing fisheries, and habitat losses are real threats to the American economy and way of life. At the same time, America's youth continue to fall further behind their global peers in science and math, resulting in the threat of a future where fewer Americans are prepared for careers that will address these challenges. Congress recognized this perilous track and passed the America COMPETES Act of 2007, which gives NOAA a broad mandate to educate the public about ocean, coastal, Great Lakes, and atmospheric science and stewardship."

Two environmental projects completed by targeted gifted learners were distinguished at the Big Springs Regional Science Fair. *Melting Polar Ice Caps*, a global warming investigation of the impact of Arctic ice versus Antarctic ice in terms of rising sea levels, was singled-out by the National Oceanic and Atmospheric Administration for Excellence in Environmental Science Research. *A Study in Invertebrate Populations in Various Ecosystems* was awarded Best in Show for Indepth Research for any middle school project. This project highlighted the important role of invertebrates in four different Marion County ecosystems and the critical need to leave ecosystems intact.

The overall success of *Water Wonderland* was indicated with advances in student learning in all categories. A relative weakness was noted in student perceptions of peer collaborations as indicated in peer and self evaluations. Although not surprising when the age and maturity levels of the targeted students are considered, the need to increase team building exercises and collaborative opportunities will influence future curriculum design.

Beyond student learning gains, *Water Wonderland* was designed to influence a population of students with natural inclinations toward leadership with hopes some would channel their strengths into environmental studies. The achievement of this component was highlighted as gifted students were exposed to a wide-range of value-based career options they may not have otherwise considered were they not involved in the *Water Wonderland* enhanced curriculum. Of the forty-five students participating in *Water Wonderland*, twelve expressed interest in environmental careers and researched recently added degree offerings at many respected colleges and universities. The goals of four new degrees from the University of Florida's School of Natural Resources and Environment are highlighted on the department's website, *brings together faculty from eleven U of F colleges to educate tomorrow's environmental leaders*. Maybe some of the targeted gifted learners will answer the leadership call.

IV. Dissemination

One Earth stations enabled gifted learners to take the lead in stewardship. Seventy-five basic education peers and their teacher were invited to rotate through each of the One Earth stations. There, gifted learners guided the visitors through hands-on activities that reinforced the presented messages of each of the stations.

The guidelines for One Earth stations and related *Water Wonderland* resources have been shared with elementary gifted programs within Marion County. Plans are to celebrate Earth Day with One Earth stations on another campus next year thus spreading the *Water Wonderland* project to other gifted learners and their basic education peers.

Photos of the One Earth event and accompanying text were submitted to the Marion County Public Schools webmaster for inclusion on the district's website.

V. Budget

Expenditures advanced academic achievement for gifted learners by supplying necessary support materials for directed, guided, and independent inquiries. Digital technologies allowed learners to replicate real-world conditions for gathering of data, accessing Internet resources for research, and communicating inquiry results in digital products.

<u>Items</u>	<u>Cost</u>
Science Inquiry Supplies and Materials	\$2880.00
Environment Models	\$1090.00
Digital Devices	\$1527.00
Dell Computers	<u>\$3900.00</u>
Total	\$9397.00

VI. Contact Person

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**Miami-Dade County School District
Mater Academy**

Project Title: The Physical Science/Physics Continuum Project

I. Project Rationale and Goals

A. Project Rationale

An analysis of our data shows that our deficiencies in the science portion of the Florida Comprehensive Assessment Test (FCAT) are due to the lack of knowledge and/or retention of science content in the area of physical science. Research also shows that students who are gifted, for the most part, are kinesthetic learners who need visual and tactile stimuli in order to connect concepts with practical applications. Therefore, providing the gifted students with a sensory-rich environment while also challenging them will help them to achieve their full potential in science and technology. This project was intended to enable the targeted gifted students with opportunities they would not normally be afforded due to their low socioeconomic status.

B. Project Goals

The goals for this project were as follows:

1. To provide students with opportunities to perform quantitative studies on the forces involved with motion, providing individual students with the ability to investigate direct and inverse relationships both graphically and mathematically.
2. To change students' attitudes towards science and enhance their comprehension of physics concepts by involving them in student-centered activities.
3. To bridge the gap between Physical Science (in the Middle School) to Physics (in the High School) by using vertical teaming – where teachers collaborate and plan together.

II. Project Implementation

A. Project Activities

The learning experiences obtained by the students were divided into three distinct but interrelated components, which would not be otherwise available to these students.

Component 1: Hands-on training - in the use of modern technology physics equipment, with the concurrent planning of, performing, interpretation, documentation and presentation of highly accurate results in a coherent manner.

Component 2: Field studies - students had the opportunity to interact with the faculty of Florida International University's Physics Department, and have authentic learning experiences with nanotechnology, high energy particle physics, and atomic level material interaction.

Component 3: students became part of St. Thomas University’s STEM Fellows Program and obtained academic mentoring in the fields of mathematics, engineering, physics, and astronomy fields which studies show are currently lacking in female and minority participation.

The experience the gifted students obtained from the use of this equipment led them to seek greater understanding of different physical phenomena. This led them to seek more information from our partnership with St. Thomas University’s STEM Fellows Program. The STEM Fellows Program is a major initiative to increase the number of students in the sciences thus enabling minority students with exceptional scholastic achievements to pursue careers in science, technology, engineering, and mathematics.

B. Curriculum Content Focus

The use of the equipment aided the middle and high school students in obtaining a visual comprehension of the concepts of acceleration, speed/velocity, direction of movement, as well as the effects of gravity as a force. By the time the middle school students are in high school, they will be able to use the same equipment to expand their understanding of the concepts they acquired in middle school using higher order mathematical skills. High school students will be able to take their experience on to a college or university. As a result, the gap in knowledge from middle school physical science to high school physics and high school to college will be bridged.

Use of the equipment also allowed gifted students to perform quantitative studies on the forces involved with motion. This provided individual students with the ability to investigate direct and inverse relationships both graphically and mathematically thus increasing the comprehension of physics and mathematics concepts. The learning achieved by the gifted students was enhanced by the student-centered nature of these activities which helped to improve their attitudes toward science, while also improving their chances of pursuing a career in the science and/or technology field.

C. Sunshine State Standards Addressed

Science

- SC.H.1.4.1 Knows that investigations are conducted to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare different theories.
- SC.H.3.4.1 Knows that performance testing is often conducted using small-scale models, computer simulations, or analogous systems to reduce the chance of system failure.
- SC.H.2.4.2 knows that scientists control conditions in order to obtain evidence, but when that is not possible for practical or ethical reasons, they try to observe a wide range of natural occurrences to discern patterns.
- SC.C.2.4 understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.
- SC.B.2.4.1 knows that the structure of the universe is the result of interactions involving fundamental particles (matter) and basic forces (energy) and that evidence suggests that the universe contains all of the matter and energy that ever existed.

D. Instructional Methodology Used

Using the electronic measuring equipment, the students were able to obtain hands-on experience in designing and setting up experiments. They experienced the difficulties involved in manually

setting up the equipment. They were also taught how to use the Logger Pro ® and were made aware of the ways that the different sensors could be set up to obtain different types of data. They were also able to experience the real world working conditions of a scientist. Students attempted to obtain real time data indicating the motion, force, and direction of objects with a high amount of accuracy. This also gave the students a means of analyzing and reporting the data in a more accurate manner. Due to the accuracy of the equipment one of the gifted students was able to use the magnetic field detector feature in order to do a study on the magnetic fields of cell phones and their effect on the growth of fruit flies for the Florida Science Fair.

E. Nature of the Collaboration

In order to increase the academic achievement of the students, we collaborated with Florida International University’s Department of Physics, and St. Thomas University’s Department of Math and Science. During their visit to Florida International University, students were able to interact with the faculty who deal with high energy particle physics and the students were invited to participate in an intellectual discussion regarding the CERN Super Collider located on the border of France and Belgium. They were able to experience the nanotechnology lab and learn the different ways nanotechnology is affecting our everyday lives. They then had the opportunity to observe a high energy electron microscope which is currently being used to determine the interaction of substances at the atomic level.

At St. Thomas University the students were offered assistance with science fair projects and were able to use university facilities along with being mentored by the university faculty and upper classmen. The STEM Fellows Program has led several of our students to enroll in the university program which provides an opportunity to study in a cohort with a personal academic advisor to help students through graduation. It also gives students the opportunity to learn science and perform publishable research along with faculty members in the technologically advanced labs inside the new Carnival Cruise Lines Science and Technology Building, home to the School of Science, Technology and Engineering Management. This opportunity has provided more gifted minority and female students the opportunity to choose a career in science, technology, engineering, or mathematics. This is an opportunity they might not otherwise have had.

Participants:

Participants	Number
Gifted students	103
General education students	107
Community members	6
Total participants	216

Personnel

Dr. J.R. Rodriguez-Abrines Project Director, High School Science Teacher
 Mrs. Sarah Hays, Middle School Science Teacher
 Mrs. Folashade Adetoro, Web Design Teacher
 Teresa M. Santalo, Assistant Principal

III. Evaluation

A. Assessment of Student Performance

All science students were given quarterly Interim Assessments from September 2008 to January 2009. The middle school students demonstrated an increase of 22%, from an 8% to a 30% of our students obtaining a passing score. The FCAT Science scores remained the same from the previous year, 38% of our students scoring at a level 3 or above. The high school students demonstrated an increase of 24%, from a 2% to a 26% of our students obtaining a passing score on the Interim Assessments. The FCAT Science scores increased 6%, from 27% of our students scoring a 3 or above in 2008 to our current passing scores of 33%.

B. Project Evaluation

The Physical Science/Physics Continuum Project was a success. Our science department was affected greatly by our vertical teaming and sense of cohesion amongst our middle and high school teachers. This team building helped our middle school teachers to better understand the relationship between physical science and physics which helped them to teach the physical science concepts in a way that would facilitate a smoother transition into the high school physics classes.

The project was successful in helping to increase our Interim Assessment as well as our FCAT scores. This was mentioned in the above section.

Our students' attitudes toward science seemed to change for the better. Students for the first time in our school's history were choosing Physics as a major field of study in college. We also had several students enrolling in the STEM Fellows program at St. Thomas University. There also seems to be more interest in Physics, demonstrated by more students wanting to enroll in Physics for the coming school year.

IV. Dissemination

Dr. J.R. Rodriguez-Abrines, project director, provided the first in-service to the entire science department at the beginning of the school year. At this time he introduced the new technology and manipulatives purchased through the grant and demonstrated their basic use. He explained the importance of teamwork throughout the science department in making the project a success. Midyear, Dr. Rodriguez-Abrines held a second in-service where teachers were able to share their experiences on the use of the equipment, and Dr. Rodriguez was able to give further training on the more advanced uses. In collaboration with St. Thomas University, Mater Academy science teachers were invited to the science and technology wing to learn what was available to them as well as their students.

Year round, both the physical science and physics students were assigned a bulletin board where they displayed pictures, and data and results of current classroom experiments. Physics students enrolled in Web Design established a Physical Science/Physics web page where science projects were showcased. Lesson plans, worksheets, and reading were also posted. This was an invaluable resource to teachers where they could share best practices.

Dr. Rodriguez-Abrines, as project coordinator and EESAC (Excellence in Education School Advisory Council) chairperson, disseminated information to the council at the monthly meetings. This helped to keep students, teachers, and stakeholders abreast of the success of the project.

V. Budget

<u>Items</u>	<u>Cost</u>
Lab Pro Interphase	\$2,200.00
Motion Detector	\$780.00
Dual Range Force Sensor	\$1,090.00
Light Sensor	\$530.00
Magnetic Field Sensor	\$580.00
Picket Fence	\$70.00
Low-g Accelerometer	\$980.00
Vernier Photogate	\$450.00
Ultra Pulley Attachment	\$240.00
Vernier Dynamics System	\$2,640.00
Travel Expenses	\$440.00
Total	\$10,000.00

VI. Contact Person

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**Orange County School District
East Lake Elementary School**

Project Title: Forensic Fusion

I. Project Rationale and Goals

A. Project Rationale

There is a nationwide need for students to pursue post-secondary education in science, technology, engineering, and mathematics. Research has shown that female students, in particular, do not enter these fields with the same regularity as their male counterparts. Results from East Lake's 2007-2008 district-based Edusoft pre-testing in science indicated a clear need to develop the skills associated with Strand H of the 1993 Sunshine State Science Standards. Strand H focuses on the nature of science and scientific thinking. Edusoft is a Web-based program the district uses to measure student progress toward mastering Sunshine State Standards. Females in all grades level 3-5 listed above had a lower average score and a total lower percentage of on-target students than their male counterparts. In fifth grade, which is an FCAT science testing year, there was a need across the board for advanced science inquiry. Gifted student's needs were not currently being met in science as a result of lack of training of the general education teachers in gifted instructional strategies. This need was positively impacted by the *Forensic Fusion* project.

Capitalizing on the nationwide interest in forensic science, the gifted program at East Lake focused their gifted science curriculum on forensic science as a means of teaching standards-based science concepts. The real world application of forensic science, coupled with the extensive amount of scientific concepts covered within its evidentiary procedures, allowed for cross-curricular integration of science, math, and language arts. The forensic program focused on using scientific inquiry and investigation to develop an interest in Science, Technology, Engineering and Mathematics (STEM) careers, and met individual needs as assessed by gifted student educational plans.

B. Project Goals

GOAL: To promote inquiry in science among gifted learners in Grades 1-5 at East Lake Elementary School through creating a gifted resource program with a forensic science focus.
OBJECTIVE 1: CURRICULUM DEVELOPMENT
<i>Objective 1.1:</i> By June 2009, develop rigorous and challenging forensic science-based curriculum to advance science inquiry in gifted elementary school students as measured by Florida's Frameworks for K-12 Gifted Learners Checklist for Challenge and Rigor.
<i>Objective 1.2:</i> By June 2009, compact the standard science curriculum for gifted students in order to implement Forensic Fusion and ensure that it correlates with the Gifted Frameworks #1, 3, 4, and 6 as measured by Florida's Frameworks for K-12 Gifted Learners Checklist for Challenge and Rigor.
OBJECTIVE 2: GIFTED TEACHER TRAINING
<i>Objective 2.1:</i> By June 2009, improve gifted teacher <u>content knowledge</u> in forensic science to

<i>support implementation of the Forensic Fusion collaborative curriculum as measured by successful course and other professional development completion records.</i>
Objective 2.2: <i>By June 2009, improve the <u>pedagogical skills</u> of the gifted teacher related to science inquiry as measured by the student achievement data of East Lake Elementary school's gifted learners on the Edusoft science pre- and post tests.</i>
OBJECTIVE 3: ADVANCEMENT OF GIFTED STUDENTS
Objective 3.1: <i>By June 2009, advance the science inquiry skills of East Lake's 50 gifted students as assessed by the district's Edusoft science pre/post test.</i>
Objective 3.2: <i>By June 2009, increase the forensic science knowledge and skills of East Lake Elementary School's 50 gifted learners as demonstrated during their planning and implementation of the Forensic Fusion Family Workshop.</i>
Objective 3.3: <i>By June 2009, develop the interest of 50 East Lake Elementary School gifted students in STEM careers as assessed by a student attitude survey.</i>

II. Project Implementation

A. Project Activities

Students who participated in the *Forensic Fusion* project took part in a challenging, core compacted curriculum where each unit of study began with a unit pre-test. Each unit was compacted into seven lessons, including two hands-on investigations. In addition, culminating each unit, a crime scene was developed that directly reinforced the topic. Gifted students recorded their conclusions in their forensic laboratory journal and students created a podcast demonstrating the forensic technique they had learned. Podcasts were defined as web-based radio or Internet broadcasts.

To further develop their forensic techniques, students visited Timber Creek High School, and collected evidence within four staged crime scenes. Then, the Orlando Science Center visited students and reinforced the forensic technique being studied in that unit. Each month the science center completed a different portion of a yearlong crime scene entitled "The Trophy Case Capers." Over the course of the year, the students analyzed evidence from each session of the "Trophy Case Capers" and used their findings to narrow down the alleged suspect list. A field trip to the science center allowed students to work in their state-of-the-art forensic lab to synthesize all of the evidence collected throughout the year using their Scanning Electron Microscope.

In our culminating activity with Orlando Science Center, students concluded that the trophy "thief" was none other than our principal. The students presented their findings to the Orlando Science Center and a mock arrest was staged at our school. Finally, students had the opportunity to interact with a forensics or law enforcement professional who had direct expertise with the forensic technique discussed in that month's crime scene. The chart below indicates the new knowledge acquired by students who participated in the grant project.

NEW KNOWLEDGE, SKILLS, AND ABILITIES		
ALL	Grades 1-2	Grades 3-5**
Podcasting	Fingerprinting	Facial Reconstruction
Reading comprehension-nonfiction	Teeth Impressions	Blood Typing
Research Skills	Plant Identification	Basic DNA

NEW KNOWLEDGE, SKILLS, AND ABILITIES		
ALL	Grades 1-2	Grades 3-5**
Expository writing	Soil Analysis	Tire Treads
Comparative analysis	Footprint	Chromatography
Critical Thinking	Patterns	Microscopy
Deductive Reasoning	Sounds	Spectroscopy
Interviewing	Fiber analysis	Casts and Molds
Observation		Trajectory
Problem Solving		Crime Scene Mapping
Lab Reports		Blood Spatter Patterns
Data Tables		Fractography
Graphs		Voice Patterns
Algebraic Thinking		Inorganic Analysis
Predict		Mixture and Separations
Infer		
		Students in grades 3-5 also mastered the more basic 1-2 forensic skills

B. Curriculum Content Focus

The *Forensic Fusion* project was developed around the Parallel Curriculum Model because it focuses on ascending intellectual demand, which aligned with the programs objective of advancing gifted students' development in science inquiry.

Through the developed *Forensic Fusion* program, gifted students challenged themselves through planned investigations aligned with the state standards, moving students beyond the text toward exploration and discovery. Students learned to think, speak, and behave like scientists, while developing scientific habits of mind.

Building on the concept of inquiry, the use of forensic science facilitated the development of proficient critical thinking skills and problem solving, which the National Science Standards require. Forensic science was an ideal choice for gifted learners because it provided a multidisciplinary approach to science including: biology, chemistry, anatomy, genetics, physics, math, earth science, communication, and law. The collaborative curriculum created crime scenes

that reviewed the materials taught in each unit of study, and also required students to solve complex problems using logical reasoning and which involved numerical data.

INSTRUCTIONAL PLAN PROPOSED SCOPE AND SEQUENCE		
Month	Unit of Study	Crime Scene Activity Topic
August	Water	Water Analysis/ Absorption-Evaporation Rates
Sept.	Earth's Surfaces	Soil Studies/ Inorganic Analysis/Tire Tracks/Footprints/Casts and Molds
Oct.	Earth's Resources	Organic Analysis/Rock and Mineral Identification/ Crime Scene Reconstruction
Nov.	Earth/Stars/Galaxies	Rate of Light Travel/Light Refraction/Momentum/ Spectroscopy/Forces of Gravity
Dec.	Technology	Facial Recognition Software/ CSI Scope Compound Microscope/ Mobile Crime Lab/ Scanning Electron Microscope/ Digital Technology/ Crime Scene Mapping
Jan.	Matter	Density/ Glass Fractography/ Fiber analysis/ Inorganic Analysis/Fuming
Jan.	Changes in Matter	Mixtures and Separations/Paint analysis/Rate of Evaporation/Document Analysis/ Chromatography
Feb.	Forces/Motions	Ballistics/Trajectory/Spatter Patterns/Light Refraction
Feb.	Forms of Energy	Flame Tests/ Rate of Heat Loss/ Voice Patterns/ Micro Blue Evidence Detection/ Arson
Mar.	Electricity	Electric Currents in Courtroom Evidence/ Electrophoresis
April	Classifying Organisms	Focalization/ Hair Analysis
April	Cells to Systems	Blood Typing / Microscopy/ Saliva
May	Human Body	DNA / Fingerprinting/ Dental Impressions/ Facial Reconstruction
May	Plants	Chromatography/ Plant Identification/Trace Evidence/Leaf and Soil Analysis
June	Ecosystem Interactions	Entomology- Insects/ Zoology – Animal Hair and Blood/ Organic Analysis
June	Ecosystem Changes	Habitats/Soil Analysis/Water Analysis/ Environment Analysis

C. Sunshine State Standards Addressed

Science

SC.A.1	understands that all matter has observable, measurable properties.
SC.C.2	understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.
SC.F.1	describes patterns of structure and function in living things.
SC.G.1	understands the competitive, interdependent, cyclic nature of living things in the environment.
SC.H.1	uses the scientific processes and habits of mind to solve problems.
SC.H.2	understands that most natural events occur in comprehensible, consistent patterns.
SC.H.3	understands that science, technology, and society are interwoven and interdependent.

D. Instructional Methodology Used

Redesign of Instruction:

- Compacting of curriculum to include forensic science inquiry
- Mentoring partnerships with high school students
- Authentic crime scene experiences with the Orlando Science Center, Orange County Sheriff Office, Criminal Justice Institute, Drug Enforcement Agency and University of Central Florida(UCF): Forensic Department and Police Department
- Use of technology through podcasting to allow gifted students to communicate their findings to a greater audience
- *Forensic Fusion* Family Workshop allowed students to synthesize forensic skills acquired throughout the year while engaging in planning, delivery, and leadership exercises.
- Use of authentic tools and environments.

Training for Educators:

- Forensic Educational Conference- the gifted teacher was the first elementary teacher to attend this conference.
- Great Explorations in Math and Science (GEMS) training, customized for *Forensic Fusion* program to include training on: The 18 gifted cluster teachers (general education teachers of the targeted gifted students) joined the gifted teacher receiving GEMS instruction in Mystery Festivals, Fingerprinting, and Crime Lab Chemistry.
- Science Inquiry Workshop – The 18 gifted cluster teachers attended this workshop developed by UCF exclusively for *Forensic Fusion* program.

E. Nature of the Collaboration

- The **Orlando Science Center** collaborated with the gifted teacher at East Lake to develop a yearlong forensic science training and experience for each of the grades 1-5. The science center came to East Lake eight times throughout the year. For the purpose of the visits, the Orlando Science Center developed a mock crime scene scenario and related activities. During each visit students used new forensic techniques previously taught by the gifted to teacher to solve a small portion of the simulated crime. After each session was completed the Orlando Science Center took the evidence from East Lake and analyzed it under their scanning electron microscope.

The images from the scanning electron microscope were published through an interactive website that allowed students to further analyze data. This program culminated in the students and school receiving a certificate of completion. The science center facilitated a field trip to their facilities where students participated in forensic exhibits. Science center staff mentored gifted students as they prepared to take what they learned from the forensic training they were provided and constructed a forensic workshop for parents, students, and staff members. Finally, science center provided planned lessons through a web-based server making it available to other teachers in the Central Florida area. .

- **The Orange County Sherriff’s Office, School Resource Officer Deputy Carmelo Ortiz,** staged four culminating crime scenes quarterly that provided students the opportunity to mark and collect evidence, make predications and solve problems, through the scientific method, and report findings using nonfiction writing skills.
- **The Forensic Science Classes at Timber Creek High School** collaborated with elementary school students a mock crime scene.
- **The East Lake Elementary Technology Coordinator, Mr. Glarsnell Jean-Charles,** collaborated with the gifted teacher, media specialist, and gifted students to record student demonstrations of how to perform such forensic techniques as fingerprinting, and published them through a podcast posted on East Lake’s school website. Finally, East Lake’s website has a page dedicated to the curriculum of the *Forensic Fusion* program where resources on science, inquiry, forensics, and the lessons created through this initiative are available for use by parents, students, and other educators.
- **The Office of Science Teaching Activities, Florida State University Professor, Dr. Ellen Granger,** presented a one day workshop for teachers using the GEMS guides including Mystery Festival, Crime Lab Chemistry, Fingerprinting, and Environmental Detectives.
- **The University of Central Florida’s Elementary Education Department Professor, Dr. Robert Everett,** planed and implemented a three-hour workshop, entitled *Using Science Inquiry through Forensics in the Elementary Classroom.* This workshop was available to third, fourth, and fifth grade general education teachers at our school as well the gifted teacher. Dr. Everett presented information from the National Science Teachers Association training on this topic. Teachers received sample lesson plans, the GEMS mystery festival book, and participated in hands-on demonstrations of how to perform each experiment.
- **The Criminal Justice Institute at Valencia Community College** served as a liaison between East Lake’s gifted program and local, state, and federal law enforcement agencies in order to provide monthly guest speakers on criminal justice, law enforcement, and criminology fields.
- **The Drug Enforcement Agency expert, Agent Daniel M. Cunningham,** provided resources related to drug enforcement career descriptions, guest speakers and demonstrations.

Participants

Participants	Number	Participants	Number
Gifted students	50	Teachers of gifted	1
General education students	20	General education teachers	18
Administrators	3	Parents	30

Community members	13	Other participants	4
		Total number of participants	129

Student Population:

During the 2008-2009 school years, the East Lake Elementary School’s gifted population was comprised of fifty gifted students, grades 1-5. Fifty gifted students participated in the simulated crime scenes constructed by the gifted teacher and the Orlando Science Center. Twelve gifted students in the fifth grade acted as forensic instructors at the Forensic Family Workshop.

Personnel

Fund Manager: Marc Rummeler, Principal, East Lake Elementary School, served as project administrator and oversaw the expenditure of grant funds. He also provided staff to handle payroll and purchasing requirements and ensured reporting was completed on time.

Project Manager: Mariel Milano, Gifted Teacher, East Lake Elementary School, managed the implementation of the project, serving as the liaison to project partners, held meetings to fully develop the curriculum, engaged gifted students in project planning and implementation, maintained records, communicated with other gifted teachers about the project, attended project training, engaged in scholarly dialogue and discussions with university professors in the field, and assessed and recorded progress toward project goals and objectives.

OCPS Instructional Support Teacher, K-12 Gifted: Martha Kesler, OCPS Gifted Resource Teacher, supported the gifted teacher/project manager in implementation aligned with the Sunshine State Standards and Florida’s Frameworks for K-12 Gifted Learners.

OCPS Instructional Support Teachers, Elementary Science: Beverly Cox and Joan Walker, shared vast available resources with the East Lake Elementary gifted teacher/project manager related to best practices in teaching elementary science and the forensics field. In addition, they further supported the partnership through their long-held relationship with the Orlando Science Center and UCF.

Orlando Science Center Executive Director: Joanne Neumann provided staff to work with the East Lake Elementary gifted teacher/project manager in providing hands on, real world experiences for gifted students through engaging curriculum and simulated learning experiences at the museum.

East Lake Technology Coordinator: Glarsnell Jean-Charles, Technology Coordinator, East Lake Elementary School, helped students to develop media resources in support of the project. Students engaged in research, created podcasts and maintained program webpage with his support.

III. Evaluation

A. Assessment of Student Performance

Quantitative Assessment

Students were assessed using the Edusoft pre and post-testing in science provided by Orange County Public Schools. Students in fifth grade were also assessed based on their performance on the 5th grade FCAT.

- Gifted fifth-grade students’ science achievement level based on the FCAT, for students scoring

	2008	2009
Level 3	11%	8%
Level 4	50%	50%
Level 5	39%	42%

- Gifted students were also given a pre- and post-test that focused on the science benchmarks for their respective grade levels. The data for each grade level is below:
Grade 3: average increase in knowledge was 16% when comparing pre-and post-test results.
Grade 4: average increase in knowledge was 26% when comparing pre-and post-test results.
Grade 5: average increase in knowledge was 31% when comparing pre-and post-test results.

B. Project Evaluation

<p>Objective 1: CURRICULUM DEVELOPMENT</p> <p>Objective 1.1: By June 2009, develop rigorous and challenging forensic science-based curriculum to advance science inquiry in gifted elementary school students as measured by Florida’s Frameworks for K-12 Gifted Learners <i>Checklist for Challenge and Rigor</i>.</p> <p>Objective 1.2: By June 2009, compact the standard science curriculum for gifted students in order to implement <i>Forensic Fusion</i> and ensure that it correlates with the Gifted Frameworks #1, 3, 4, and 6 as measured by Florida’s Frameworks for K-12 Gifted Learners <i>Checklist for Challenge and Rigor</i>.</p>		
What was measured	Instrument	When
1. Developed forensic curriculum	Checklist for Challenge and Rigor	July 2008
2. Correlation of compacted curriculum to the Frameworks.	Checklist for Challenge and Rigor	August 2008
<p>Objective 2: GIFTED TEACHER TRAINING</p> <p>Objective 2.1: By June 2009, improve gifted teacher <u>content knowledge</u> in forensic science to support implementation of the <i>Forensic Fusion</i> collaborative curriculum as measured by successful course and other professional development completion records.</p> <p>Objective 2.2: By June 2009, improve the <u>pedagogical skills</u> of the gifted teacher related to science inquiry as measured by the student achievement data of East Lake Elementary school’s gifted learners on the Edusoft science pre- and post tests.</p>		
What was measured	Instrument	When
1. New teacher content knowledge about forensic science	Documentation of completion of professional development	August 2008
2. New teacher pedagogical knowledge relating to science inquiry, gifted pedagogical and instructional strategies that support Florida’s Framework for K-12 Gifted	Success measured by their gifted students’ achievement on the Edusoft science pre/post tests.	August 2008– May 2009

Learners Outcomes 1, 3, 4, and 6		
<p>Objective 3: ADVANCEMENT OF GIFTED STUDENTS</p> <p>Objective 3.1: By June 2009, advance the science inquiry skills of East Lake’s 50 gifted students as assessed by the district’s Edusoft science pre/post test.</p> <p>Objective 3.2: By June 2009, increase the forensic science knowledge and skills of East Lake Elementary School’s 50 gifted learners as demonstrated during their planning and implementation of the <i>Forensic Fusion</i> Family Workshop.</p> <p>Objective 3.3: By June 2009, develop the interest of 50 East Lake Elementary School gifted students in STEM careers as assessed by a student attitude survey.</p>		
What was measured	Instrument	When
1. Science Inquiry Skills	Pre- and post-testing	August 2008/ May 2009
2. Forensic Skills	Forensic Family Workshop	May 2009
3. Interest in STEM career	STEM interest survey	May 2009

The overall *Forensic Fusion* project goal of advancing science inquiry skills in gifted students was met, as measured by the pre- and post-testing data from the participating gifted students. All students showed growth in science inquiry as well as a 50% increase in interest in STEM careers. The curriculum was compacted and successfully met the requirements of the Challenge and Rigor checklist.

Our culminating project, the Forensic Family Workshop, featured twelve fifth grade gifted students as “lead instructors.” Those students spent nine weeks researching and developing a forensic science-learning center through a mentorship with the Orlando Science Center. Each forensic learning center included a fictional crime scene scenario, lab activity, background scientific principles, and assessments created by the gifted students. During the workshop the remainder of the gifted students and their families took part in each learning center. The gifted students took on the role of instructor and led students and parents through the activity.

During the 2009-2010 school years the *Forensic Fusion* project will be continued as a result of the documented students growth and stimulation of interest among gifted students. The materials and resources provided by the grant have allowed for the sustainability of the program. During the next school year, the curriculum will undergo a redesign of the life science portion of the forensic curriculum, in order to incorporate epidemiological content, through the *Disease Detectives* project.

IV. Dissemination

The products of the *Forensic Fusion* project were disseminated in many ways. Students disseminated the results of their inquiry investigations through peer-to-peer evaluations, in class presentations, and forensic science laboratory journals. In order to disseminate results of the program beyond the walls of East Lake, a subpage on the school main website was created which featured *Forensic Fusion* edited lesson plans, forensic resources, documentation of the planning and implementation of Forensic Family Workshop, and archives of the program’s events through photographs.

In addition, student-authored articles will be submitted to student publications at Timber Creek high school that summarized the products that our partnerships have produced, such as forensic inquiry,

staged crime scenes, and forensic demonstrations. During the grant project the gifted teacher collaborated with the Orlando Science Center to adapt the curriculum developed as a result of the *Forensic Fusion* project to meet the needs of middle and high school students. The curriculum was shared with middle and high school students at eight total schools in three counties in Central Florida.

A presentation of the *Forensic Fusion* project was shared at the Orange County Elementary Gifted Teachers' Professional Development Meeting in April 2009 to encourage other teachers to use resources developed by the grant.

The Orange County Public Schools public relations department interviewed the Orlando Science Center, the gifted teacher and students and created a video highlighting our culminating activity, successes, and content of our project which will be shared with other teachers in our district who are interested in writing grant projects.

The *Forensic Fusion* project was also presented at the Heart of Florida Math and Science Conference to elementary and middle science teachers in three counties. During the summer of 2009, the curriculum created by the *Forensic Fusion* project will also be delivered to elementary and middle school gifted students at the Gifted Education Resource Institute (GERI) summer academy at Purdue University. Finally, the *Forensic Fusion* project will be presented at the National Association for Gifted Children's conference in November 2009 as a one-hour workshop.

V. Budget

<u>Item</u>	<u>Cost</u>
Personnel	
Salary	\$2173.88
Benefits	\$380.67
Field Trip – Transportation	\$418.50
Orlando Science Center	
Timber Creek High School	
Curriculum Supplies	\$2820.71
Discovery Whodunit? Forensic Lab	
Science Solves It Book Set	
Micro Blue Evidence Detector	
Forensics Essential pack	
Case of the Missing Mascot Kit	
Finger Print Analysis Lab Activity	
The Case of the Kidnapped Cookies Lab Activity	
Wards DNA Whodunit Lab Activity	
Wards Intro Chromatography Lab Activity	
Crime Scene Supply Pack	
Inspector Hector's Everyday Science Tour	
Ward's Sealed-with-a-Kiss Lab Activity	
Analysis of Minerals and Soil Lab Activity	
Portable Fuming Chamber	
Carrying Case	
Knowledge Cards	
Tool mark Identification Kit	
3- Capital Digital Microscopes	
Forensic Video Set	
Bone Dissection Kit	

Orlando Science Center	\$2000.00
Staff, curriculum, SEM evidence	
Staff Development	\$300.00
Science Inquiry Workshop for general education teachers	
Out of county travel (NAGC conference)	\$344.35
Substitute fees	\$173.54
Dues and fees	\$385.00
Total:	\$8996.60

VI. Contact Person

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**Palm Beach County School District
Banyan Elementary School**



Project Title: *Puentes Al Mundo* “Bridges to the World”

I. Project Rationale and Goals

A. Project Rationale

The rationale behind the program, *Puentes Al Mundo*, was to improve the quality and content of instruction for the students, to collaborate and coordinate with various members of the community, to enable enhanced learning experiences for the students, and to provide an enriching academic and experience that the students would not otherwise have had.

B. Project Goals

The goals of *Puentes Al Mundo* were to:

- Teach gifted students to understand, speak, read, and write the Spanish language;
- Provide our elementary school children with a foundation for language acquisition upon which they can build true second language literacy, fluency, and academic proficiency; and
- Afford an awareness of customs, heritage, holidays, and facts about a target culture that will teach them to appreciate cultures other than their own and accordingly create a foundation for tolerance.

II. Project Implementation

A. Project Activities

Formal Instruction with Spanish-Speaking “Maestras” (teachers)
Instructional / Educational DVDs
Puppetry
Interaction with native Speakers
Zumba (fun, physical Latin-inspired movement)
Art Projects
Songs
Games (including Spanish Bingo)
Home reinforcement
Web site content
Conversation

B. Curriculum Content Focus

Spanish language and customs were taught and studied; introductory level (Level 1) for Kindergarten and Grade 1; more advanced level (Level 2) for Grade 2.

Curriculum was based on a program from McGraw Hill Wright (Espanol Para Ti). Students learned from verbal instruction by Spanish-speaking instructors (parents, retired Spanish teachers, Florida Atlantic University (FAU) education / Spanish students) and educational DVDs.

C. Sunshine State Standards Addressed

Foreign Languages

- FL.A.1.1 engages in conversation, expresses feelings and emotions, and exchanges opinions
- FL.A.2.1 understands and interprets spoken language on a variety of topics
- FL.B.1.1 understands the relationship between the perspectives and products of the culture studied and uses this knowledge to recognize cultural practices
- FL.C.1.1 reinforces and furthers the knowledge of other disciplines through foreign language
- FL.C.2.1 acquires information and perspectives that are available only through the foreign language and within the target culture
- FL.D.1.1 recognizes that languages have different patterns of communication and applies this knowledge to his or her own culture

The following *Florida Frameworks for Gifted* were implemented:

- G1.01 Organization of data (Know)
- G1.02 Conceptual frameworks (Understand)
- G2.01 The nature of questions (Know, Understand)
- G2.02 Question creation (Know, Understand)
- G2.03 Questions scrutinized (Accomplish and Perform)
- G5.02 Self-awareness
- G5.03 Cooperative learning (Know, Perform)
- G6.03 Social Context (Perform)
- G7.01 Communication (Know)

D. Instructional Methodology Used

What previously existed at Banyan Creek Elementary for the gifted population:

- No formal foreign language component
- No formal foreign culture component
- No formal peer mentoring program
- No external / collegiate subject matter experts to teach students in an area beyond their teachers' knowledge

How *Puentes Al Mundo* redesigned instruction to address these areas:

- The program provided a formal foreign language component for the gifted (where none existed)
- The program provided a formal foreign culture component for the gifted (where none existed)

- The program provided a peer mentoring element whereby the gifted students and ELL (Early Language Learners) interact and assist each other with the languages they are learning and whereby the higher grade gifted students teach mini-lessons to younger students
- Subject matter experts (FAU collegiates with Spanish fluency and other volunteers) taught the gifted students in an area that the Banyan teachers were not proficient. This is a redesign not only in that the subject matter experts educated the gifted students, but also in that the instructors worked with and educated the Banyan Creek gifted teachers, who then incorporated their acquired knowledge into other gifted subjects, and future gifted classes.

E. Nature of the Collaboration

This entire program was collaborative in that it was taught by FAU Spanish and/or Education students, native Spanish-speaking volunteers, parents, etc. Zumba instruction was given by community members. Local Spanish restaurant donated Spanish food for event. All the aforementioned individuals collaborated with gifted teachers, administrators, and parents to implement the program activities throughout the year.

Participants:

Participants	Number	Participants	Number
Gifted Students, K-2	180	Teachers of Gifted	9
Administrators	2	Parents	30
Community Members	9		
Total Participants	230		

Personnel:

Principal, Assistant Principal, Guidance Counselor, Media Specialist, Gifted Teachers (K, 1, and 2).

III. Evaluation

A. Assessment of Student Performance

The students took an academic pre-assessment at the beginning of the program to establish a baseline. They took the same assessment at the end of the year to ascertain academic gain.

EVERY student in the program improved.

Improvement gains for Kindergarten

Class	Percentage Pre-assessment	Percentage Year end assessment	Average percentage of improvement
Class A	39	80	105
Class B	43	85	97
Class C	46	79	74
Kindergarten combined			92

Improvement gains for Grade One

Class	Percentage Pre-assessment	Percentage Year end assessment	Average percentage of improvement
Class A	39	79	100
Class B	55	95	75
Class C	52	81	56
Grade One combined			77

Improvement gains for Grade Two

Class	Percentage Pre-assessment	Percentage Year end assessment	Average percentage of improvement
Class A	43	85	97
Class B	63	87	38
Class C	51	80	55
Grade Two combined			63

B. Project Evaluation

The project was evaluated with formal academic assessment (above), as well as through written evaluation by teachers, volunteers, and parents. Generally, the feedback was positive as the students achieved academic gain, were able to apply their knowledge across other subjects in school as well as in social situations outside of the classroom. Specifically, the teachers and volunteers evaluations yielded valuable detailed information about improving the program to teach / coordinate in the future.

One aspect of the program that was not implemented fully was the integration of *Puentes Al Mundo* students with other populations within the school. This will be facilitated next year now that the program base has been solidified and now we can build on the program and enhance it.

The program will be continued next year and expanded into all 3rd grade gifted classes. We are considering changing the program in Kindergarten to be less formal instruction. The 3rd grade students will put together mini-lessons to teach the Kindergarten classes basic Spanish such as colors, numbers, introductions, etc.

IV. Dissemination

At the end of the school year, the evaluation results were shared with administration, teachers, parents, the PTA, FAU Department Head, and volunteers via email report. The *Puentes Al Mundo* website includes the evaluation of the program.

Additional follow up information will be shared with the county ESE office via e-mail, and shared in a meeting, if desired, by the county. We will also contact local newspapers and magazines to publicize program success and continuation.

V. Budget

<u>Items</u>	<u>Cost</u>
Espanol Para Ti: Spanish Comprehensive Learning Systems (teaching guide, planners, DVDs, workbooks, CDs)	\$9106.17
General office supplies (copy paper, art supplies)	\$291.83
Total	\$9,398.00

Note: we raised other monies to support purchasing binders and other supplies to fund Family Zumba Night with Spanish food, etc. These costs and expenses are not included as they did not utilize grant funds.

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Polk County School District

Project Title: Lawton Chiles Middle Academy

I. Project Rationale and Goals

A. Project Rationale

Lawton Chiles Middle Academy is a magnet school with an emphasis on math and science. Approximately 23% of students are gifted. Prior to this year, students were grouped by ability in math, but not for other classes. This year, gifted students were assigned to cluster classrooms in math, science, language arts and Integrated-lab. Gifted service was provided using a Support Facilitation model where three teachers of the gifted worked with teachers of the cluster classes to plan and deliver an advanced curriculum.

Over the past few years the school had obtained a significant amount of math and science technology (probeware, graphing calculators and TI Navigator, Inspire Data, and geometry software), but funds for training and curriculum development were lacking. As a result, technology that would be valuable in the instruction of gifted students was rarely used.

B. Project Goals

- (1) To develop a technology-rich math and science curriculum for our gifted students.
- (2) To train math, science, and gifted teachers in the use of available technology.
- (3) To train cluster class teachers in gifted teaching strategies.
- (4) To help students become users of math and science technology.
- (5) To develop math problem solving skills in gifted students.
- (6) To develop a partnership with community water resource experts to enhance student knowledge of local watersheds.

II. Project Implementation

A. Project Activities

Professional Development

1. Four teachers attended a two day workshop during the summer on the use of electronic probeware to enhance science instruction.
2. Dr. Michael Matthews, head of the Gifted Education Department at the University of South Florida, conducted a one day seminar on teaching math and science to gifted learners.
3. Three math teachers spent two days developing and planning gifted math curriculum during the summer.
4. All math, science and gifted teachers spent one day in the summer planning the implementation of the new curriculum.
5. Four teachers met for one day with representatives of four community natural resource agencies to plan a lakes study project.
6. Math and science teachers each held a vertical planning day during the year to evaluate progress and modify the program.

7. Math teachers participated in two on-line seminars and follow-up sessions conducted by the National Council of Teachers of Math.
8. The math department formed a partnership with the developer of *Understanding Math* to pilot the software for Polk County. The software allows teachers and students to explore math concepts moving from the concrete to the abstract. The software was used by pairs of students in a lab setting or as a presentation tool with Smart Boards.

Lakes Study

1. Students participated in a study of two Polk County lakes. The study involved three field trips to each of the lakes and an additional field trip to a nature center.
2. Students took a virtual field trip down the Peace River.

Enhanced Math and Science instruction

1. The use of technology was incorporated into math, science, and integrated lab classes.
2. Curriculum emphasizing data analysis and problem solving was implemented in math classes.
3. A team of 7th grade gifted students participated in Science Olympiad.
4. Several students utilized probeware to collect, analyze, and present data for their science fair projects.
5. Students at Lawton Chiles develop an electronic portfolio in their integrated lab class. Gifted students added a gifted section where they track their progress toward achievement of their personal gifted goals.

B. Curriculum Content Focus

Math and Science Instruction

1. A data analysis unit was developed and implemented in all cluster math classes. This unit served to introduce students to several types of technology. Students began by collecting personal data such as height, arm span, and jump height. They made histograms, scatterplots, and box-and-whisker diagrams of the class data. They were then introduced to Excel and Inspire Data on laptop computers and used these tools to further explore their data. Finally, they imported their data into graphing calculators and created graphs. Given this background, math and science teachers utilized these tools whenever possible to explore data in their classes.
2. Science teachers used probeware whenever possible in conducting labs.
3. Classroom teachers and the gifted math teacher worked together to provide math problem solving activities and strategies. These activities were used in daily warm-ups.

Lakes Study

1. Partnerships were established with the city of Lakeland, Polk County Natural Resources, Lake Education/Action Drive, and the South Florida Water Management District (SWFMD). A study of two Polk County lakes was initiated. Lake Agnes was in a primarily rural setting and Lake Hollingsworth was in a highly develop urban area. Three field trips to the lakes were conducted, one in the late fall, one during the winter, and one in late spring. An additional mini-grant from SWFMD provided funding for transportation and additional probeware.
2. A representative from each of the agencies visited integrated lab classrooms and presented lessons on watersheds, water quality measurement and factors influencing quality, macro-invertebrates, and aquatic plants.
3. Lawton Chiles is located next to a lake and students collected macro- invertebrates from the lake and studied them in integrated lab.
4. Students went on three field trips to each of the two lakes. Activities at the lakes included: water testing from the shore and the middle of the lakes using probeware, collecting and

classifying macro- invertebrates, classifying plants, collecting GPS and weather data using probeware.

5. A fourth field trip to a nature center served as a culminating activity. Students studied maps of the watershed and compared the history of the area with historical data.

C. Sunshine State Standards Addressed

In the design of our project, we believed that for what we wanted to accomplish, Sunshine State Standards were not an effective tool for measuring growth in our students. Lawton Chiles Middle Academy consistently has achieved an A rating and our gifted students were already performing at very high levels. We wanted to go well beyond the level of the standards and decided to build our program around Florida's Frameworks for K-12 Gifted Learners. We did focus on skills in the new math standards which are being phased in over the next several years and key standards are listed below.

Mathematics

Grade 6 Big Idea 3	write, interpret, and use mathematical expressions and equations.
MA 6.A.3.2	write, solve and graph one- and two- step linear equations and inequalities.
MA 6.A.3.4	solve problems given a formula.
MA 6.A.3.6	construct and analyze tables, graphs and equations to describe linear functions and other simple relations using both common language and algebraic notation.
Big Idea 6	Data Analysis.
MA 6.S.6.2	select and analyze the measures of central tendency or variability to represent, describe, analyze and/or summarize a data set for the purpose of answering questions appropriately.
Grade 7 Math:	
MA 7.A.1.4	graph proportional relationships and identify the unit rate as the slope of the related linear function.
MA 7.G.2.1	justify and apply formulas for surface area and volume of pyramids, prisms, cylinders and cones.
Grade 8 Math Big Idea 1	analyze and represent linear functions and solve linear equations and systems of linear equations.

D. Instructional Methodology Used

Our emphasis in this project was on helping our students develop problem solving skills, technical proficiency, and data analysis skills. The team developed advanced curriculum for math and science which was team-taught by classroom teachers and teachers of the gifted. Standards for evaluation were selected from *Florida's Frameworks for K-12 Gifted Learners*.

Goals Emphasized

Student Outcomes Goal 3 – By graduation, the student identified as gifted will be able to conduct thoughtful research/exploration in multiple fields.

Traits to be emphasized: scientific method, research tools, and deductive and inductive reasoning.

Student Outcomes Goal 4 – By graduation, the student identified as gifted will be able to think creatively and critically to identify and solve real-world problems.

Traits to be emphasized: problem investigation, data analysis, critical thinking.
Student Outcomes Goal 7 – By graduation, the student identified as gifted will be able to develop and deliver a variety of authentic products/performances that demonstrate understanding in multiple fields/disciplines.

Traits to be emphasized: audience recognition, communication, advanced presentation, and problem solving.

E. Nature of the Collaboration

- A partnership was formed with four natural resource agencies to conduct a study of two Polk County lakes. Teachers and representatives from the agencies planned this unit together. Representatives from each of the agencies made presentations in integrated lab classes and all worked together to plan and carry out the three field trips to the lakes. Although all of the agencies have an educational component, this was the first ever collaboration of this type for Polk County.
- One of our primary goals was the development of advanced curriculum for gifted math and science students. Five math teachers and the teacher of gifted math worked during the summer developing this curriculum. Three science teachers and the science teacher of the gifted worked during the summer as well. All of the math and science teachers were involved in a workshop on teaching math and science to gifted students conducted by Dr. Michael Matthews, Director of Gifted Education at the University of South Florida.

Participants:

Participants	Number	Participants	Number
Gifted students, grades 6,7,8	136	Teachers of gifted	2
General education students	62	General education teachers	9
Parents	10		
Total Participants	219		

Personnel:

Eleven staff members - Lawton Chiles teachers - were involved in the project. This included two teachers of the gifted, five math teachers who taught cluster math classes, 3 science teachers who taught cluster science classes and the school technology coordinator.

III. Evaluation

A. Assessment of Student Performance

The *Florida Frameworks for K-12 Gifted Learners* sets goals for gifted students but do not provide a method of testing. Mastery of each trait can be assessed on a continuum of four levels: (Know, Understand, Perform, and Accomplish). In order to assess student progress, we developed four checklists where students self report their familiarity with and ability to use different technologies: Excel spreadsheets, Inspire Data (an educational data base), electronic probeware, and graphing calculator systems. The skills assessed were arranged to parallel the four continuum levels. Students were tested at the beginning of the year and at the end.

Results (Grade Average)

Grade	Technology	Pre-test	Post-test	Average Gain
6	Inspire Data	1.1	10.1	9.0
7	Inspire Data	1.2	6.2	5.0
8	Inspire Data	1.1	5.9	4.8
6	Excel	2.7	8.6	5.9
7	Excel	3.4	6.3	2.9
8	Excel	3.6	6.1	2.5
7	Graphing Calculator	1.4	6.5	5.1
8	Graphing Calculator	2.0	7.8	5.8
6	Proeware	1.2	7.6	6.4

Scores.....Continuum..... Explanation

1-5..... Know..... Basic familiarity with instrument.

6-10..... Understand..... Able to apply basic skills in non-routine problem solving.

11-15..... Perform..... Able to utilize technology in solving complex problems.

15-.....Accomplish..... Accomplished Researcher. Able to conduct research independently.

- Our goal was to move students up one level on the continuum during the year. Group averages show that this was accomplished. Our students have become familiar with the various technologies and are able to use the technologies in non-routine problem solving. They have a background that we can build on during the rest of their time in middle school. They are growing in their research abilities.
- Another goal was to increase math problem solving skills. We wanted to develop skills beyond what is tested in the Sunshine State Standards and didn't consider FCAT scores a relevant measure of these skills. We used Florida Math League test scores as a pre and post test using the 2008 test as a pre test and the 2009 test as the post test. On the state level the two tests had a similar distribution so no adjustment was made for differences between the tests. Sixty-three percent of the students showed gains on the post test.
- In collaboration with our partners in the lakes study we developed a test to assess gains in student knowledge of watersheds and water quality. On the pre test students scored an average 38%. On the post test they averaged 85%.

B. Project Evaluation

- Students were evaluated using instruments designed for this project and showed gains in technological skills, problem solving, and knowledge of water sheds. They completed a survey on the lakes project and were very enthusiastic about their experiences. Most were eager to continue the study next year and to go in greater depth. We hope to continue this study next year but due to high transportation costs for the field trips, continuation is dependent on our ability to obtain funding through other grants.
- Teachers involved reported increased usage of our available technology and confidence in its application. Curriculum that was developed this year will be continued and expanded. Our ^{sixth} and seventh grade students have a background in using spreadsheets, data bases, probeware, and graphing calculators and we expect to build on these skills next year to help our students become more competent researchers.
- We had hoped to involve more teachers in the project and to have more time during the year for planning and development of curriculum. For financial reasons, staffing levels were reduced and Polk County teachers were assigned an additional class. Several teachers who had planned to participate in the project dropped out and those who did participate faced a significant reduction

- in planning time. Still, we think that the program has been very successful and we expect to build on the gains from this year.

IV. Dissemination

- The project director made a presentation about our program to Polk County teachers of the gifted during contact day at the beginning of the school year. He served as a resource to other teachers interested in pursuing Gifted Collaboration Challenge grants for the coming year.
- Our lakes study project was featured in a Lakeland Ledger news article and a Lakes Education/Action Drive newsletter.
- All students at Lawton Chiles Middle Academy develop an electronic portfolio in their integrated lab class. Gifted students added a section which reflects their progress toward their gifted EP goals. Participants in the lakes study also had a section on this activity. These portfolios were shared with parents in a portfolio fair.
- We made extensive use of video and digital cameras during the year. Three gifted 6th grade students are working on a video documentary of the lakes project. Unfortunately, they were unable to complete it this year but they plan to finish it early next year. A Power Point slide show was also developed. Both presentations will be shared with our partners in the lakes study and with parents.

V. Budget

<u>Items</u>	<u>Cost</u>
Salaries.....	\$4215.27
Substitutes.....	\$720.27
USF Consultant.....	\$500.00
On-line Seminar.....	\$298.00
Probeware and Equipment.....	\$2937.87
Miscellaneous Supplies.....	\$313.60
Travel.....	\$200.00
Total	\$9350.61

VI. Contact Person

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Volusia County School District

Project Title: *Legendary Florida*

I. Project Rationale and Goals

A. Project Rationale

This grant was designed to introduce 4th and 5th grade students to the content of Jackson Walker's paintings regarding the historical events of Florida history within the context of interdisciplinary teaching. The intent of the grant is to create an enriched content that introduces art concepts that support the instruction of science, language arts, music, literature of specific periods, and social studies.

B. Project Goals

The goals of the *Legendary Florida* project were to develop an interdisciplinary curriculum related to Jackson Walker's historical paintings found in the historic Volusia County (DeLand) Courthouse that specifically address the academic needs of gifted learners. In addition to developing the new curriculum approach (which is now found on the Florida Museum of Art's website), students would increase their knowledge of Florida history, the use of art to portray information, and of effective art techniques.

II. Project Implementation

A. Project Activities

- A team of teachers of the gifted modified a comprehensive, interdisciplinary curriculum for use with Jackson Walker's artwork in the historic Volusia County Courthouse for use in instructing 4th and 5th grade gifted students.
- Teachers of the gifted and the art teachers of the same schools participated in an all day in-service training regarding the artwork of Jackson Walker and the Florida history that is portrayed in the artwork. The Florida Museum of Art hosted the training with Jackson Walker, Jewel Dickson, the team of authors and Suzanne Rawlins conducting the training. Teachers were provided with CD's of the artwork and print-outs of the newly written curriculum, methods for implementing the new curriculum, and hands-on instruction in various art methods for use with students. Additionally, teachers of the gifted visited both the Florida Museum of Art and the historic Volusia County Courthouse in DeLand with intensive training provided by master docents and the artist, Jackson Walker.
- After completing a pre-test (designed by the team of teachers of the gifted) regarding Florida history and specific art concepts, students visited the Florida Museum of Art to view artwork along with the Jackson Walker collection at the Volusia County Historic Courthouse in DeLand. Highly-trained volunteer docents with the Florida Museum of Art worked with small groups of students regarding the historical content of each of the 18 murals on display. Students completed a log of observations regarding what they observed. (For example: Only one painting does not contain a snake that is native to Florida. Which one? Why do you think the artist chose this painting to omit the signature snake?)

- Students then experienced the interdisciplinary curriculum developed. This teaching included not only the teachers of the gifted (in full-time gifted classrooms) but the art teachers at each school. The classroom teacher included the history instruction that was
- integrated into language arts, music, reading and social studies while the art teacher developed the concepts of art principles found within Jackson Walker's paintings.
- Students were then given the opportunity to develop artwork that is inspired by the works seen at the courthouse and museum. A wide variety of media were used by the students. For example: Horses and dogs were constructed in paper mache, as Mr. Walker's painting all contain either a horse, dog and/or snake. Other students created paintings, clothing of a specific time period, personalized historical journals, hats of specific time periods, clay figures of specific time periods, pottery, classroom murals much like Walker's, etc.
- Students received a close-up experience with the artist, Jackson Walker (at some locations). Mr. Walker volunteered to visit several sites where the teachers specifically requested his presence.
- Then all students participated in a post-test regarding the history content and the art concepts contained within the newly developed curriculum.
- Selected artwork pieces will be on display at the Volusia County School's Board Room in DeLand and at the Florida Museum of Art. (Displays to begin in summer 2009). Additionally, the museum plans to include the pieces on their *Legendary Florida* website, attached to their museum website, in order to encourage other teachers/classrooms to participate in viewing and understanding this impressive body of works and its relevance to Florida history and art.

B. Curriculum Content Focus

- Content included:
 - Science, language arts, visual arts, music and social studies concepts as depicted in Jackson Walker's paintings of the *Legendary Florida* exhibit in the historic Volusia County Courthouse in downtown DeLand.
 - History content: Significant scenes and personalities throughout Florida's rich history include:
 - "Sir Francis Drake's Rain on St. Augustine" (1586)
 - "Anastasia and the Encounter at Gully Hole Creek"
 - "The Flower Hunter" (1773) showing periods such as the Great Awakening and the Enlightenment
 - "Warriors From Bondage"
 - "American At Barrancas" (with the song "The Battle of New Orleans")
 - "Eyes of the Okeechobee"
 - "The Captive Osceola"
 - "Cow Calvary"
 - "Departing for Destiny" (1890-1918) Spanish-American War (Teddy Roosevelt: a young Rough Rider)
 - "Where Peaceful Waters Flow" during the "gilded Age" of booming industry fueled by immigration (steamboats on the Oklawaha River (1900)
 - "A Deadly Bond" with Ma Barker (1920's)

- “Orange Fritters and a Story” regarding Marjorie Kinnan Rawlings’ life at Cross Creek
 - “The Maverick from Eatonville”
 - “Seminole Steers”
 - “Return to Big Cypress”
 - “Wrath of the Privateers” with thatched roofs and vigilant soldiers in the orange trees
 - “U-123” with men on deck the boat
- Art Content:
 - Color
 - Mood
 - Hue
 - Shade
 - Contour line
 - Textures
 - Shape
 - Perspective
 - Observation skills
 - Purpose of the art work
 - Linking the art work to real-world application
- Complete content along with strategies for implementation attached.
- Music content was aligned with the music of the period. (Selections were pre-recorded for classroom use.) The music content included:
 - Tempos
 - Styles
 - Moods
 - Lyrics
 - Instruments and voice
 - Volume
 - Melody
 - Pitch
 - Meter
 - Dynamics
 - Timbre
 - Harmony
 - Genre of music, etc.
- Science content:
 - Ecology
 - Water management
 - Biological studies of natural organisms of the Florida flora and fauna
 - Water cycles
 - Preservation of foods prior to refrigeration
 - Natural habitat/food chains/ecosystems
- Language Arts content:
 - Journals (art and personal histories)
 - Writing of brochures regarding Florida

- Reading literature tied to specific time periods in Florida (The Yearling, Marjorie Kinnan Rawlings, for example)
- Oral presentations

C. Sunshine State Standards Addressed

Due to the integrated curriculum approach and the broad spectrum of instruction, the standards listed below are an example of only one of the paintings. There are 18 paintings in the collection. For further information, please refer to the link to the curriculum at <http://www.museumoffloridaart.org/legendaryflorida/pdf/gifted.pdf>

Visual Arts

- | | |
|------------|---|
| VA.A.1.2.1 | uses and organizes two-dimensional and three-dimensional media, techniques, tools, and processes to produce works of art that are derived from personal experience, observation, or imagination |
| VA.B.1.2.1 | understands that subject matter used to create unique works of art can come from personal experience, observation, imagination, and themes |
| VA.C.1.2.2 | understands how artists have used visual languages and symbol systems through time and across cultures |
| VA.E.1.2.2 | knows the types of tasks performed by various artists and some of the required training |

Social Studies

- | | |
|------------|--|
| SS.A.1.2.1 | understands how individuals, ideas, decisions, and events can influence history |
| SS.A.1.2.3 | understands broad categories of time in years, decades, and centuries |
| SS.A.4.2.4 | knows significant historical documents and the principal ideas expressed in them |
| SS.A.4.2.5 | understands geographic, economic, and technological features of the growth and change that occurred in America from 1801 to 1861 |
| SS.A.6.2.7 | understands the unique historical conditions that influenced the formation of the state and how statehood was granted |
| SS.B.1.2.3 | locates and describes the physical and cultural features of major world political regions |
| SS.B.1.2.5 | knows ways in which people view and relate to places and regions differently |
| SS.C.1.2.1 | identifies the structure and function of local, state, and federal governments under the framework of the Constitutions of Florida and the United States |
| SS.C.1.2.4 | knows possible consequences of the absence of government, rules, and laws |
| SS.C.2.2.1 | understands the importance of participation through community service, civic improvement, and political activities |
| SS.C.2.2.2 | understands why personal responsibility and civic responsibility are important |

Language Arts

LA.A.2.2.2	identifies the author's purpose in a simple text
LA.A.2.2.3	recognizes when a text is primarily intended to persuade
LA.C.3.1.3	speaks effectively in conversations with others
LA.C.3.2.2	asks questions and makes comments and observations to clarify understanding of content, processes, and experiences

D. Instructional Methodology Used

- This grant permitted the redesign of a strong, interdisciplinary approach to learning about Florida history via the artwork of a local artist, Jackson Walker. This project provides the rigor of content needed to supplement the newly implemented American history curriculum for grades 4 and 5 in the gifted program. Due to this implementation, the concepts of Florida history were not adequately being taught. With the infusion of the *Legendary Florida* curricula, Florida history is now integrated into the two grade levels as a strong component of American history. Grade four (gifted classrooms only) cover American history from the beginning of exploration through the pre-Civil War period while grade five covers the Civil War through contemporary times/issues. Florida history is now a real component that comes alive with the study of the artwork, literature, music and related science of the periods.
- *Florida Frameworks for Gifted Learners K-12* are an essential element in any redesign of curriculum for gifted learners. The writing team that developed the *Legendary Florida* integrated curriculum for gifted learners used the Frameworks during the writing process to assure that the level of questioning and depth of content assists the learner to develop from the Knowing Level to the Understanding Level to the Performance Level to the Accomplished Level, according to the abilities of the learner. Gifted students in Volusia County have goals and objectives within their Education Plans (EPs) that reflect the *Florida Frameworks*. Each student's goals/objectives are addressed every day in a full-time, gifted classroom. The integration of the project supports the implementation of the goals and objectives that are directly derived from the *Frameworks*. (www.unfwogi.com)

E. Nature of the Collaboration

- This project was the truest representation of collaboration. Volusia County Schools attained access to the historic artwork of Jackson Walker that included instruction from highly-trained docents with implementation of an integrated curriculum while the Museum of Florida art obtained a permanent addition to their offerings for other schools via the curriculum that was created. Additionally, they soon will have art pieces on display of the visual arts projects that came from the implementation of the curriculum.
- To the delight of the gifted program in Volusia County, the Florida Museum of Art is so pleased with the collaboration on the *Legendary Florida* project that they have invited us to participate in next year's program: "Liquid Muse." The same group of teachers will be trained in science content provided by St. John's Water Management. So, this collaboration has led to further collaboration, all to the benefit of the gifted learners of Volusia County.

Participants:

Participants	Number	Participants	Number
Gifted students Grades 4, 5 from 12 schools	527	Teachers of gifted	28
General education students	54	Community members	17
Administrators	3	Other participants: Art teachers	12
Total Participants	641		

Personnel:

Team of educators who wrote the curriculum and trained teachers of the gifted: 7

- Elaine Beeghley, teacher of the gifted, Forest Lake Elementary, grade 5
- Chris Taylor, teacher of the gifted, River Springs Middle School, social studies department chairperson
- Marla Basli, art teacher, Forest Lake Elementary, grades K-5
- Suzanne Rawlins, Gifted Specialist, Volusia County Schools (assisted process)
- Jewel Dickson, retired Gifted Specialist for Volusia County Schools and head docent at the Florida Museum of Art, DeLand
- Jason Caros, Social Studies Specialist, Volusia County Schools
- Suzi Preston, Visual Arts Specialist, Volusia County Schools

Teachers of the gifted who attended training:

- All grade 4 and grade 5 teachers of the gifted from 12 schools: total 28

Florida Museum of Art contributions:

- Pam Coffman, Education Specialist with Florida Museum of Art assisted in guiding curriculum writing, planning visits to the museum, coordinating the museum exhibit
- Jennifer Coolidge, Director of Florida Museum of Art

Implementation phase:

- Dr. Chris Colwell, Superintendent for Curriculum, Volusia County Schools, arranged to fund transportation for all 12 schools with gifted students to attend the viewing of artwork at both the museum and the historic courthouse.
- Linda Bogart, office specialist, assisted with billing/PO orders and tracking funding balances.
- Suzanne Rawlins, Gifted Program Administrator, scheduled busses for trips to the Florida Museum of Art and to the historic Volusia County Courthouse; gathered data for pre/post test results/arranged schedule for art projects to be judged and photographed/made arrangements for the display of student artwork that resulted from the study; supported the fidelity of the integration of the program with answers to questions regarding curriculum, etc.
- Jewel Dickson, retired Gifted Specialist for Volusia County Schools arranged the schedule for docents, conducted tours with students, trained teachers in the details of each painting, coordinated schedules with Jackson Walker, artist.
- Jackson Walker, artist, provided instruction in his paintings, visited classrooms for presentations to students.
- Emily Cortez-Torrado, Transportation Specialist, assisted with scheduling of transportation.
- Cookie Grafton, Instructional Materials Specialist, assisted in obtaining appropriate literary selections

III. Evaluation

A. Assessment of Student Performance

- Pre-test and post-test exams were administered to all students participating. When averaged together the pre-test results were 38%. Post-test exams when averaged together were 89%. (see Pre/post test)
- As per the established goals, students met the objectives by demonstrating factual and application knowledge relating to visual arts, Florida history, language arts goals and science content.

B. Project Evaluation

- Project assessment was completed via the pre-test/post-test results. Student scores increased from an average of 38% to a final average score of 89%.
- The truest assessment of the effectiveness of the program will come in the 2009-2010 school year. If teachers continue to utilize the curriculum that was developed and integrate the subject areas within that curriculum, then the efforts will be the most effective.
- The collaboration of the project was highly effective as evidenced by the new collaboration that has emerged. Next year's project, *Liquid Muse*, will involve the same set of teachers of the gifted and grade 4 and 5 gifted students. Both the Florida Museum of Art and the St. John's Water Management will continue a collaboration with gifted students and their teachers in Volusia County Schools
- Art "outcomes from the studies of science, history and culture were found embedded in the Jackson Walker paintings. The variety was amazing; each school interpreted the content through different research efforts resulting in the colorful variety of student-created images and objects displayed, by school, on the wall in the School Board Meeting Room through December 2009." Suzi Preston, Visual Arts Specialist, Volusia County Schools.

IV. Dissemination

- Project summary information via power point presentation was shared with all Volusia County ESE personnel at a department meeting on June 3, 2009.
- Student projects will be on display at the Florida Museum of Art and the Volusia County Schools' board room beginning the summer of 2009 through the fall of 2009.
- A presentation to the Task Force for Under-representation within the Gifted Program will be shared in June, 2009.
- Results of the grant along with displays of student products will be posted on the Gifted Services website at www.volusia.k12.fl.us/gifted as soon as the conversion from the software Frontpage to Blackboard is complete.
- The Florida Museum of Art will post grant results and samples of student art on their website: www.MuseumofFLoridaArt.com
- Sharing of curriculum and the results of this project will be shared at Volusia County's Curriculum meeting in June, 2009. Attendees include: teachers on assignment and curriculum specialists for the county.
- Additional sharing will be held at the pre-planning meeting with teachers of the gifted and new-to-gifted trainings in the fall of 2009.
- Daytona News Journal will be notified of the exhibit of student works when they are on exhibit.

V. Budget

<u>Items</u>	<u>Cost</u>
Substitute teachers	\$2735.27
Benefits	\$827.10
Teacher stipend for curriculum development	\$4500.00
Student supplies for products	\$791.00
Literature supplies	\$540.64
Total	\$9,398.00

VI. Contact Person

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