Evaluation Summary Report: *Project PROMISE*
2007-2008
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Evaluation Activities

During the period of September 1, 2007 - August 30, 2008, the external evaluator (or a surrogate) engaged in the following activities:

- Evaluated student achievement data for the first three years of the project;
- Reviewed internal *Project PROMISE* (PP) planning and implementation documents, meeting agendas, minutes, dissemination flyers, professional development agendas, previous reports of project progress and evaluation, schedules of training, and teacher reports of students identified for gifted services;
- Perused Web site for overall perceptions (http://www.doe.virginia.gov/instruction/gifted_ed/project_promise/);
- Reviewed curriculum implementation logs and teachers' assessments of curriculum strengths and limitations;
- Evaluated professional development evaluations;
- Evaluated teachers' evaluations of student products;
- Conducted electronic focus group sessions with project directors to gather overall perceptions of effectiveness of project;
- Conducted electronic focus group sessions with participating teachers to gather perceptions about gifted learners at key stages of development and to identify areas of need for professional development; and
- Conducted classroom observations.

Evaluation Findings and Conclusions

The evaluation summary that follows contains conclusions drawn from data analyses, project document and material reviews, interviews and focus groups, classroom observations, and student product review.

1. Student Demographic Data

Table 1. Total Numbers by Grade Level

Grade Level	Classes	Students	Males	Females	AA/Black	Caucasian	Other
Kindergarten	5	98	49	49	65	27	7
1st	5	88	44	44	65	18	4
2nd	4	75	34	41	49	26	0
		296	146 (49%)	150 (51%)	207 (70%)	77 (26%)	12 (4%)

Demographic data were collected at the beginning of the grant implementation. Additional data concerning student referrals to gifted services were analyzed in year two to address evaluation question 1: To what extent is there an increase in identified primary-age disadvantaged students in K-2 in the demonstration sites? (a) Are these students retained in the gifted program in subsequent years?

Demographic data on students involved in the treatment classrooms are summarized in the following table. Results from the demographic data suggest that, after the first year of project implementation, there was a 100 percent increase in the number of students referred to the gifted and talented coordinator for screening to receive gifted services. Referral data were available for years three and four from Martinsville. Results suggest that Project PROMISE teachers continued to refer students for gifted programming throughout the final two years of implementation. Teachers in kindergarten and grade one continued their earlier pattern of referrals while teachers in grades two through three increased their rate of referrals, in some cases either doubling or tripling their earlier rate. This may be due to the fact that students in grades two through three had been exposed to the Project PROMISE curricular and instructional enhancements which made them more excited about and engaged in science instruction. It also may be due to the fact that Project PROMISE teachers now felt more comfortable with identifying talent in students from diverse backgrounds. In either case, this is an important finding for the future talent development of students in these Title I schools. There was no indication of whether or not students were actually placed or retained in gifted programs.

Table 2. Student Referral Data

School Division	School	Teacher	Grade	Number of students	Referred for GT Services (04-05)	Referred for GT Services (05-06)	Referred for GT Services (06-07)	Referred for GT Services (07-08)
Greensville	GES	Teacher A	K	21	0	0	0	0
	GES	Teacher B	K	23	0	0	0	0
	GES	Teacher C	1	20	1	0	0	0
	GES	Teacher D	1	19	0	0	0	0
	GES	Teacher E	2	18	0	0	0	0
	GES	Teacher F	3	17	0	0	2	2
	GES	Teacher G	3	18	0	0	1	0
Martinsville	DHES	Teacher H	K	23	0	2	2	*
	CES	Teacher I	K	18	2	1	1	**
	CES	Teacher J	K	16	0	1	1	2
	DHES	Teacher K	1	21	1	0	0	*
	CES	Teacher L	1	17	1	1	1	*
	CES	Teacher M	1	16	2	3	3	*
	DHES	Teacher N	2	21	0	2	2	4
	DHES	Teacher O	2	20	0	2	2	3
	CES	Teacher P	2	16	0	0	0	3

GES = Greenville Elementary School
DHES = Druid Hills Elementary School
CES = Clearview Elementary School
*Not a Project PROMISE teacher this year. **Left school system.
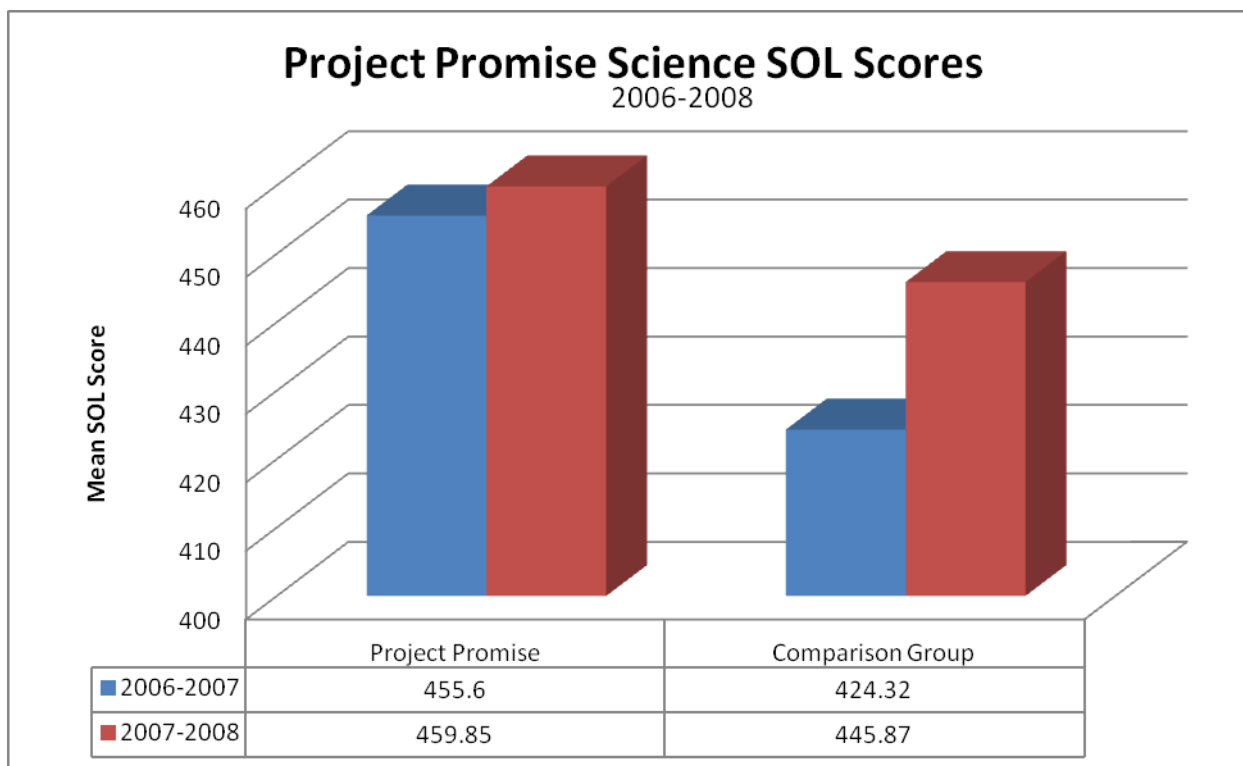
2. Student Achievement Data

The management team provided the external evaluator with achievement data for participants in the Martinsville and Greensville school divisions for the period 2005-2008. These data include grade three state assessment results in science and SAT-10 full- and sub-scale scores in science for students who participated in Project PROMISE and a comparison group of students (same grade, similar background characteristics) who did not. The different school divisions provided different kinds of data so there may not be a similar profile of scores for students in each school division. These data were used to address the following evaluation question: What evidence exists of improvement in reading achievement or language development?

Commonwealth of Virginia Standards of Learning (SOLs)

Greensville Elementary School. Grade three students in the Greensville Project PROMISE cohorts scored significantly higher on the grade three Virginia Science Standards of Learning (SOL) than a comparison group of students who did not participate in *Project PROMISE* (Table 3 and Appendix A1). Even though both groups improved for academic year 2007-2008, Project PROMISE students (those who received the enhanced curriculum) scored significantly higher than those students in comparable classrooms who received their regular prescribed curriculum. These results actually compare same-age peers who participated in the project and those who did not. All Greensville classes are heterogeneously grouped. The fact that

the comparison groups of grade three students improved may be evidence of the "spillover" effect of the professional and curriculum development of the Project PROMISE teachers. In other words, Project PROMISE teachers may have shared what they learned about gifted children and hands-on, inquiry-based science instruction with other teachers in their school.

Table 3. Grade Three Science Standards of Learning Assessment for Greensville Elementary School (2006-2008)

Project Promise Science SOL Scores
2006-2008

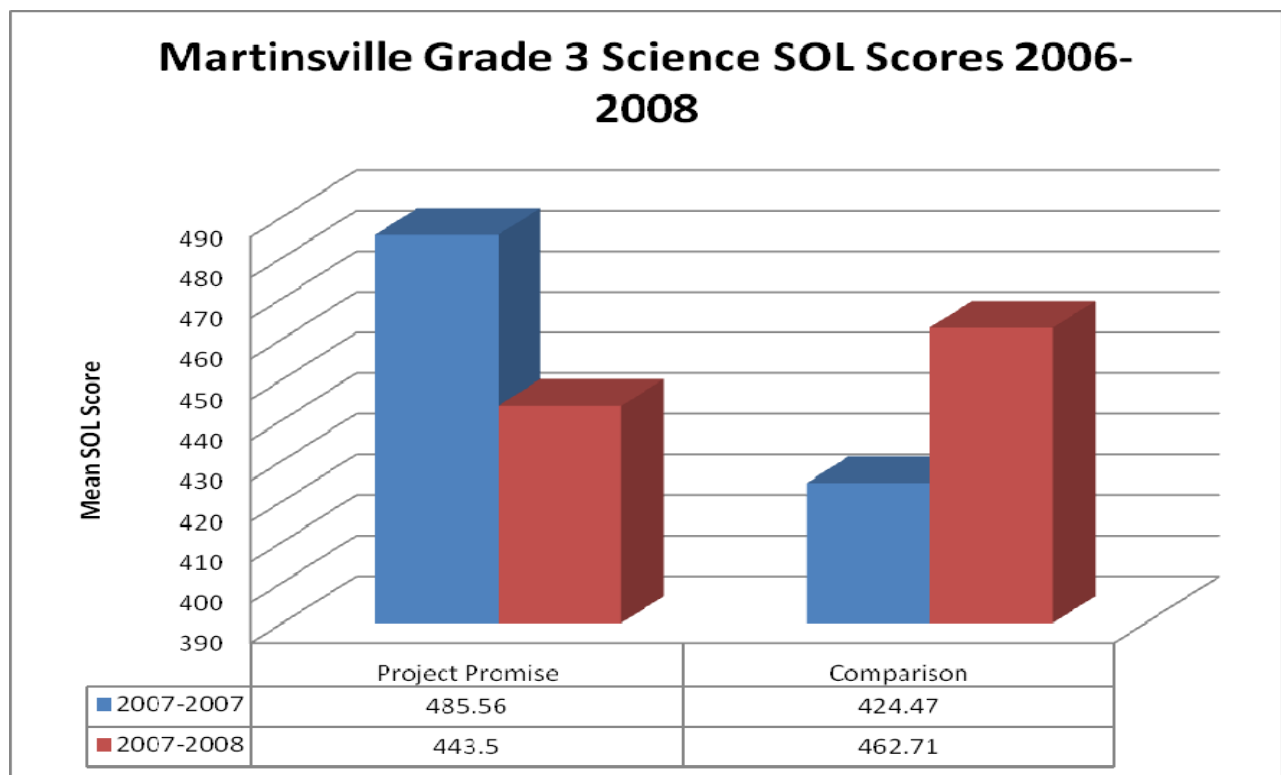|	Project Promise	Comparison Group
■2006-2007	455.6	424.32
■2007-2008	459.85	445.87

Note. This chart summarizes two years of average grade three Science SOL scores for Greensville students who participated in Project PROMISE and a comparison group of students in classes that did not.

Martinsville City Schools. Two schools in Martinsville were host sites for Project PROMISE, Clearview and Druid Hills (prior to grade-level reorganization). Students who participated in Project PROMISE scored significantly higher on the grade three Science SOL test in year three of the project, but scored lower in year four (Table 4). This may be due, in part, to the significant reorganization that occurred prior to the no-cost additional year of the project; the two host K-5 elementary schools were reorganized into primary and intermediate schools. Anecdotal data from project directors and teachers suggested that the reorganization may have had a negative impact on participants' ability to deliver the curriculum consistently and as specified. An additional explanation may be the differential number of students in each group as well as the demographic makeup of the groups. The comparison group of students had almost three times as many students as the Project PROMISE group. Further, a glance at the raw data suggested that *all* of the students who scored 600 (a perfect score on this measure) belonged to the comparison group, which indicated that students in the comparison group may NOT have

been similar in background characteristics to those in the Project PROMISE group. Additional data containing disaggregated scores for African-American, Caucasian, and Hispanic students may be found in Appendix A2.

Table 4. Grade Three Science Standards of Learning Assessment for Martinsville City Schools (2006-2008)

Martinsville Grade 3 Science SOL Scores 2006-2008

	Project Promise	Comparison
■ 2007-2007	485.56	424.47
■ 2007-2008	443.5	462.71

(Mean SOL Score, y-axis: 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490)

Note. This chart summarizes two years of average grade three Science SOL scores for Martinsville students who participated in Project PROMISE and a comparison group of students in classes that did not.

Greensville Elementary School. Baseline and final year SAT-10 full scale scores indicate that students in the comparison classes scored significantly higher on the SAT-10 than those students who participated in Project PROMISE (Table 5). Additionally, results from the SAT-10 subscale scores for 2007-2008 (Appendix A3) indicate that students in the comparison classes scored higher than students in the Project PROMISE classes on *all* six reading and/or language subscales. These results should be interpreted cautiously for several reasons. First, there were no statistically significant differences in full- or sub-scale scores for students in Project PROMISE and comparison groups, only average differences. Next, the unit of analysis for this comparison is a cluster of classroom, which means that the scores are representative of classes in which the *teacher* was a member of the Project PROMISE or classroom group; the scores may not represent the individual scores of *students* who were Project PROMISE participants. In other words, data were not provided that followed the *individual* achievement levels of students who participated in Project PROMISE for one, two, or three years. Finally, it is very difficult for interventions at the classroom level, especially in *one* content area, to have an impact on a global measure of achievement such as the SAT-10. Further, scores on the SAT-10 are not truly comparable across grade levels, since students in different grades take SAT-10 tests that are on different levels. Comparing sub- or even full-scale scores on different levels of the test is comparable to comparing apples to oranges.

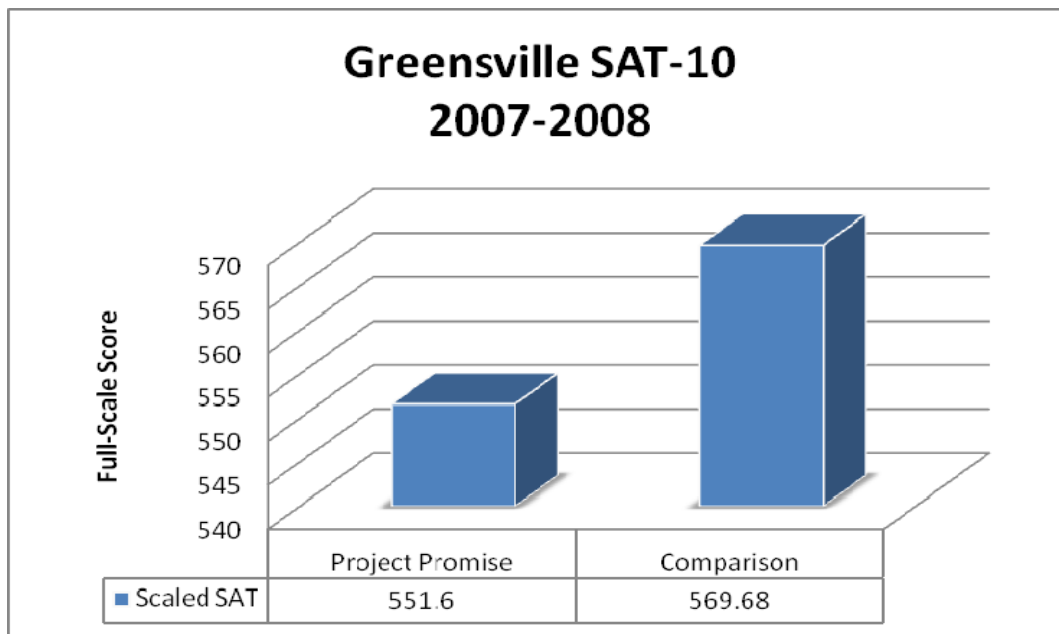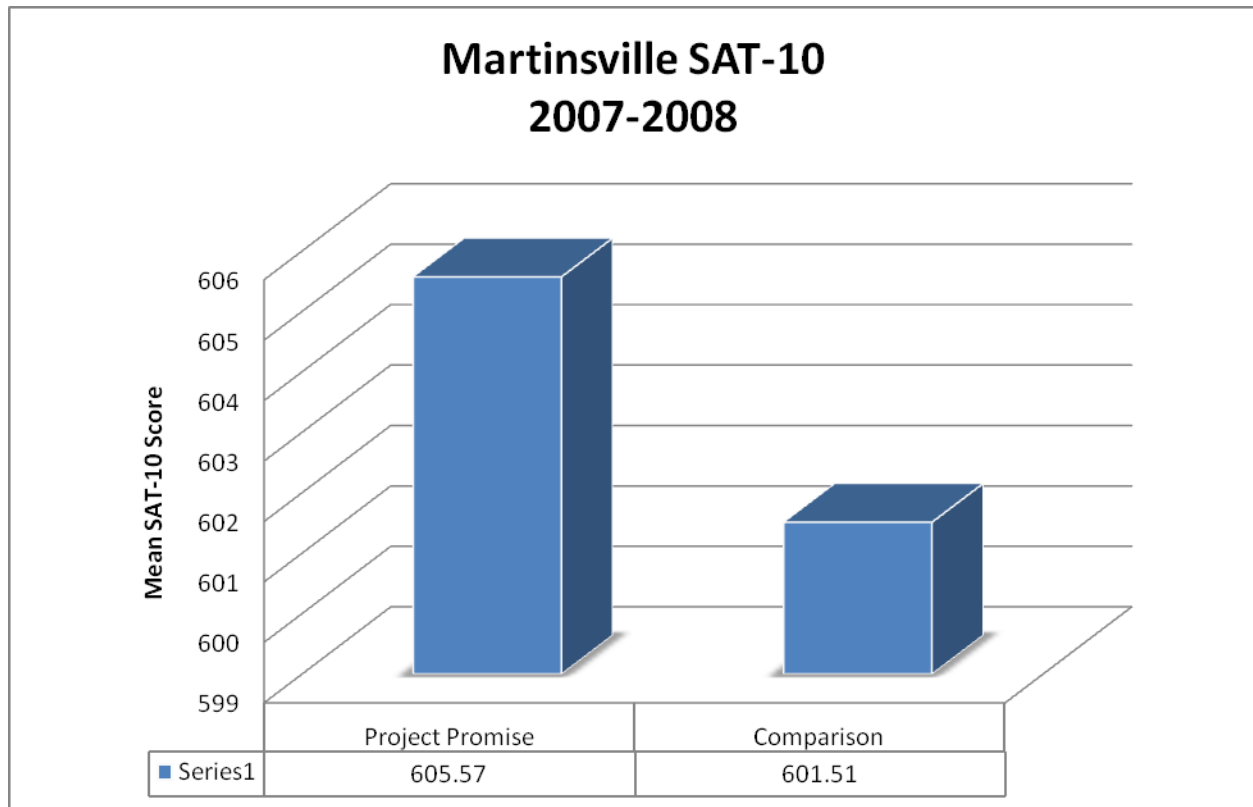Table 5. SAT-10 Full-scale Scores for Greensville Project PROMISE and Comparison Groups: 2007-2008

Table 6. SAT-10 Full-scale Scores for Martinsville Project Promise and Comparison Groups: 2007-2008

Martinsville SAT-10 2007-2008

Series1	Project Promise	Comparison
	605.57	601.51

Martinsville City Schools. Baseline and final year SAT-10 full-scale scores indicate that students in the Project PROMISE classes scored significantly higher on the SAT-10 than those students who participated in the comparison classes (Table 6). Additionally, results from the SAT-10 subscale scores for 2007-2008 (Appendix A4) indicate that students in the Project PROMISE classes scored higher than their peers in the comparison classes on the Phoenemic Awareness subscale. Students in the comparison classes scored higher than students in the Project PROMISE classes on the other five reading and/or language subscales. Again, these results should be interpreted cautiously for several reasons. First, there were no statistically significant differences in full- or subscale scores for students in Project PROMISE and comparison groups, only average differences. Next, the unit of analysis for this comparison is a cluster of classrooms, which means that the scores are representative of classes in which the *teacher* was a member of the Project PROMISE or classroom group; the scores may not represent the individual scores of *students* who were Project PROMISE participants. In other words, data were not provided that followed the *individual* achievement levels of students who participated in Project PROMISE for one, two, or three years. Additionally, teachers in the Project PROMISE classes were dispersed to different schools when the school division

reorganized (please see previous section). Finally, to emphasize, it is very difficult for interventions at the classroom level, especially in *one* content area, to have an impact on a global measure of achievement such as the SAT-10. Further, scores on the SAT-10 are not truly comparable across grade levels, since students in different grades take SAT-10 tests that are on different levels. Comparing sub- or even full-scale scores on different levels of the test is comparable to comparing apples to oranges. Having said this, to address the following evaluation question, What evidence exists of improvement in reading achievement or language development?, there are no statistically significant differences in scores for the Project PROMISE and comparison classes; however, there are average, overall group differences in favor of the comparison classes.

Project Documents

1. Professional Development Materials

To address the evaluation question, To what extent is *Project Promise* perceived to be effective by relevant stakeholders?, three sets of professional development materials were reviewed for the October 2007, January 2008, and June 2008 training and professional development sessions for Project PROMISE planning team members and treatment teachers. At the conclusion of each year-end training and professional development session, evaluation feedback was collected in the form of a participant rating scale and open-ended prompts. The participants were invited to rate aspects of the professional development session (Appendix B; responses are summarized by percentages; N = 12 participants).

It is clear from the minutes and teacher comments that earlier years' recommendations for professional development made by the participants were implemented successfully by the management team. The project management team provided a new graphic organizer that allowed teachers to document whether or not and to what extent they implemented each lesson with the units. For example, teachers realized as they implemented the curriculum that they needed assistance with managing flexible small groups of students. The management team arranged for professional development opportunities that emphasized the use of centers as a management technique. Further, the evaluator recommended that the teachers receive professional development in the explicit teaching of creative thinking. The management team responded by inviting a consultant to discuss Thinking Maps with the Project PROMISE teachers. In examining the teachers' comments, it is evident that the teachers enjoyed and valued their involvement in Project PROMISE, and made substantial progress in their understanding of the needs of gifted learners and the elements of enhanced curriculum and instruction. The members of the management team are to be commended for their honest reflection and service to their collaborating teachers.

What did you feel were the most beneficial aspects of the institute for your professional development?

October 2007
> *The ability to work with team members in Project PROMISE to put into practice what we learned;*

Learning how to quickly give higher-level assignments without using additional materials;
Useful strategies for classroom management/groupings; and
Ideas for grouping and center activities.

January 2008
Thinking maps were excellent; and
I gained a lot of knowledge on thinking maps and organizing thoughts.

June 2008
The curriculum debriefing session, and the field trip were great;
Learning how the test scores were scored to reflect gifted. We enjoyed field trips that may be useful to our classrooms and instruction;
I enjoyed the time for reflections - for realizing how much we have learned, grown and done;
Receiving final curriculum units;
Enjoyed looking at the Web site and final drafts of curriculum;
I learned so much about giftedness traits, finding gifted students, and doing higher-level activities; and
I was given the opportunity to participate in a variety of workshop sessions – Petals, Thinking Maps, etc., that I have used in my classroom and plan to utilize more.

Additional Comments:
Now we need to do Social Studies;
Come back in a year to see how the units have been used;
I have really enjoyed and learned tons of information because of Project PROMISE. It has been an experience that I am really glad I had the opportunity to participate in; and
I thoroughly enjoyed this opportunity to work with wonderful people at nice facilities throughout the four years of Project PROMISE.

It is rare and refreshing to see teachers excited about their involvement in a research study and ready, even after four seemingly-endless years, to begin anew!

2. Curriculum

The three K-3 science units were developed for Project PROMISE based on *The William and Mary Center for Gifted Education* curriculum models and focused on life sciences, earth science, and physical science. The curriculum units focused on the overarching concept of *systems*, as suggested in the William and Mary curricular frameworks.

Each curriculum unit framework included the lesson number and title, materials and handouts needed, general and specific instructions for the teacher, the general lesson sequence, and pre- and post-assessments. Each unit also contained several lessons that placed the students in the role of the scientist, often conducting, evaluating and reporting on demonstrated scientific experiments. Each unit also contained at least one unit that demonstrated the use of a "Need to Know Board." All curriculum units focused on the writing process, including opportunities for various types of writing including journaling, persuasive writing, and narrative writing (especially with respect to observations). Additionally, all curriculum units created for this grant project included all needed handouts, graphic organizers, and assessment/evaluation suggestions.

The curriculum materials themselves were not within the purview of the external evaluator; however, it should be noted that the process of analyzing, evaluating and revising their

curriculum resulted in substantial professional growth and confidence for the teachers. Therefore, the evaluation data explored here will be the results of the teachers' curriculum debriefing logs, in which they suggested which lessons were successful and which needed remodeling to address the specific needs of each classroom.

For year three, the management team created new forms to encourage teachers to document the implementation of individual lessons and any modifications they made in their actual teaching. This allowed teachers to reflect on their teaching of the units and management team members to verify that the teachers were implementing the curriculum as written. With respect to the first question regarding the strengths of the lesson, teachers suggested that students remembered and had a deeper understanding of the role of the practicing scientist in the field. Further, they suggested that students appeared to have a deeper understanding of the main concepts emphasized in the lessons.

In evaluating the teachers' lesson plan implementation logs, it is evident that most teachers implemented the lessons within each unit as written. There were a few exceptions, but they appeared to be minor and related to time spent on the lesson, the replacement of recommended literature with books with which teachers were more familiar or took less time to teach, or the replacement of certain concepts or terms with some that may have been more appropriate for their own students. When prompted for their evaluation of the problem-based nature of the lessons, every teacher responded that they thought that aspect of the unit was critical in enhancing the understanding and motivation levels of their students. In evaluating the unit documentation, it is obvious that the teachers used everything within their power to implement the lessons as written. They are to be commended for their growth and development in this important area. These participating teachers are well-versed in the concept-based teaching and learning approach and serve as mentors to their school and division peers.

3. Staff Communications

Data from executive team members were collected via electronic interview. Major communication tools include frequent electronic memos, regular on-site observations and visits, conference calls, and quarterly in-person meetings. The executive team kept the outside evaluator informed of all communications by including her in all correspondence. One local liaison summarized the various types of communication that was practiced by project executive staff:

Executive team meetings for opinions and procedures;
Project directors make site visits;
Project directors request and respond to local information as the project moves forward;
Conference calls with county coordinators;
Frequent e-mail for messages/announcements;
Surveys/questions about units of instruction and equipment/supplies; and
New website to communicate with external audiences
(http://www.doe.virginia.gov/instruction/gifted_ed/project_promise/).

The project manager suggested that the executive team members collaborated "by phone, e-mail, conference calls, and in-person meetings to meet the needs of the Project PROMISE teachers" to address the following issues:

- Planning training sessions (pedagogy, gifted issues, and science), and debriefing those sessions;
- Ordering and distributing supplies and materials;
- Troubleshooting when needed;
- Working on refining curricula;
- Working with in-school administration;
- Reviewing implementation of the curricula;
- Coordinating and conducting observations of the classes; and
- Other activities as necessary to ensure the smooth and effective implementation of the grant. (Grillo)

For year four, the Project PROMISE management team communicated regularly with one another and the collaborating teachers. They were in tune to the needs of the participants and provided materials and professional development as needed. Local liaisons suggested that the model they had begun in year two was still appropriate and working well.

> *At the local level we have met to plan and share ideas and successes both school-by-school as well as getting the two school teams together. As demonstration site team leader, I have met with principals individually to discuss Project PROMISE and its importance as well as dispense information about upcoming units and trainings. The entire Project PROMISE team (Greensville, Martinsville, and executive team) collaborated at the January and June meetings in Richmond, by grade level, as well as with the entire group to revise units, revisit activities, and share successes.*
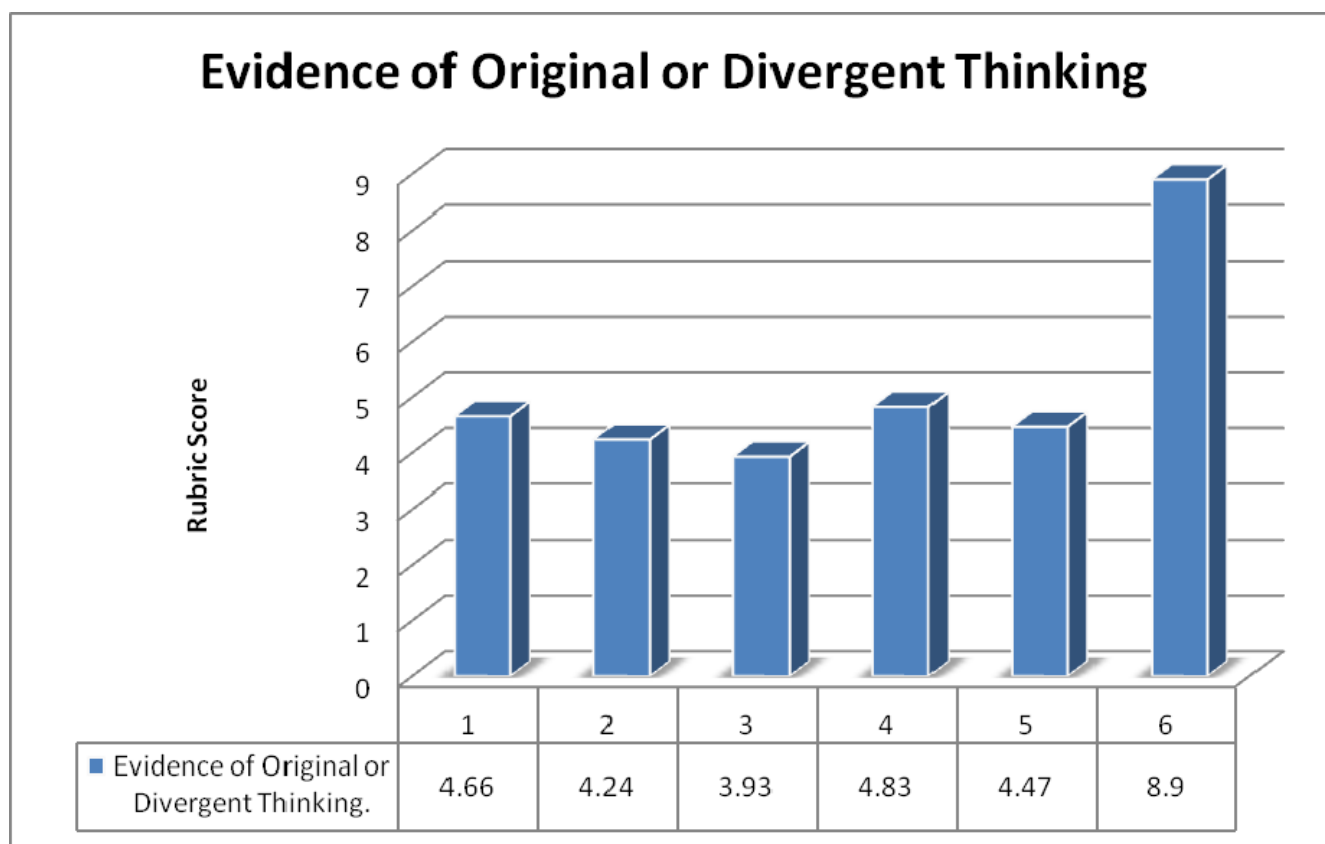
4. Student Products

Student products were collected four times during the fourth year of the grant. Project managers created a new rubric for teachers to use in evaluating growth in students' creative and critical thinking over four observations through students' products. Most student products followed the format suggested by the lesson plans within the curriculum units. Products ranged from journal entries, reports and persuasive essays to posters, drawings, and dioramas. Among the individual products that were submitted, it was evident that some students demonstrated multiple levels of understanding of the concept of *systems*. For example, some students were able to make comparisons within the disciplines of science (Earth, Physical, and Life); others were able to make comparisons across disciplines, while a third group was able to make comparisons across disciplines. There was a good grasp of the Hamburger Model (William and Mary) in students' writing samples. There was also some limited evidence of critical thinking but substantial improvement in the area of creative thinking.

Teachers' ratings of student products were used to address the evaluation question, To what extent is there evidence of student growth through problem solving, critical and creative thinking, and content knowledge? Here the data are limited to Greensville and to teachers in grades K and

one (Table 7). It is difficult to ascertain from the rubric scores whether or not teachers perceived growth in students' critical and creative thinking skills from the first product rating to the last. However, from classroom observations and teacher focus groups, there is sufficient anecdotal data that suggest that students made substantial progress in their use of problem-solving, and critical and creative thinking skills after they were exposed to the curricular and instructional techniques used in this project.

Table 7. Average Rubric Scores for Student Products: Greensville Elementary School.

Evidence of Original or Divergent Thinking

	1	2	3	4	5	6
Evidence of Original or Divergent Thinking.	4.66	4.24	3.93	4.83	4.47	8.9

Personal Interviews and Focus Groups

1.   Interviews with Project PROMISE team leaders

The project director and local liaisons were interviewed via e-mail to ascertain their perceptions of the quality and effectiveness of the grant implementation. Major themes included the effectiveness of various types of communications in troubleshooting real and potential problems with the implementation, the critical importance of regular meetings, the need to engage in constant formative evaluation of the implementation process, and the importance of providing both technical and emotional support to teachers in their implementation process.

In response to evaluation questions and by way of overall summary, the Greensville project manager had several concerns about future use of the curriculum developed for this project.

> *My concern is that untrained regular classroom teachers might not know why the units are designed as they are printed. If sections or activities are omitted, the results for the students will not be the same that we had or expose the student thinking that they can produce. Therefore, I offer the following summative comments.*

In spite of this concern, she offered important insights into the overall impact of Project PROMISE on all who were involved, including and especially, classroom teachers and their students in Title I schools.

> *The most powerful component of Project PROMISE was staff development. At the beginning of the grant, pre-assessment strategies determined that the regular classroom teacher participants had limited understanding of gifted learner characteristics. As a result, more than 180 hours of staff development activities during the four-year duration of the grant added training which complemented the previous training and moved teachers forward as they were ready and as the next area was needed. The evidence of their growth was manifested in their writing, implementing, and revising the science units as well as in their attention to exhibited characteristics in their students and their analysis of student products.*
>
> *The second most valuable component of Project PROMISE was curriculum development. Regular classroom teachers learned how to critique science units of instruction that were given to them, how to revise the already-developed units to better fit their grade levels, and then how to collaborate with other teachers to develop/write their own units. Their abilities "grew" with each of their experiences.*
>
> *Since the Javits Grant was written to provide instructional materials and some equipment for the implementation of the science units, teachers became more relaxed and confident that they could accomplish the work set before them. They moved from an attitude of giving reasons why they could not teach certain concepts in hands-on, problem-solving activities to requesting the materials and training they needed to be able to provide this instruction.*
>
> *Visits by observers from outside the school division were welcomed. The teachers were receptive to suggestions for improvement and pleased with comments of praise.*
>
> *The culminating event for the division Project Promise teachers occurred during the preschool meeting for all elementary science teachers. The Project Promise teachers requested that they be allowed to present the components of the grant and to share the science units with their grade-level peers. These presentations were well-received, and the instructional units and strategies are being incorporated into the grade-level curriculum.*

Finally, she makes this recommendation regarding collaboration for those considering a major curricular intervention or seeking to use materials developed for this project.

Support from the principal, the assistant principals, the gifted coordinator, the assistant superintendent for instruction, and the science coordinator is essential to the successful implementation of this body of work. Any school division planning to incorporate these materials into their instructional programs should provide as many components of this staff development/teacher training as needed by their teachers.

The other local liaison offered her reflections on what Project PROMISE did for her teachers and students:

Project Promise allowed for many things to occur:
- *Participating teachers' awareness of gifted characteristics was definitely raised through the many different training sessions given;*
- *Teachers' methods of teaching science became more hands-on and carried over into other areas of their teaching;*
- *Students in the Project PROMISE classes loved science time and other teachers in the building asked how they could become Project PROMISE teachers as well;*
- *Gifted referrals were made by participating teachers but the students referred did not necessarily qualify for our existing gifted program which for grades K-5 is only in the General Intellectual Ability area. Teachers said they saw signs of curiosity and students who asked good questions, so those were the ones referred. Discussions did occur as to looking at the gifted eligibility criteria/profile to see if it needed to be revised;*
- *Project PROMISE enhanced the instruction of science with problem-based inquiry methods and gave children opportunities to think creatively;*
- *Teachers' comfort level was raised significantly towards the writing of curriculum. They became quite good at writing science curriculum units.*

She also mentioned some of the many challenges they faced in attempting to implement the project as written:

- *Maintaining a cohesive group of Project PROMISE teachers. For various reasons the group slowly dwindled from 8 to 4 teachers from 2005 to the last year of implementation;*
- *Teachers more often than not taught Project PROMISE separately from the "regular" science they felt they had to cover based on the local pacing guide and to be able to adequately cover all the SOL;*
- *Units had to be constantly tweaked to allow for better coverage of the SOL, so teachers became frustrated at times. Some completed units were only field tested one year;*
- *Teachers always felt pushed for time and often did not "get to" the enrichment activities written as part of the units;*
- *Teachers' own knowledge of science concepts was sometimes weak, but this was addressed later in a training session presented as mini-labs for the Project PROMISE teachers to rotate through.*

For 2007-2008, the project director responded to the evaluation question, How does the Project PROMISE team collaborate to promote the goals of the grant? What are your

overall perceptions of the strengths and weaknesses of the project? by providing an overall summary of the four-year implementation of the grant.

Over the course of the grant, the Project PROMISE team has collaborated through all aspects of the development and implementation of the components of the project. The classroom teachers in the experimental school divisions, supporting teachers from the demonstration divisions, all of the administrators, and the personnel from the Virginia Department of Education, have been effectively and continuously jointly involved in planning and presenting training sessions, writing and developing materials to support the new curriculum, field testing the various lessons, gathering summative and formative data, conducting and analyzing evaluative materials, and providing on-going feedback to all of the stakeholders. In a traditional setting, these team members would have remained isolated by their hierarchical positions, but in the Project PROMISE setting they were truly all collaborative learners. Whether the team members were tracking down frog eggs, redesigning thinking charts, or analyzing student learning gains, the strategically implemented opportunities for collaboration led to increased and dramatic professional growth for the teachers, deeper insights for the administrators, and large leaps in achievement and accomplishment for the students. A particularly noteworthy outcome of the grant was that the Project PROMISE teachers became leaders in their schools, not only through their increased professional confidence, but also through their gains in understanding of a diversity of student learning needs.

A poignant and clear articulation of the growth of the Project PROMISE teachers came when they were analyzing the students' products at the final meeting, when one teacher realized that she was now consistently grading the projects on actual evidence of student learning and critical thinking, rather than on neatness and conformity, as she had been doing prior to the grant. She was now able to articulate how her students' projects demonstrated evidence of potential giftedness, and felt that she could successfully advocate for those students in eligibility and identification meetings. Thus, the strengths of Project PROMISE came from the intense, ongoing, hands-on professional development for the teachers that led to their dramatic professional growth; the hands-on, actively experimental aspects of the curriculum that led to increased student interest and achievement, and the collaborative nature of the project that very effectively supported the teachers as they implemented their new skills. At the beginning of the grant, the teachers preferred that we just hand them lessons to complete with their students, but by the end of the grant, the teachers were writing their own curriculum, analyzing the effectiveness of the lessons, and becoming active researchers on their own. Through the design and implementation of this grant as a complete package of curriculum development, professional development, and active administrator involvement and support, the goals of the grant were effectively realized.

The primary weakness of the grant was related to the unfortunate but unavoidable turnover of grant administrators and school personnel. Maintaining consistent participants throughout the entire four years of the grant proved to be

quite problematic. In addition, the grant activities and curriculum implementation were curtailed by the demands of school systems struggling to meet the requirements of No Child Left Behind—everything from class scheduling to choice of science books to time for experiments was limited due to administrative mandates related to benchmark testing.

In retrospect, the administrators were able to see and acknowledge the improved student achievement that was a result of Project PROMISE, but the increase in referrals for gifted services was not a priority when basic school accreditation was at stake.

The project director identified some of the critical drawbacks of undertaking rigorous research in educational settings. In spite of these problems, and perhaps because of them, Project PROMISE helped develop a committed cadre of teachers who now understand the critical link between *effective* professional development and enhanced learning and motivational levels for their students. In conducting classroom observations in years two and four, this evaluator has observed first hand, the evolution in teachers' perceptions of teaching and learning, and of their own leadership roles within their schools.

2.   Teacher focus groups (Martinsville and Greensville School Divisions)

Year Four
The major findings by question emerged across grade levels from focus group data are summarized below. A complete summary of teacher comments may be found in Appendix C.

1. What are your overall perceptions about Project PROMISE*?*

Overall perceptions of the program were positive and enthusiastic. The major themes are summarized below. First, participants perceived that they are better able to meet the needs of all students, not simply the gifted, in their classrooms. Additionally, participants also expressed positive feelings about the hands-on nature of the activities and the quality of higher-level thinking that students demonstrated as they engaged with the curriculum. Further, some teachers now felt better equipped to identify children of promise from low-income backgrounds. Additionally, some participants suggested that Project PROMISE has helped understand the critical importance of teaching science with a problem-based approach. Importantly, teachers appeared to understand the phrase, "hands-on does not mean minds-off." Finally, most teachers used the concept of "growth" to identify and illustrate their overall perceptions of Project PROMISE. Some illustrative comments were:

- *It's a wonderful project that has helped me identify giftedness in low income students.*
- *Project PROMISE is a great science unit that helps the children learn to think while doing hands-on science experiments. It also helps identify high-ability students.*
- *Gifted students can be identified using a variety of criteria and Project PROMISE provides the variety of activities needed.*

- *Project PROMISE is a comprehensive collection of units that are hands-on and raise the level of expectation and knowledge of students in the classroom.*
- *Excellent ! !*
- *That it was a great experience. I grew, my children grew, and my teaching grew.*

2. **What are your perceptions of the characteristics and behaviors of young high-ability students?**

Again, there were diverse opinions regarding the characteristics demonstrated by high-ability students. Several participants suggested that the project helped them recognize gifted behaviors in unusual or unique responses. Most offered that they realized that giftedness was more than just a number on an IQ test; that gifted children as a group were as unique and different as other children. Further, most participants felt that gifted characteristics fell on a continuum between positive and negative traits, but all recognized that they had to look deeper and be open to diverse traits and characteristics when trying to identify giftedness in very young children. Finally, most teachers recognized that gifted children are capable of much more than they thought; that they needed to escalate their expectations and when they did, their students responded. Selected responses include:

- *Characteristics may vary but include unusual ways of looking at things, problem solving, ability to learn easily, and creativity. They may not be teacher pleasers.*
- *These characteristics can be displayed in many different areas. Some are positive and others can be perceived as negative but we must be able to differentiate to meet the needs of these students.*
- *Advanced thinking can come in many forms and not necessarily from 'traditional' methods and situations.*
- *I am amazed at how much they can do and the high ability that they have.*

3. **Because of your involvement in Project PROMISE, have your perceptions and attitudes changed with regard to the characteristics and behaviors of young high-ability students? Please elaborate.**

Most participants suggested that they felt they were more in tune with the characteristics of young gifted students; many stated that they now realized that gifted students were not a homogeneous group. One participant suggested that "gifted students may exhibit behaviors that previously (before *Project PROMISE*), I considered simply 'problems'." Others offered that they no longer felt intimidated by gifted students and really listened to their responses to identify characteristics of giftedness. Most importantly, several participants stated that they felt they could now identify gifted behaviors and responses in their students from diverse backgrounds. For example, one teacher offered, "Children of poverty do not always demonstrate their giftedness in the same ways as higher-economic children so it is especially important to be aware of children who do view things in unusual ways and make connections quickly."

4. **Because of your involvement in Project PROMISE, were you able to identify talent in students that may have been overlooked in the past? Please explain.**

Several Project PROMISE cohort teachers stated that they had always looked for talent in students from diverse backgrounds while others continued to be surprised by the heterogeneity of strengths and talents among gifted youth in their classrooms. Some participants indicated that, either due to local division identification procedures or the pressure of state testing, did not identify any students based on their participation in Project PROMISE. Most importantly, though, some participants shared that they now recognized the detrimental impact of poverty on their students. Finally, one participant summed it up well, "Yes, gifted learners don't come in a box with pretty wrapping paper and a bow tied on it -- gifted learners have talents that need to be examined by quality teachers."

5. **Because of your involvement in Project PROMISE, what have you learned about the effectiveness of professional development sessions?**

During the first two years of this project, the overwhelming majority of respondents suggested that they needed much more professional development on the characteristics and behaviors of young gifted students, especially those who are underachieving or may be from diverse backgrounds. This is consistent with the general gifted education literature that suggests that general education classroom teachers receive little or no information about the characteristics of gifted students or how to teach them appropriately. By year three, those earlier perceptions had dissipated somewhat. Often, professional development opportunities are organized by someone within a school division without regard to the needs of the teachers. It is obvious that in this project, the management team took great pains to organize professional development opportunities that directly met the immediate needs of teachers in classrooms. Finally, several participants mentioned that the use of open-ended products and problem-based learning allowed them to "open up" their curricula to allow for student diversity of expression and thought. In year four, teachers thought more globally about the importance of and need for effective professional development opportunities. It is evident that teachers see the power of professional development that is targeted to their needs and stage of development as a professional educator.

- *Professional development is a key element to improving and becoming a better teacher. You have the chance to learn new and effective strategies.*
- *Our professional development sessions have been very effective and provided me with strategies to provide for individualism.*
- *To give up time out of your summer and school year for professional development, you want it to be able to be something you can go back and implement with your students right away. Project PROMISE has given us several wonderful opportunities to do this.*
- *Project PROMISE has taught me a lot of techniques and helped me grow as a professional. I am much more confident.*

6. **Because of your involvement in Project PROMISE, what have you learned about yourself as a professional?**

There was some consensus among these responses. Two main themes emerged from the focus group data; first, that teachers felt more efficacious in their teaching and realized that they must model lifelong learning; and next, that teachers (and students) were capable of being challenged and challenging others. Project PROMISE has been integral in encouraging and allowing teachers to see learning as an ongoing process and helping them to feel more confident in their own teaching. In terms of the field of gifted education, one teacher felt so much more confident that she began work on an endorsement to teach gifted students!

- *I have a good "handle" on higher-level thinking questions. I need to extend higher-level thinking throughout the day.*
- *There is always room for growth and advanced ways to achieve "rigorous" instruction.*
- *I learned something new to take back to my students each year. Each year we have added to what we already knew.*
- *I have gained more confidence in teaching high-ability learners. I was inspired to earn my gifted endorsement from the VADOE.*

7. **How effective have professional development opportunities been for you with regard to high-ability learners? What opportunities would you like to see in place?**

Teachers responded quite differently to this question in year three. For the first two years, most were still requesting more information and specific strategies to use with gifted children in their classrooms. In year three, the teachers shared their sense that they had grown as professionals, that the professional development had "transformed their teaching," and that they were still at the beginning of the journey but felt that they now had some roadmaps to guide them. For year four, teachers were now looking ahead to see how they may be part of a "scale-up" of the original project. In other words, they wondered how they might extend what they've learned to other content areas and other educators.

- *They have given me an opportunity to think about science on a higher level. I feel I have become a better teacher and professional because of Project PROMISE.*
- *I would like for all students to be tested for giftedness.*

8. **Please feel free to add any additional comments that may have been overlooked in the focus group questions.**

In past years, the focus of responses to these evaluation questions has been the lack of alignment between the curricula and the state standards (SOL). For year three, all of the comments received related to the project management team and the project in general. It's obvious from their responses that the teachers appreciate the work of the management team, especially Barbara McGonagill and Ruth Grillo. One comment summarized their feelings: "Project PROMISE has made me a better teacher." As a teacher-educator, this evaluator could not imagine higher praise for an innovative and expansive research project. Finally, this comment from year four invokes several implications. First, change takes time. Too often in education, political demands require that an innovation demonstrate gains before its stakeholders (in this case, teachers and students)

have the opportunity to reflect on what they've learned. Similarly, those same demands may require that educators implement multiple innovations simultaneously. From the perspective of an evaluator, it is very difficult to attribute success or failure to a project while there are multiple programs operating, often in competition.

- *I am very pleased that I agreed to do this- at the beginning and even the middle, I was not so sure - but now I see how much I have grown.*

Classroom Observations

Classroom observations were conducted in Martinsville in March 2008, and in Greensville in May 2008 (COS-R results are synthesized into this narrative and are available upon request form the evaluator). In year two, the evaluator noted several strengths and weaknesses in the manner in which teachers implemented the PROJECT PROMISE curricular and instructional innovations. Noted strengths included evidence of positive teacher rapport with students, the ability to spark students' interest in the lesson by enhancing the introduction, an environment in which students were actively engaged in the hands-on nature of the lessons, an understanding that talent may manifest itself differently in diverse populations, collaboration with colleagues in the school, and an emphasis of using the language of the practicing professional. These strengths were evident in all of the classroom observations conducted this year.

In the year two classroom observations, there were also several weaknesses noted. They included evidence that several teachers had difficulty with the appropriate pacing of the lessons, that all teachers were not actively assisting students in making connections to the overarching concept of *systems*, that all teachers did not feel confident in teaching the content and concepts of science to their students, that students were not able to generalize from the hands-on science activities to the bigger ideas that represented true concept-based and enduring understandings, and that all teachers struggled with asking open-ended and follow-up questions of students. Based on those observations, the evaluator made several recommendations.

In summarizing year four classroom observations, the evaluator first examined correspondence and agenda from the various professional development sessions. It is apparent that *all* of the recommendations for enhancing the implementation of the Project PROMISE curricula were internalized and implemented. For example, the evaluator recommended teacher training in creative thinking skills to enhance students' abilities to connect their observations and activities to the bigger concepts. The project management team invited an expert in DeBono's Thinking Hats to talk to the teachers. Every teacher commented on how helpful and enjoyable that training was for their participation in the project.

Project PROMISE teachers also internalized the feedback and made the necessary adjustments in their teaching. The evaluator's narrative field notes are available in Appendix D and will be summarized here to address the evaluation questions. First, there was evidence in each class that the teachers frequently used debriefing and scaffolding techniques throughout. At the end of each activity or experiment, teachers paused to ask students what they'd learned and how that related to earlier lessons or to the big idea or concept. Further, instead of simply reciting answers to students' questions, teachers used scaffolding techniques to encourage students to construct their

own understanding. In one grade one lesson, students were actively engaged in predicting whether or not certain solids would dissolve. The teacher had the students totally engaged, excited, and on task throughout the lesson. She added just enough competition to the lesson to make it engaging, but still allow students to feel comfortable responding and taking risks. In all classes, the evaluator saw a major shift from teacher- to student-centered classrooms. She also saw evidence of expertise in open-ended questioning strategies. Perhaps the next step in the teachers' development is to work on debriefing to bigger ideas and concepts. A third major strength that built on earlier examples was the increased and improved use of the language of the discipline. Students were using language that most teachers would think was beyond their capability at that age. Additionally, there was evidence that teachers were scaffolding and facilitating students' ideas and conceptions of connections within the discipline and across into other disciplines of study such as social studies or language arts. Further, teachers implemented the age-old recommendation of "wait time." It is perhaps more important than ever when teaching a concept-based unit as the teacher asks open-ended questions to which there is not one correct answer. Students need to learn to listen to what other students suggest and synthesize those ideas with their own. All of those processes take time which is often unnerving for teachers and students alike, but essential if higher-level thinking is to occur. There are two additional observations that led this evaluator to believe that Project PROMISE teachers have moved from novice to expert in terms of teaching and self-reflection: the quality of teacher and student questions and responses; and the move from a teacher- to a student-centered classroom environment. In comparing teacher and student responses to oral and written questions, one sees improvement in the quality and quantity of responses. This transformation was evident in each classroom that was observed. First, students listened and responded to the teacher and to other students. This sophistication of classroom interaction is occasionally found in high school or gifted classrooms, but rarely in elementary classrooms. Students not only answered the questions, but elaborated on and explained their responses. Because of this critical change, Project PROMISE classrooms became student- rather than teacher-centered. In order for students to gain enduring understanding of important concepts and principles, this shift must occur. It was exciting and affirming to see it occur in Project PROMISE classrooms. Congratulations to the Project PROMISE management team and especially to its teachers!
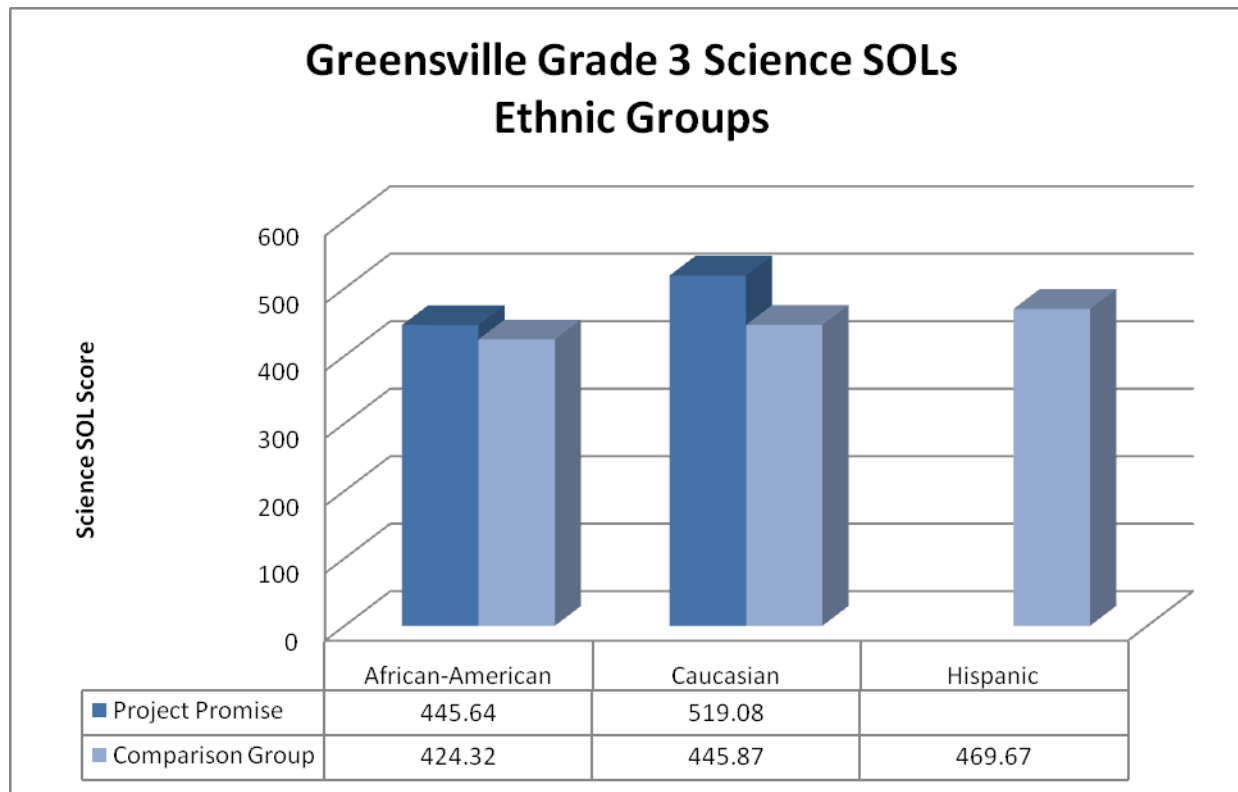
Overall Recommendations for the Future

- Consider integrating technology into future curriculum unit revisions;
- Establish Project PROMISE teachers as lead teachers in their schools to disseminate and facilitate successful instructional tools;
- Provide training and support to teachers on how to use performance-based assessments to drive instructional modifications (e.g., data-based decision making);
- Expand the curricular focus from concept-based, enhanced curriculum for the whole class to differentiated curriculum based on students' needs, strengths, and talents;
- Include Project PROMISE teachers in subsequent curriculum revision and development of facilitation guides to support implementation to other schools and school divisions;
- Publicize Project PROMISE materials and findings within the structures of the Virginia Association for the Gifted (VAG) and the Virginia Consortium of Gifted Coordinators;

- Present findings at Association for Supervision and Curriculum Development and other general education conferences in addition to gifted conferences such as VAG and National Association for Gifted Children;
- Submit manuscripts for publication to research and practitioner journals;
- Use technology (e.g., wikis, blogs) to assist teachers who may want to try to develop concept-based curriculum in a risk-free environment;
- Establish a listserv or other blog to allow Project PROMISE teachers and management team to maintain connections to one another;
- Encourage teachers' sharing/networking with each other around what works; and
- Continue to celebrate your hard work, dedication, and tremendous impact on kids!

This serves as a year four evaluation report that addressed data collected in the last year of the project and the final evaluation report which summarized three years of data collection and analysis.
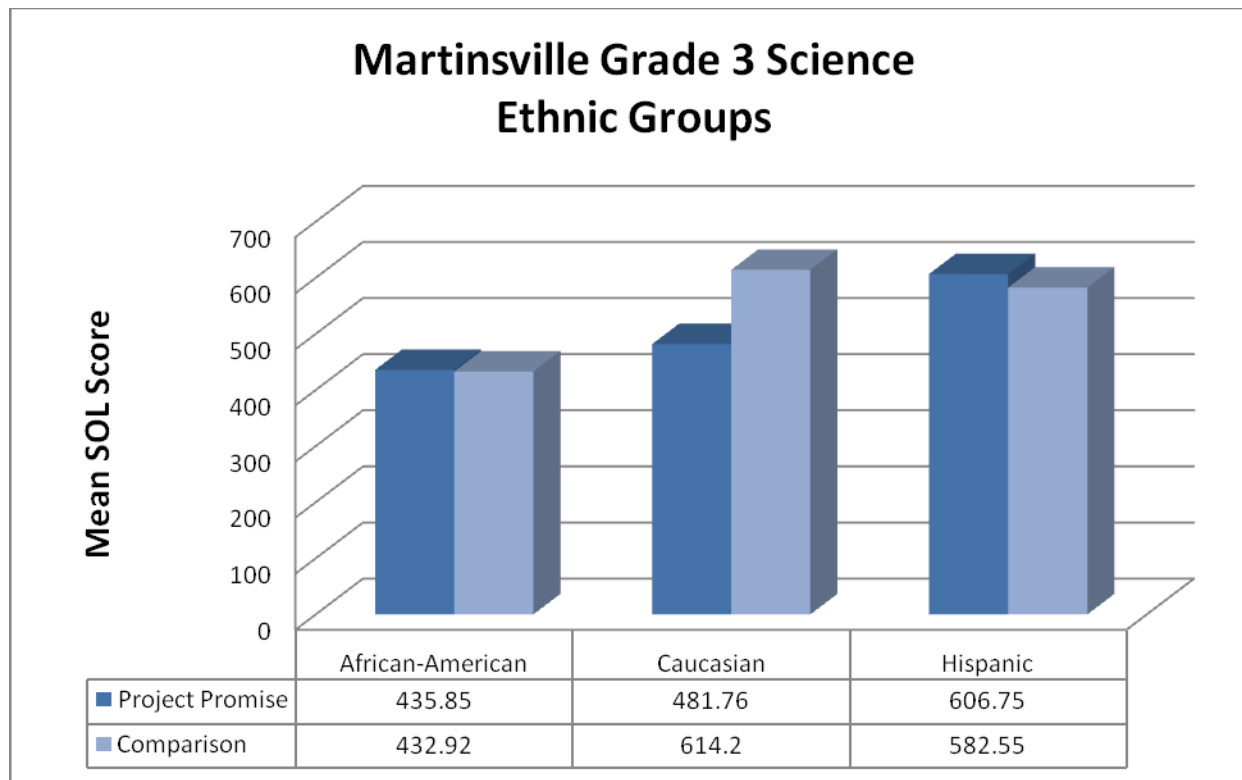
Appendix A

Student Achievement Data

Greensville Elementary School

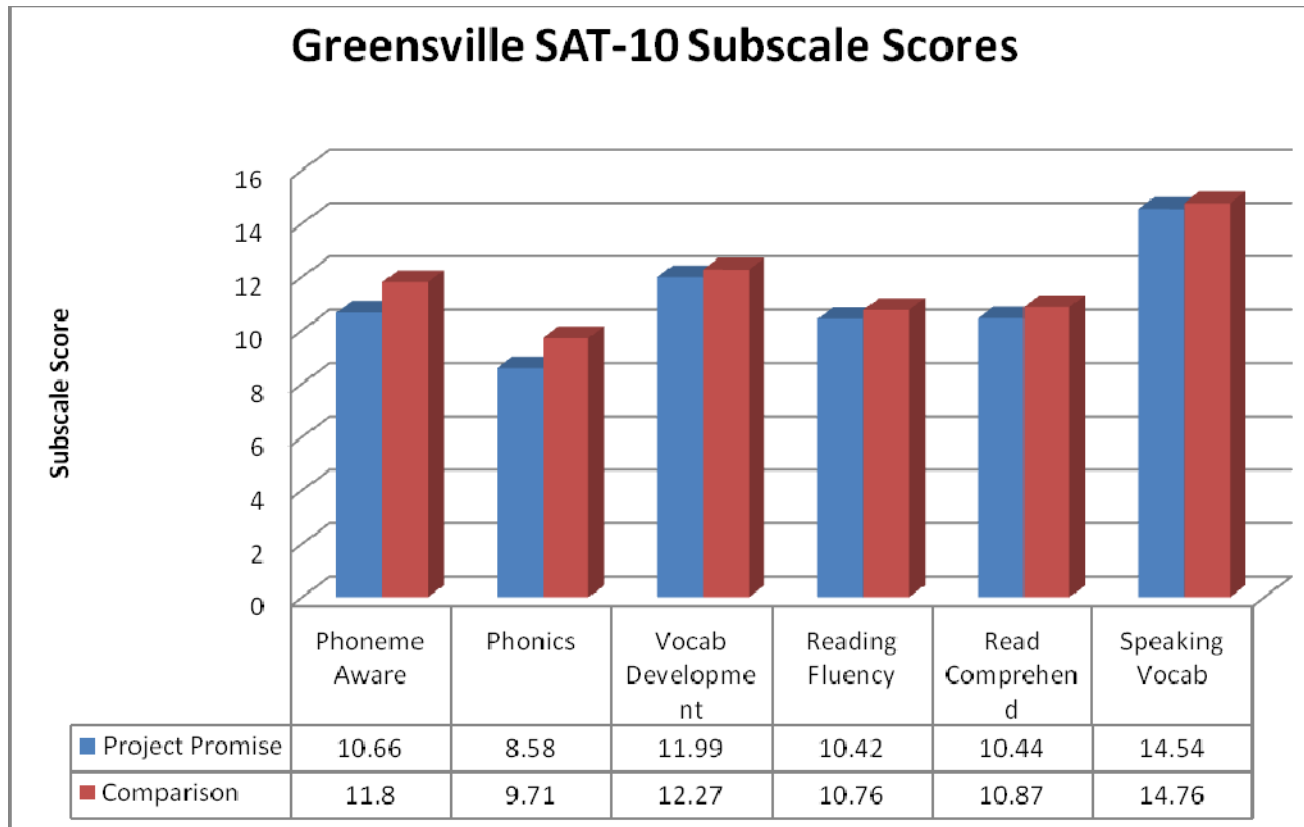*A1: Grade 3 Science SOL Scores for Sample Ethnic Groups: 2007-2008*

	African-American	Caucasian	Hispanic
■ Project Promise	445.64	519.08	
■ Comparison Group	424.32	445.87	469.67

Martinsville City Schools

A2: Grade 3 Science SOL Scores for Sample Ethnic Groups: 2007-2008

Martinsville Grade 3 Science Ethnic Groups

	African-American	Caucasian	Hispanic
Project Promise	435.85	481.76	606.75
Comparison	432.92	614.2	582.55

Mean SOL Score

Greensville Elementary School

A3: Mean SAT-10 Subscale Scores by Participant Group

Greensville SAT-10 Subscale Scores

	Phoneme Aware	Phonics	Vocab Development	Reading Fluency	Read Comprehend	Speaking Vocab
Project Promise	10.66	8.58	11.99	10.42	10.44	14.54
Comparison	11.8	9.71	12.27	10.76	10.87	14.76

Subscale Score

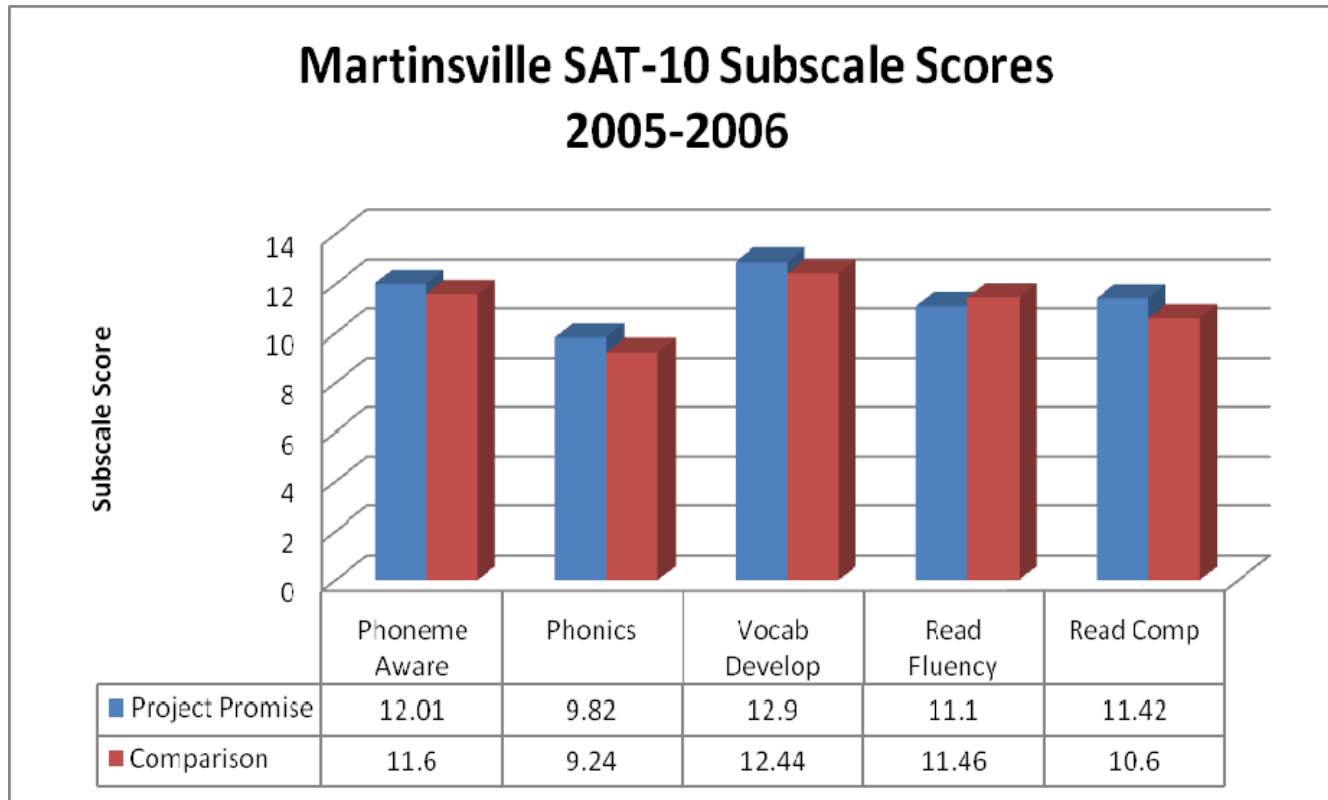# Martinsville City Schools

A4: Martinsville SAT-10 Subscale Scores: 2007-2008
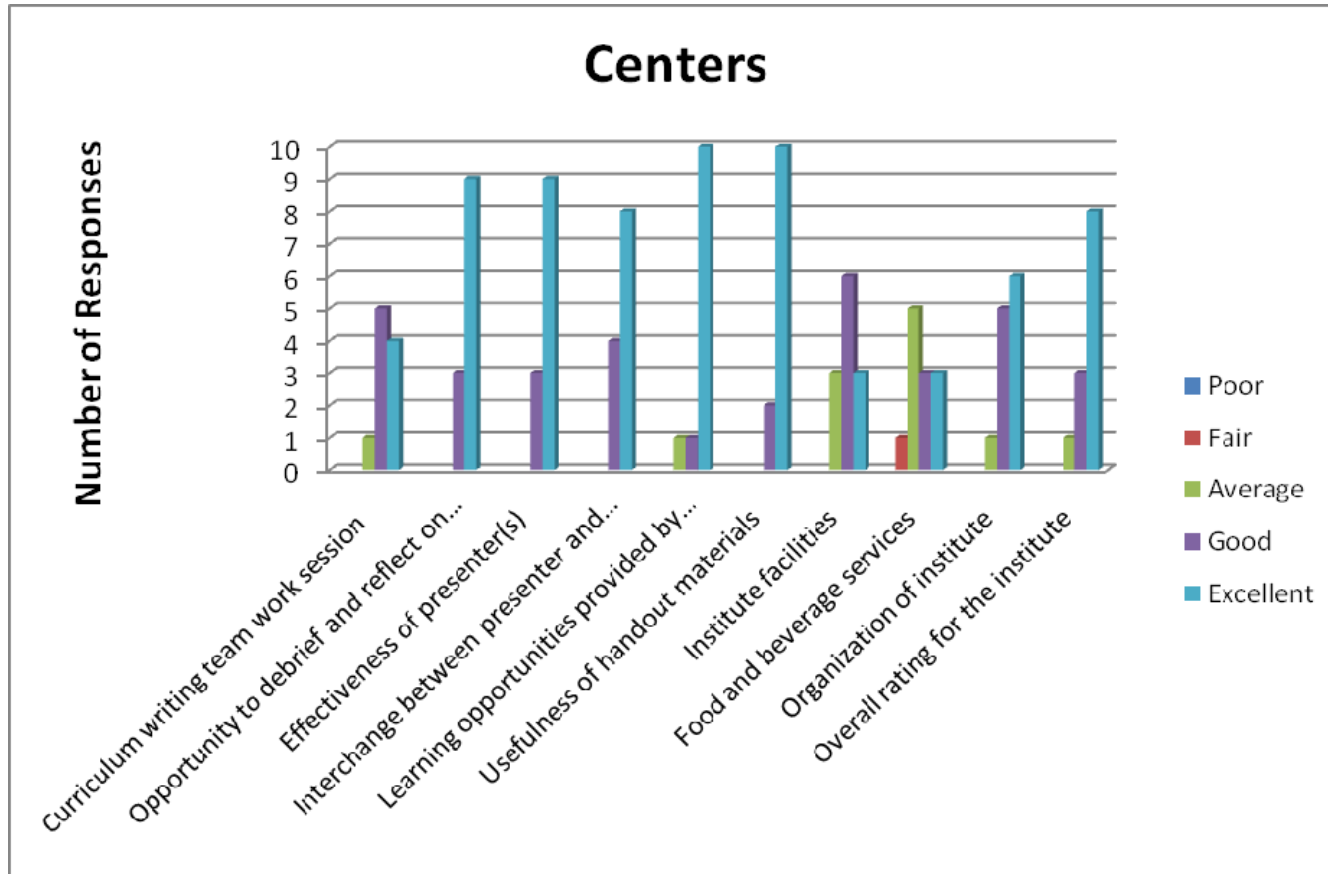
Students in Project PROMISE and Comparison Classes

Martinsville
2007-2008 SAT-10 Subscales

	Phonemic Awareness	Phonics	Vocab Development	Reading Fluency	Reading Comprehension
Project Promise	11.25	8.46	11.96	10.12	10.46
Comparison	10.95	8.67	12.34	10.64	11.35
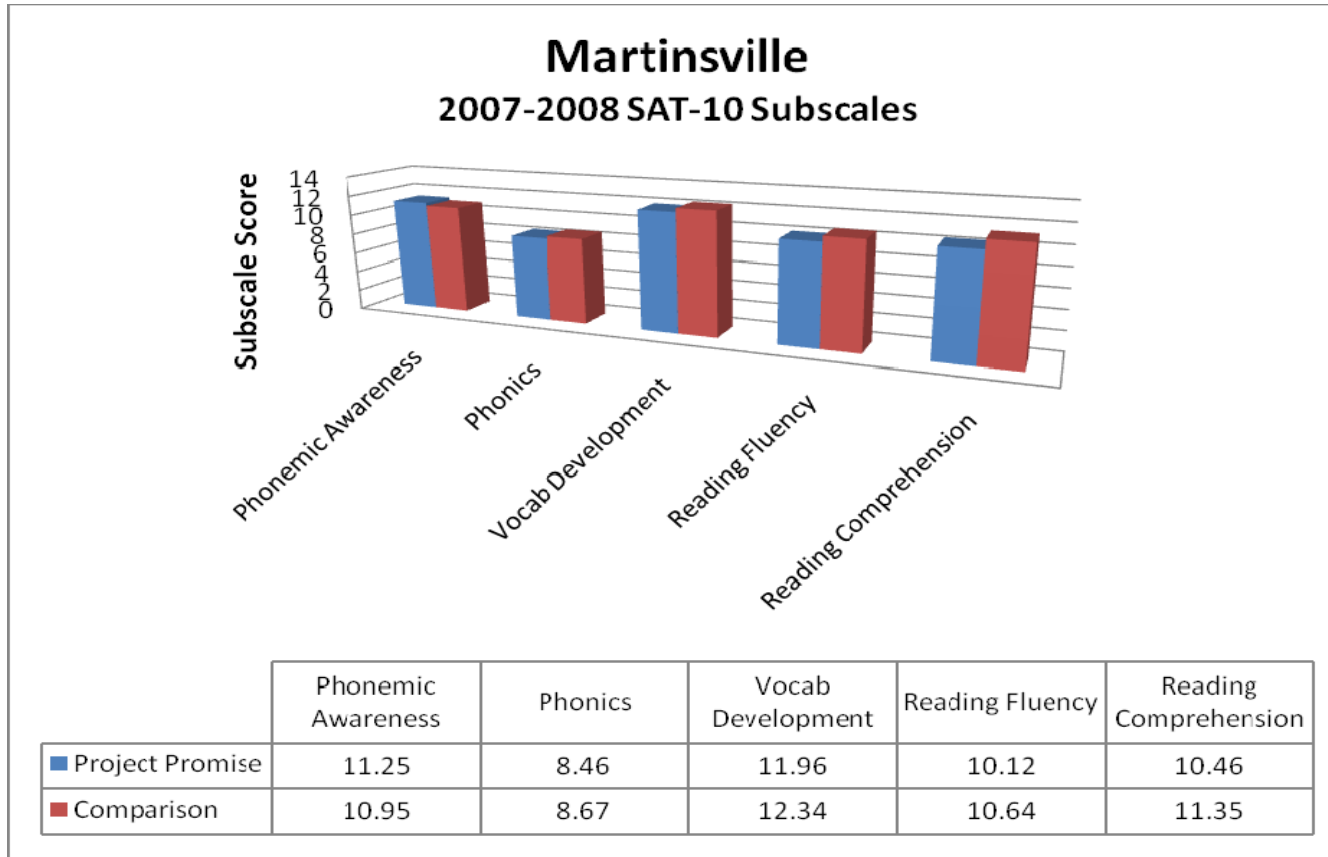
A5: Mean Baseline SAT-10 Subscale Scores by Participant Group

Martinsville SAT-10 Subscale Scores 2005-2006

	Phoneme Aware	Phonics	Vocab Develop	Read Fluency	Read Comp
Project Promise	12.01	9.82	12.9	11.1	11.42
Comparison	11.6	9.24	12.44	11.46	10.6

B1: October 2007

Assessment and Curriculum Debriefing
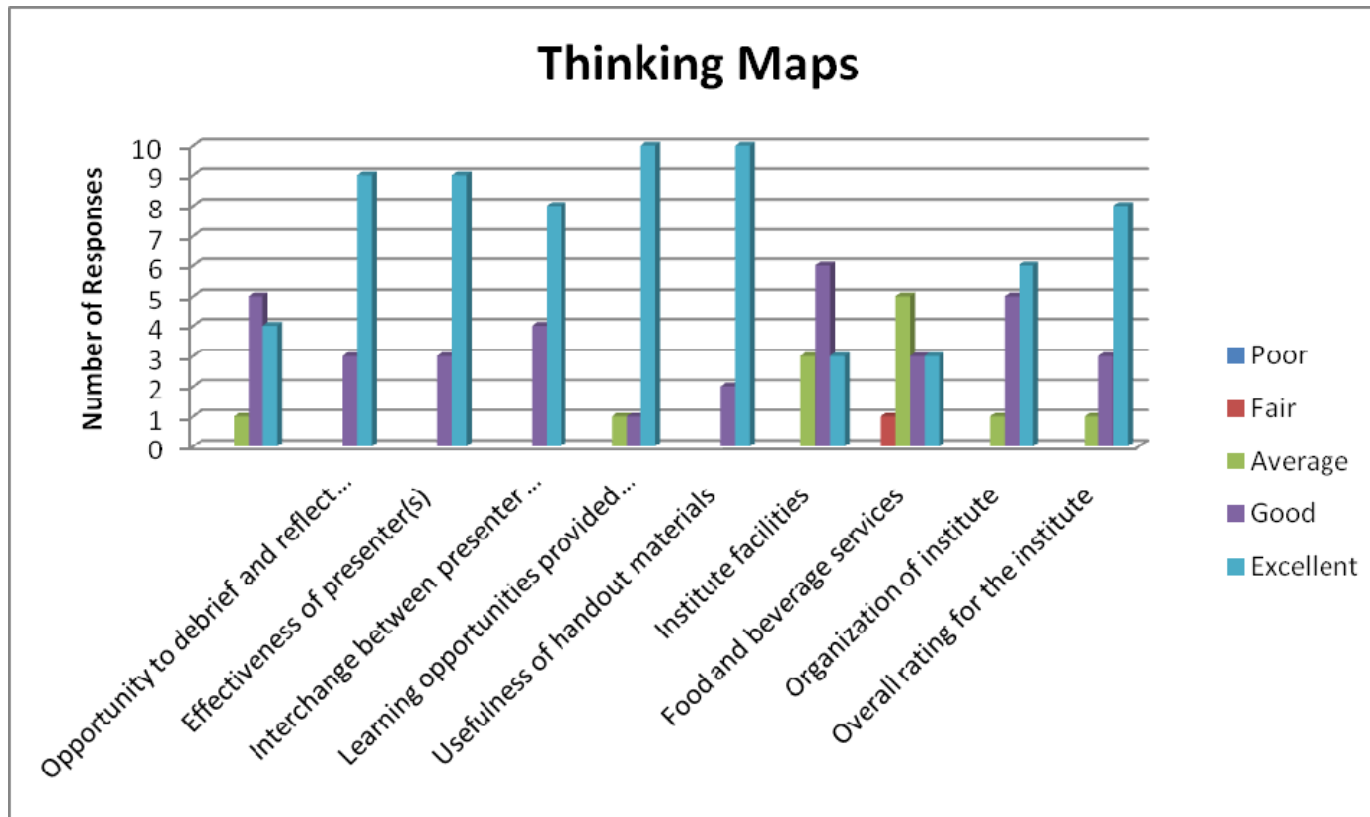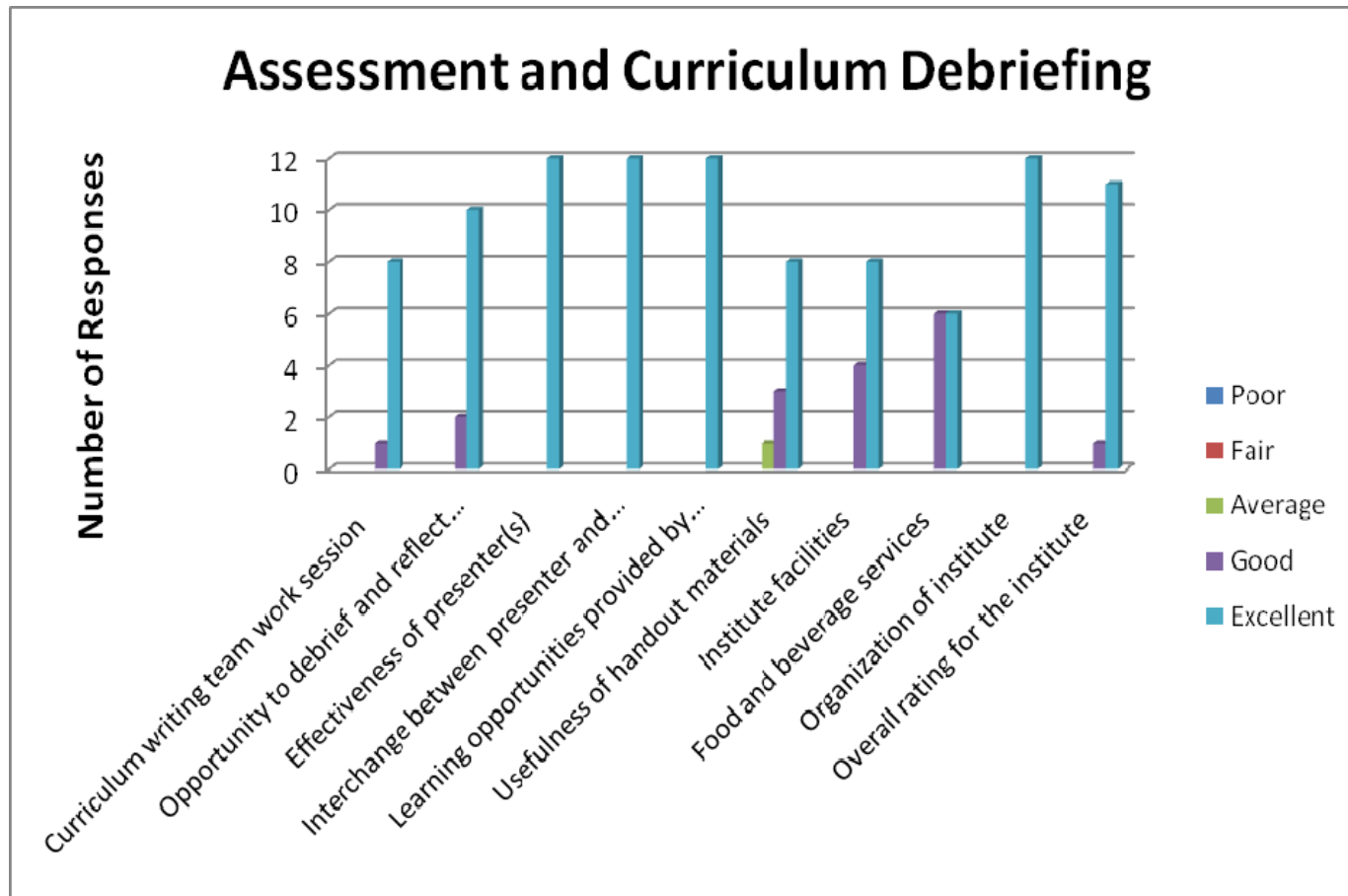
Appendix C

Teacher Focus Group Responses: Year 4 (2007-2008)

	Focus Group Question	Teacher Response
1.	What are your overall perceptions about Project PROMISE?	Project PROMISE allows the children to use higher level thinking and hands on activities as they study science. Awesome opportunity, professional development, and curriculum. Project PROMISE is a very hands-on exciting program. It allows students to be involved and take ownership in what they are learning. It's a wonderful project that has helped me identify gifted students in low-income students. Project PROMISE is a great science unit that helps the children learn to think while doing hands-on science experiments. It also helps identify high ability students. Gifted students can be identified using a variety of criteria and Project PROMISE provides the variety of activities needed. Project PROMISE has helped my students really <u>think</u> about what they are learning. PP is a comprehensive collection of units that are hands-on and raise the level of expectation and knowledge of students in the classroom. Excellent ! ! That it was a great experience. I grew, my children grew, and my teaching grew. Wonderful!
2.	What are your perceptions of the characteristics and behaviors of young high-ability students?	Young high-ability students need different ways to view and experience learning. They need to be challenged. Unique, special, and difference are key. Many of (have?) high expectations of themselves. They are eager and like to add to discussions what they know. Students can be gifted in different areas. Characteristics may vary but include unusual ways of looking at things, problem solving, ability to learn easily, and creativity. They may not be teacher pleasers. Giftedness/high ability can be manifested in many ways. It can be a challenge to redirect certain behaviors toward learning. High ability students enjoy making their own maps. High ability students enjoy doing the hands-on experiments. These characteristics can be displayed in many different areas. Some are positive and others can be perceived as negative but we must be able to differentiate to meet the needs of these students. Advanced thinking can come in many forms and not necessarily from "traditional" methods and situations. I have changed my perceptions. I understand certain behaviors and characteristics of kids now and that helps me every day. I am amazed at how much they can do and the high ability that they have.
3.	Because of your	High-ability students do not always get the highest grades or have the

	involvement in Project PROMISE, have your perceptions and attitudes changed with regard to the characteristics and behaviors of young high-ability students? Please elaborate.	best classroom behaviors. Some of them need to be discovered. Yes, they are <u>not always</u> high academically. The characteristics include much more than IQ Yes, I understand them better. Yes, because all high-ability students aren't well behavior (behaved?). They can be the problem student who is bored. Yes, I thought that such students would be teacher pleasers, would be neat and be well-organized originally. Yes, my perceptions and attitudes have changed. I now think of gifted students as those who might be the "class clown" or be very verbal not wanting to display their giftedness in more "middle class" venues. Yes, it makes me take a second look at my students' work. It makes the students responsible for their own work. I have gained knowledge on how these behaviors have impacted students daily. Yes, I now understand that "negative, annoying" behaviors sometimes indicate higher-level thinking abilities. I have changed my perceptions. I understand certain behaviors and characteristics of kids now and that helps me every day. Yes, I look for different signs of giftedness and use the Petals approach.
4.	Because of your involvement in Project PROMISE, were you able to identify talent in students that may have been overlooked in the past? Please explain.	I find myself looking and listening more as the students work. I see some reactions now as belonging to a different type of learner. Yes, by learning about gifted characteristics (Harrison scale) realizing is not just <u>one</u> thing and only intelligence - it is to do with thinking perceptions. Yes, there was more opportunity to observe the thinking of students. Yes, I was able to identify a student that was labeled as a troublemaker but he needs to be challenged. Yes, one of my students this year was very gifted but he was very shy and I probably would not have recommended him based on his class participation if I was not aware of some of the signs that Project PROMISE taught me. I have taught several students whom, I felt showed gifted tendencies but appeared to [be] "hung-up" on the effects of their social class. It gives me another way to identify them. I may look at them in a different way. (active students) Through completing individual projects and asking higher-level thinking questions, students have a nonthreatening way to show what they know and their thinking process. Yes, sometimes students may have talent but not be able to do the "traditional" steps accomplished by "normal" high-level thinkers. Yes, I understand how gifted kids are different - they're not just "smart" they think differently. Yes, I look for different signs of giftedness and use the Petals approach.
5.	Because of your involvement in Project PROMISE, what have	Professional development has opened my mind and ways of thinking of gifted is totally different. It is effective if you take it and use it. Professional development is a key element to improving and

	you learned about the effectiveness of professional development sessions?	becoming a better teacher. You have the chance to learn new and effective strategies. The petals session taught me that all students learn in different ways and how to reach them. Project PROMISE has taught me a lot of techniques and helped me grow as a professional. I am much more confident. Our professional development sessions have been very effective and provided me with strategies to provide for individualism. It has made me a better teacher. I love using the thinking maps and my students love them too. To give up time out of your summer and school year for professional development, you want it to be able to be something you can go back and implement with your students right away. PP has given us several wonderful opportunities to do this. Professional development enhances self-confidence and enhances my ability to "interpret" situations. Professional development can be much more effective when you have a dynamic presenter who gets you involved and lets you have fun. Professional development can be an extremely eye-opening, useful tool.
6.	Because of your involvement in Project PROMISE, what have you learned about yourself as a professional?	I can always learn something new to make me a better teacher. I can do it! I am more confident in my ability to write curriculum. I feel that I have become a better teacher and that I can be very understanding. I can reach all students and challenge them to a higher level. I am more capable that I thought. I have a good "handle" on higher-level thinking questions. I need to extend higher-level thinking throughout the day. I learned something new to take back to my students each year. Each year we have added to what we already knew. I have gained more confidence in teaching high-ability learners. I was inspired to earn my gifted endorsement from the VADOE. There is always room for growth and advanced ways to achieve "rigorous" instruction. That I am much more capable of teaching, writing curriculum, and evaluating, than I thought - more confidence. I have learned that I can do things that I thought I couldn't do, like write curriculum.
7.	How effective have professional development opportunities been for you with regard to high-ability learners? What opportunities would you like to see in place?	I have grown in my knowledge of different learning styles and how to make lessons fit many different styles. Very effective. Thinking Maps. Pedals. Harrison Scale. P.P. Reunion and professional development next year '09. Thinking maps have really helped me to guide high-ability learners to different places while learning. It has given me a new tool with which to teach and learn myself. The professional development of thinking hats and thinking maps has taken me students to a higher level of thinking. The professional development have been helpful especially the beginning ones and the ones on Petals. Our professional development sessions have given me a variety of

		strategies to accommodate high-ability students. I would like to see Thinking-maps adopted at GES.
		It has given me an opportunity to grow along with my students. They have given me an opportunity to think about science on a higher level. I feel I have become a better teacher and professional because of Project PROMISE.
		All of the workshops were very effective especially Petals, Thinking Hats, Testing, and the science centers.
		I have learned a great deal about gifted learners - maybe more ways to extend the lessons- sharing ideas.
		I would like for all students to be tested for giftedness.
8.	Please feel free to add any additional comments that may have been overlooked in the focus group questions.	I had a blast and will take my new knowledge with me forever. I am very pleased that I agreed to do this- at the beginning and even the middle, I was not so sure - but now I see how much I have grown.

Appendix D

Classroom Observation Narratives

Greensville Elementary School
Emporia, VA

Wednesday, May 21, 2008

Grade 1, Teacher C

Lesson: Natural Resources…she began with an open-ended question: What are natural resources? One student responded with, "a tree." Teacher C responded that that was an example of a natural resource. She prompted them to response by saying, "you've already given me one example…" No responses from students. She tries again…"Let's think about it. Is a car a natural resource?"

Teacher C does a great job of piquing their interest; she is very dramatic. She helps them by giving nonexamples: water in a mud puddle.

Teacher C reminds them of the Rs of ecology: reuse…students: recycle, reduce…

She tells them that they're going to go on a nature walk; she reminds them that they need to bring certain materials with them. Teacher C uses the language of the practicing professional…science tools. Good!

She reminds them that they're going to make a circle map for the natural resources they find.

Debriefing: she had them stop at various places around the school write, debrief. She asks students to look at their list to see if everything is a natural resource. Next, she prompts students for definitions or classifications as natural resources.

It's nice to see teaching going on, rather than simply managing discipline. Good use of appropriate language: "manufactured goods." To move to the next step, I would recommend that she take time each day to debrief to the higher level concept of systems. She can also use debriefing to assess students' prior knowledge and connect to earlier learning.

Kindergarten, Teacher B

Students have been working on the unit on Plants; Teacher B is reviewing with them. Students provided great examples of plants using fluency and flexibility (shift from flowers to fruits and vegetables) which are prerequisites for creative thinking. Teacher B brings out pictures of plants. She asks for volunteers to point to parts of the plant and tell what that part does. Students demonstrated good risk-taking skills. The students volunteered to answer open-ended questions.

Teacher B demonstrates good voice inflection; flair for the dramatic. Again, I see examples of enhanced and improved teaching. Teacher B points to a part of the plant; the student volunteer tells how water is absorbed into the plant. Again, I see evidence of growth in open-ended questioning skills. Teacher B asks a question to see if the students understand an important abstract idea: "Why do leaves change color in fall?

Student A responds and Teacher B says, "you're close.' Good example of scaffolding without closing off responses or giving students the answer. (I see one student whom I suspect may be gifted: Student B.)

During the next part of class, students were going to conduct an experiment using colored water and paper to serve as water and plant stem. Teacher B asks, "why did I choose celery as an example of a vegetable?"

Student C: "because it's mostly all stem."

Teacher B: "What do you think will happen to these white flowers when we put food coloring in the water?"

Student D: "the flower will look like a rainbow." Teacher B follows-up by using the students' responses, suggesting that they'd try multiple colors in the next experiment. It's obvious that teachers are now taking the time to listen to students' responses; without that, teachers cannot use true open-ended questioning strategies because they build off of students' responses and questions.

Again, I think the debriefing process was missing. Students will not be able to make generalizations and connect to new learning without some scaffolding to that overarching concept.

Teacher B: "What will happen to the white flower?"

Student B: "It'll turn blue."

Teacher B: "Who agrees?"

Again, she was creating a risk-free environment for creative thinking by withholding closure and asking students to take a side, one way or the other.

Grade 1, Teacher D

Teacher D was reading a fun story.

Teacher D: "What could she do to make it sweeter?"

Students: "add sugar."

Teacher D: How are we going to know if something's dissolved?"

Students: "If you don't see it."

Teacher D: "Make a prediction, yes or no. Will it dissolve?"

Teacher D has each table set up so that each student has a cup of water; there are small cups set up in the middle of each table with 6 different substances in them. She draws two circle maps on the board; one with Yes and one with No.

This kind of lesson helps perfectionists in that the teacher is withholding judgment and closure. This helps build a tolerance for ambiguity, which is important to creative thinking.

Teacher D was very well-organized; the students knew exactly what they were doing.

During this group discussion, one group suggested that the substance had dissolved. Teacher D responded, "You said it had dissolved, but I see 'yellow stuff.'"

One student responded that he couldn't see the powder anymore; Teacher D had moved students to a deeper level of thinking and classifying. Teacher D: "what does it do first? Stir it up." Now there are two levels of analysis.

This lesson would be a perfect opportunity to use Synectics to describe their observations.

The students were totally engaged, excited, and on task throughout the lesson. They added just enough competition to the lesson to make it engaging, but still felt comfortable responding and taking risks. I've seen a major shift from teacher- to student-centered

classrooms. I also see evidence of expertise in open-ended questioning strategies. Perhaps the next step in their development is to work on debriefing to bigger ideas and concepts. Teacher D showed skill in getting the discussion back to pepper and what happened with it: "What are you thinking? What happened to the pepper?"

Teachers are learning to listen to students and use their responses as scaffolding in the manner of Socratic questioning.

Teacher D: "tomorrow…if I heat the water, what happens to solids? Any predictions?"

Grade 3, Teacher F (via video/30 min.)
Teacher F: "Today, we are going to focus on dry land habitats. Who can help me with an example of a dry land habitat?"
Student: "cactus in the desert. Forest. Grassland."
Rainforest.
Teacher F: "Today we are going to focus on forests. I'm going to give you a paper plate and some candy to place on the paper plate. Mixed-up or separate? This is very similar to what we have in the forest. They are a community. Let's see what the scientists call a community…an ecosystem. Sort your candy by color on your plate. How is a population different from a community? Think-pair-share with your partner."
Great that Teacher F took the time to connect to the bigger idea of the forest. I would recommend that she ask students to do that next time. Good! She asked students to provide definition of community. Student gave a social studies example. Teacher F connected that to science. Great link between disciplines. Great! Teacher F uses the terminology of the discipline: population, ecosystem. Students were on-task and engaged. When they brainstormed in their pairs, they used scientific definitions and terminology. Had students report out from their pairs.
Student responded with community of people. Rather than telling her to move to science, I would recommend providing specific feedback as to whether or not she got the concept correct, can use this then bring her around to science. You can use this opportunity to help students understand bigger concept while then making interdisciplinary connections. Strive for more specific feedback rather than simply, good, or good example.
Teacher F moves on to questions about similarities and differences in populations.

Teacher F.: "Who would like to share one similarity with your partner? Difference…more reds, more blues?" Students appeared good at fluency, but no evidence of flexibility (could be nature of task using M & M's).

Next, she makes connection to plants and animals that live in the forest. How would this be like a real forest? Great! You asked students to make leap to science content. Again, evidence of movement from teacher- to student-centered classrooms. Teachers are asking students to define terms, use language of practicing professionals, and connect concepts to other disciplines and bigger ideas. Teacher F asked students to clear some space on their plates and use their populations to create a food chain. "What do we need to start a food chain?"

Students: "Producers."

Teacher F: "Choose one of your producers to start with. (Allows students time to work while she scaffolds for them). Share food chain with partner. Cover up your producer. If that producer is gone, what effect will that have on the food chain? Find second consumer for food chain. Cover that up. What's going to happen to that consumer if it doesn't have anything to eat?"

Student: "Mouse will die out"…(students elaborates on her response).

Evidence of elaboration in students' responses. Congrats! You have moved students from one or two word responses (to mainly closed-ended questions) to longer and more disciplinary reasons. This is a major breakthrough for teachers and students. All can see what open-ended questions can do for students' elaboration and description.

Teacher F: "You are going to put your producers and consumers on your flow map (sequencing)."

Student reminded Teacher F of discussion of day before and asked If she could add more boxes to the graphic organizer. Amazing! It was obvious from student's body language after she asked the question, that she was very proud of herself and comfortable taking a risk. Teachers at Greensville have done a wonderful job of creating risk-free environments within their classrooms which helps students feel more creative and willing to share their ideas. To differentiate, Teacher F could allow students to come up with their own graphic organizer or model to represent their model of the food chain.

Great cause-and-effect question!