



Dr. Sheldon Berman, Superintendent

---

**Program Evaluation**  
**Project SMART**  
**Year 2 (2006-2007)**  
**Science Math And The Right Technology**



**Jaye Bittner**  
**Program Coordinator**  
**Judi Vanderhaar, M.A.**  
**Beverly Winsch, Ph.D.**  
**Program Evaluators**

**February 21, 2008**

Department of Accountability, Research and Planning  
Dr. Robert J. Rodosky, Executive Director

# TABLE OF CONTENTS

<b>Executive Summary.....</b>	<b>2</b>
<b>Introduction.....</b>	<b>4</b>
<b>Program Description.....</b>	<b>5</b>
<b>Program Goals &amp; Objectives.....</b>	<b>5</b>
<b>Evaluation Objectives &amp; Questions.....</b>	<b>7</b>
<b>Evaluation Method.....</b>	<b>10</b>
<b>Design &amp; Measures.....</b>	<b>10</b>
<b>Data Collection.....</b>	<b>10</b>
<b>Program Participants.....</b>	<b>11</b>
<b>Evaluation Results.....</b>	<b>13</b>
<b>Process.....</b>	<b>15</b>
<b>Outcome.....</b>	<b>19</b>
<b>Discussion .....</b>	<b>38</b>
<b>Limitations.....</b>	<b>39</b>
<b>Recommendations.....</b>	<b>40</b>
<b>References.....</b>	<b>41</b>
<b>Attachment A. Map of Students.....</b>	<b>42</b>

## EXECUTIVE SUMMARY

---

<b>Program Background</b>	<b>Participants</b>
<ul style="list-style-type: none"><li>• The high risk of teen mother drop out coupled with the under representation of women in non-traditional science, math and technology careers poses both challenges and opportunities that active strategies and resources that can simultaneously address.</li><li>• Project SMART is a program designed to offer teenage mothers technology embedded courses in math, science and computer science courses that will enable them to gain the skills needed to pursue post-secondary education in highly skilled, nontraditional fields</li><li>• Project SMART facilitates the integration of technology into all math and science classrooms, distance learning opportunities for high school and/or college credit, and various school-to-work opportunities.</li><li>• The primary aim of the SMART Project is to increase the likelihood that pregnant and parenting students will remain in school, graduate, and successfully transition to post-secondary education, training or the workforce in non-traditional highly skilled fields</li></ul>	<ul style="list-style-type: none"><li>• Project SMART served a total of 98 students in the two TAPP schools combined – 49 at Westport and 49 at South Park.</li><li>• TAPP students and Project SMART participants represent all geographic locations in the Louisville metro area.</li><li>• The majority of Project SMART participants were Minority with 60% African-American, 7% represented other minority ethnicities.</li><li>• With respect to socioeconomic status, 92% of participants receive free/reduced lunch. In terms of family structure, and 86% of participants reside in single family homes.</li><li>• Analysis of each TAPP school separately reveals the same trend in terms of the SMART participant’s risk factors being greater than the risk factors in the general TAPP population</li></ul>

Evaluation Outcomes	Commendation/Recommendations
<ul style="list-style-type: none"> <li>• <b>Technology Implementation:</b> Teacher reports of implantation varied by school. Knowledge of how to use technology and logistical issues were reported as the greatest challenges to implementation.</li> <li>• <b>Eschool:</b> At South Park 53% of participants were enrolled in JCPSESchool. At Westport 32% were enrolled in <i>eschool</i>.</li> <li>• <b>KCCT scores:</b> In math non-SMART participants at South Park had slightly higher index score. At Westport participants index score was nearly 20 points higher. In Science South Park had slightly lower index score. At Westport participants index score was nearly 20 points higher.</li> <li>• <b>Technology scores:</b> South Park participants scored an average of 88% mastery. At Westport, participants scored an average of 73% mastery.</li> <li>• <b>Knowledge Growth:</b> At both schools, participants experienced growth in knowledge of related career fields and reported increase in likelihood of pursuing education and/ or training after high school.</li> <li>• <b>Activity Participation:</b> Participation rates were equitable across schools -83% of participants participated in activities with 48% participating in multiple activities.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Commendations:</b> <ul style="list-style-type: none"> <li>-Process evaluation results indicated a high degree of fidelity to program implementation at both TAPP schools.</li> <li>-Outcome evaluation results indicated positive impact on participants cognitive and non-cognitive measures (e.g., test scores, attendance, increased awareness of career fields/opportunities, etc.).</li> <li>- Evaluation data suggests a noteworthy “spill over” effect with non-SMART participants also showing positive outcomes.</li> </ul> </li> <li>• <b>Recommendations:</b> <ul style="list-style-type: none"> <li>- Teacher reports of technology is not at optimal level; ongoing professional development in technology implementation.</li> <li>- Increased leasing of laptops or individualized assistance to aid with Internet access outside of school.</li> <li>- Increased participation of freshmen and sophomore participation.</li> <li>- Continued increase in number of participants co-op placements in career related fields.</li> </ul> </li> </ul>

## **INTRODUCTION**

---

Jefferson County Public Schools (JCPS) is the 13th largest *urban* district in the nation serving over 96,000 students. Within the student population, many students are at risk of school failure. One group of students that is particularly at high risk includes pregnant and parenting teenage girls. Moreover, failure to complete high school does not only impact the future of the parenting student, but affects her child(ren) as well. A recent study examined data from a nationally operated program for teenage mother and their children found that the mothers earning a high school diploma offered protection from poor cognitive development in their children (Vogel, 1999). Because teenage mothers are at a high risk of dropping out of school, JCPS provides the Teenage Parent Program (TAPP) as an alternative school setting where pregnant and parenting teens can continue their education in a supportive environment. TAPP provides health care, social services and child care in an academically nurturing setting.

Alongside the challenges teen-parenting poses to completion of high school and the pursuit of post-secondary opportunities, our nation is challenged by the under-representation of women in math, science and engineering jobs – in part due to the lack of exposure teen girls are receiving in higher level math, science and computer related courses (Anderson, 2007). Remarkably, in addition to providing a nurturing, holistic environment that provides teen mothers with the support they need to successfully complete high school, TAPP has embarked on a mission to help their students excel in math, science and technology and to expose them to non-traditional career and college driven opportunities through Project Science, Math And the Right Technology (SMART).

### ***Program Description***

Project SMART is a program designed to offer teenage mothers technology embedded courses in math, science and computer science courses that will enable them to gain the skills needed to pursue post-secondary education in highly skilled, nontraditional fields. Project SMART is a partnership between four Jefferson County District Programs: The Louisville Education and Employment Partnership (LEEP), the Teenage Parent Program (TAPP), the JCPS*eSchool*, and The Computer Education Support Unit.

The SMART Project provides advanced technology in the TAPP school classrooms to help teenage mothers/students increase their academic skills in math, science and technology. This technology includes student wireless laptops, teacher laptops that include projection systems, *proscope* microscopes and graphing calculators.

The three major SMART components are the following: (a) integration of technology into all math and science classrooms, (b) distance learning opportunities to pursue math and science courses on line for high school and/or college credit, and (c) school-to-work opportunities and mentorship's which emphasize math, science and technology related fields to increase awareness of non-traditional career opportunities.

### ***Program Goals & Objectives***

The primary aim of the SMART Project is to increase the likelihood that pregnant and parenting students will remain in school, graduate, and successfully transition to post-secondary education, training or the workforce in non-traditional highly skilled fields. The three primary objectives include the following: (a) obtain at least a 3% annual increase in students' standardized test scores by increasing students' academic abilities in math, science, and technology through the integration of technology in math and science classrooms; (b) obtain a

5% annual increase in students' enrollment into advanced math, science or technology courses; and (c) provide school-to-work transition, guidance, and counseling activities for a minimum of 70 TAPP students annually. Moreover, it is the long term goal of the Project SMART staff to aid in sustaining and transporting the most successful program components so that other at-risk students in other locations can benefit.

## EVALUATION OBJECTIVES AND QUESTIONS

---

The internal evaluation report of Project SMART includes both formative and summative dimensions. During this second grant year (2006-2007) evidence continues to indicate a high degree of fidelity to program implementation. Thus, the summative (outcome/impact) dimension is the primary focus of this year's evaluation. The evaluation aims to help key stakeholders (i.e., Project manager, school administrators, career planner) use the information collected through the evaluation to do the following: (a) monitor progress, (b) provide accountability information, and (c) implement strategies for program improvement. While many of the findings of SMART year 2 have been reported to the federal entity funding the grant, the findings were aggregated among both TAPP schools. As such, this internal report provides evaluation findings for both TAPP schools separately. This will aid school-based administrators and the project manager to assess degree of implementation and outcomes for each school site.

The evaluation objectives are twofold. The first objective is to conduct a process evaluation. The process evaluation provides information regarding program dynamics and procedures, and provides quality assurance guidance to the Project coordinator. The overarching evaluation questions that guide the process study are the following:

1. What are the characteristics of the students participating in Project SMART at each TAPP school?
2. What school-to-work activities aided implementation of Project SMART components?
3. What is the level of technology implementation in classrooms based on teacher reports?

- 3a What challenges/impediments do TAPP teachers report related to technology use in classroom?
4. What percent of SMART participants are participating in JCPS*eschool*/College Now? Of these students, what percent are taking college credit courses?

The second objective is to conduct an outcome evaluation. An outcome evaluation helps assess the impact of the program on participants in the cognitive and non-cognitive domains.

The primary goal of the outcome evaluation is to assess the impact of the program on participating students in the cognitive (e.g., achievement scores in math, science and technology; knowledge growth) and non-cognitive domains (e.g., attendance, activity participation, etc.).

In order to provide comparison data, SMART participants were compared with non-SMART participants where data allows. Based on the goals and objectives of the program, the overarching evaluation questions that guide the outcome study are the following:

*Cognitive:*

1. What are the performance levels and academic index of the SMART participants compared with non SMART participants as indicated on the KCCT science test?
2. What are the performance levels and academic index of the SMART participants compared with non SMART participants as indicated on the KCCT math test?
3. What are the technology mastery scores of the SMART participants compared with non SMART participants as indicated on the Computer Applications Skills Assessment (CASA) test?
4. Are there statistically significant differences in SMART participants' knowledge of non-traditional careers in math, science and technology related fields as indicated on a retrospective survey? How do these results compare with non-SMART participants?

5. Are there statistically significant differences in SMART participants' likelihood of pursuing post-secondary educational opportunities and non-traditional careers as indicated on a retrospective survey? How do these results compare with non-SMART participants?

*Non-Cognitive:*

6. How many activities did SMART students participate in at each TAPP school?
7. What are SMART participant' perceptions of the SMART related activities and recommendations for improvement?
8. What percent of SMART students participated in a co-ops, and what types of co-ops did they participate in?
9. What is the enrollment and attendance rate of SMART vs. non-SMART participants?

## EVALUATION METHOD

---

### *Design & Methods*

The evaluation utilizes a descriptive design with a retrospective instrument. When possible, a comparison (control) group is used (i.e., SMART participants at TAPP vs. non SMART participants at TAPP). The data analyses include descriptive and inferential statistics (Campbell & Stanley, 1963). Descriptive statistics include means, percentages, measures of central tendency and dispersion. Inferential statistics include dependant sample t-tests on a retrospective survey to assess knowledge growth, and Chi-Square statistics.

### *Data Collection*

The Project coordinator and Project evaluator used multiple data sources to obtain the information. The computerized database of the district provided individual student data, including identification number, race, gender, free/reduced lunch status, household structure, attendance rate, and testing scores in math and science and technology skills related measurements. The evaluators collected student perception and growth data via survey administration, and process data via committee meetings. The Project manager maintained a master student file with student enrollment and participation data and kept a program activity log to document services.

A retrospective pre-test was used to assess changes in participant knowledge of non-traditional careers in math, science and technology fields; and their likelihood of pursuing post-secondary education and non-traditional career opportunities. Since the career fields are likely to be unfamiliar to the students, a retrospective pre-test was used because it is best used in situations where questions are likely to be misunderstood (Howard, 1980).

## PARTICIPANTS

---

Project SMART served a total of 98 students in the two TAPP schools combined. As presented in Table 1, for the TAPP schools combined, Project SMART is serving a high needs student population. In fact, while TAPP is serving a high needs student population, SMART is serving a population of students with higher percentages in the high needs/high risk categories, and students in upper grades. In addition to being either a pregnant or parenting teenage girl, approximately 86% of SMART participants live in single parent homes, and 92% receive free/reduced lunch. With regard to race, approximately 60% of participants are African-American, 33% are White, and 4% are Hispanic.

Analysis of each TAPP school separately reveals the same trend in terms of the SMART participant's risk factors being greater than the risk factors in the general TAPP population. For example, at South Park (as shown on Table 2) while African American students make up 40% of the TAPP population, 51% of SMART participants are African American. This finding is similar for the other 2 risk factors (i.e., free/reduced lunch, single parent home). Similarly, analysis of Westport TAPP students vs. SMART participants reveals the same trend for all three risk factors, as can be seen on Table 3.

With respect to TAPP students' residence, TAPP serves students who reside all throughout Jefferson County. A map of where the TAPP students (and identifying SMART participants) live can be viewed on Attachment A.

Table 1: *Profile of the 2007 TAPP Students (N=456) and SMART Participants (N=98)*

Variable	TAPP (N=456)		SMART (N = 98)	
	N	%	N	%
<b>School</b>				
South Park	231	50.7%	49	50.0%
Westport	225	49.3%	49	50.0%
<b>Grade</b>				
Seventh Grade	4	.9%	0	0.0%
Eight Grade	13	2.9%	0	0.0%
Ninth Grade	73	16.0%	7	7.1%
Tenth Grade	122	26.8%	18	18.4%
Eleventh Grade	108	23.7%	30	30.6%
Twelfth Grade	136	29.8%	43	29.8%
<b>Ethnicity</b>				
African-American	224	49.3%	59	60.2%
White	186	40.8%	32	32.7%
Hispanic	33	7.2%	4	4.1%
Other	13	2.8%	3	3.1%
<b>Family Structure</b>				
Dual Parents	84	18.4%	14	14.3%
Single Parents	372	81.6%	84	85.7%
<b>Lunch Status</b>				
Free/Reduced	377	82.7%	90	91.8%
Pay	79	17.3%	8	8.2%

Table 2: Profile of the **South Park TAPP and SMART Students 2006-2007** (N =231)

Variable	TAPP (N= 231)		SMART (N =49)	
	N	%	N	%
<b>Grade</b>				
Seventh Grade	2	0.9%	0	0.0%
Eight Grade	5	2.2%	0	0.0%
Ninth Grade	36	15.6%	4	8.2%
Tenth Grade	63	27.3%	7	14.3%
Eleventh Grade	56	24.2%	13	26.5%
Twelfth Grade	69	29.9%	25	51.0%
<b>Ethnicity</b>				
African-American	91	39.4%	25	51.0%
White	116	50.2%	20	40.8%
Hispanic	21	9.1%	4	8.2%
Other	3	1.3%	0	0.0%
<b>Family Structure</b>				
Dual Parents	61	26.4%	11	22.4%
Single Parents	170	73.6%	38	77.6%
<b>Lunch Status</b>				
Free/Reduced	188	81.4%	46	93.9%
Pay	43	18.6%	3	6.1%

Table 3: Profile of the *Westport TAPP and SMART Students 2006-2007* (N =225)

Variable	TAPP (N=225)		SMART (N =49)	
	N	%	N	%
<b>Grade</b>				
Seventh Grade	2	0.9%	0	0.0%
Eight Grade	8	3.6%	0	0.0%
Ninth Grade	37	16.4%	3	6.1%
Tenth Grade	59	26.2%	11	22.4%
Eleventh Grade	52	23.1%	17	34.7%
Twelfth Grade	67	29.8%	18	36.7%
<b>Ethnicity</b>				
African-American	133	59.1%	34	69.4%
White	70	31.1%	12	24.5%
Hispanic	12	5.3%	0	0.0%
Other	10	4.4%	3	6.1%
<b>Family Structure</b>				
Dual Parents	23	10.2 %	3	6.1%
Single Parents	202	89.8%	46	93.9%
<b>Lunch Status</b>				
Free/Reduced	189	84.0%	44	89.8%
Pay	36	16.0%	5	10.2%

## EVALUATION RESULTS

---

### Process Evaluation Results

#### *School-to-Work Activities*

One of the key performance indicators of the SMART Project includes the implementation of school-to-work activities that will assist the TAPP students with acquiring the necessary knowledge and skills to successfully enter a technologically demanding workplace, post secondary education and/or training. Participation in school-to-work opportunities are presented in Table 4. These opportunities include grant specific activities, other school supplemental activities, and college visits.

Table 4: *School-to-work Activities*

<b>Activity</b>	<b>Description</b>
<i>College Now JCPSeschool</i>	Mechanism for student to take courses online at home and at school with assistance
Prepare College workshop	Preparation for college admission and review the American College Test (ACT)
Teambuilding trip	LEEP students relationship/ teambuilding trip via outdoor activities
<i>E-main</i> resume workshop	Worked online to learn about and create a resume
Career Fair	Dialogues with college recruiters about career opportunities and college admission procedures.
Financial Aid workshop	Completed federal application for student financial aid and dialogue with representatives about financial aid opportunities and processes
Interview Training	Interview training workshop, including mock interviews
Forensic Examiner Workshop	Workshop with local forensic examiner
Co-Op	Job placements wherein students are placed in a job, monitored, and supported throughout the year. These include positions at UPS, Dr. offices, banks, Walgreen's pharmacy tech, etc.
Job Speakers	Various speakers throughout the year presenting on their careers
Women in Engineering Day	Tour of University of Louisville SPEED school of

	Engineering where students heard professors discuss engineering careers
<b>Relevant School Supplemental Activities</b>	
Legacy of a Lady	Speakers and various workshops to improve students self image
Health Fair	Program sponsored by Spenserian College nurses that discuss various health issues with students and provide information on a variety of health related topics
Shining Stars	Student leadership development program (year long)
Future Business Leaders of America (FBLA)	Business leadership development program (year long)
Self-Esteem Fashion	Student organized fashion show to boost self esteem, interviewing and organizing skills
<b>College Visits</b>	
University of Louisville visit	College visit to the University of Louisville to familiarize with campus, degree programs and admissions process
Jefferson Community College visit	College visit to Jefferson County Community College to familiarize with campus, degree programs and admissions process
Berea College visit	College visit to Berea College to familiarize with campus, degree programs, admissions process, and financial/work-study opportunities
Western University visit	College visit to Western University to familiarize with campus, degree programs and admissions process
Louisville Tech/Sullivan visit	College visit to Louisville Technical College/Sullivan to familiarize with campus, degree programs and admissions process

### ***Technology Implementation***

A primary component of the SMART program is the infusion of technology into the math and science classroom. These technologies include student and teacher laptops, classroom Projectors, graphic calculators, and *proscope* microscopes. In order to aid with technology use and implementation issues, a significant amount of professional development continues to occur. During the school year the math and science teachers participated in several professional development trainings to assist with utilizing the technology. Additionally, TAPP and the

computer support unit provided an intensive summer institute devoted to assisting the TAPP teachers with utilization of technology in the classroom. This 3 day institute was attended by nearly every TAPP teacher.

In order to assess the implementation of classroom based technology use at both TAPP schools, the students and teachers responded to technology implementation items on a survey given at the end of the school year. Both teachers and students were asked to identify the number of days per week (scale 0-5 days) the technology was used in the classroom. As shown on Table 5, the teachers at Westport reported using classroom computers the most (3.45) and proScope microscopes the least (.40). The teachers at South Park also reported the use of classroom computers the most (3.00) and proScopes the least (.06). When comparing both schools, the teachers at Westport overall reported using each of the technologies more than teachers at South Park.

In addition to technology use in the classroom, teachers were also asked to rank the challenges/impediments they face in terms of using the technologies in their classroom (Scale 1= least challenging, 5 = most challenging). As shown on Table 5, teachers at Westport – on average- identified “knowledge of how to use technology” as their greatest challenge while teachers at South Park – on average- ranked “logistical issues” as the greatest challenge associated with use of technology in their classroom.

Table 5: TAPP teacher results regarding technology implementation and challenges


	Westport (n=11)*		South Park (n=17)*	
Average # of days per week technology is used in classroom	Mean	SD	Mean	SD
<b>Scale: 0-5 days</b>				
Classroom Computers	<b>3.45</b>	1.63	3.00	1.90
Laptops	<b>2.00</b>	1.61	1.18	1.33
Projectors	<b>2.80</b>	1.98	1.06	1.74
Graphing Calculators	<b>1.50</b>	2.41	.76	1.60
ProScope Microscopes	<b>.40</b>	1.26	.06	.24
Math or Science Software	<b>1.00</b>	1.70	.65	1.41
Challenges associated with technology use in classroom	Mean	SD	Mean	SD
<b>Scale: 1 = least challenge 5 = most challenging</b>				
Technical support	2.44	1.66	2.69	1.40
Logistical issues	2.40	1.17	<b>2.94</b>	1.34
Knowledge of how to use technology	<b>3.45</b>	1.12	2.44	1.26
Lack of time	3.09	1.30	2.93	1.43
Lesson planning	2.20	1.22	2.53	1.18

\* There is missing data on some items as several teachers did not answer every question

### JCPS Eschool/College Now

Enrollment in “advanced” science, math, and technology related (i.e., computer science) courses is one of the primary objectives of Project SMART. Specifically, the goal is to assist TAPP students who are in upper grade levels (i.e., 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup>) with enrollment into college credit courses via JCPSeschool College Now. For the 2006-2007 school year, 26 (53%) of SMART students at **South Park** TAPP were enrolled in JCPSeschool. Of these students, 2 (7.6%) were enrolled in College Now courses. In terms of math, science and technology related courses, of the students enrolled in JCPSeschool at **South Park**, 3 (12%) were enrolled in grant related courses.

At **Westport** TAPP, 16 (32%) SMART participants were enrolled in JCP*Seschool*. Of these students, 8 (50%) were enrolled in College Now courses. In terms of math, science and technology related courses, of the students enrolled in JCP*Seschool* at Westport, 6 (38%) were enrolled in grant related courses.



## Outcome Evaluation Results

### Cognitive Outcome Measures

#### **2007 KCCT Math and Science Results**

In order to determine math and science achievement in SMART participants compared with non-SMART participants, the performance levels on the KCCT Math and Science test were analyzed for both TAPP schools. In Math, the non-SMART participants had a higher percentage scoring at the novice level (54.8%) compared with SMART participants (42.8%). In Science, SMART participants had a higher percentage scoring at the novice level (64.2%) compared with non-SMART participants (34.5%). However, the SMART participants had a higher percentage scoring at the proficient/distinguished level (7.1%) than non-SMART participants (0%).

For Westport in Math, the non-SMART participants had a higher percentage scoring at the novice level (48.0%) compared with SMART participants (17.7%). Also, the SMART participants had a higher percentage scoring at the proficient/distinguished level (18.7%) than non-SMART participants (5.2%). In Science, non-SMART participants had a higher percentage scoring at the novice level (42.1%) compared with SMART participants (18.7%). Additionally, the SMART participants had a higher percentage scoring at the proficient/distinguished level (37.5%) than non-SMART participants (5.2%).

An index score was calculated for both math and science in order to compare SMART vs. non-SMART participants at both schools. As shown in Figure 1, the KCCT **math** index for **South Park** SMART participants is slightly higher than the math index for non-SMART participants. Conversely, the **math** index for **Westport** SMART participants is nearly 20 points higher than the math index for non-SMART participants.

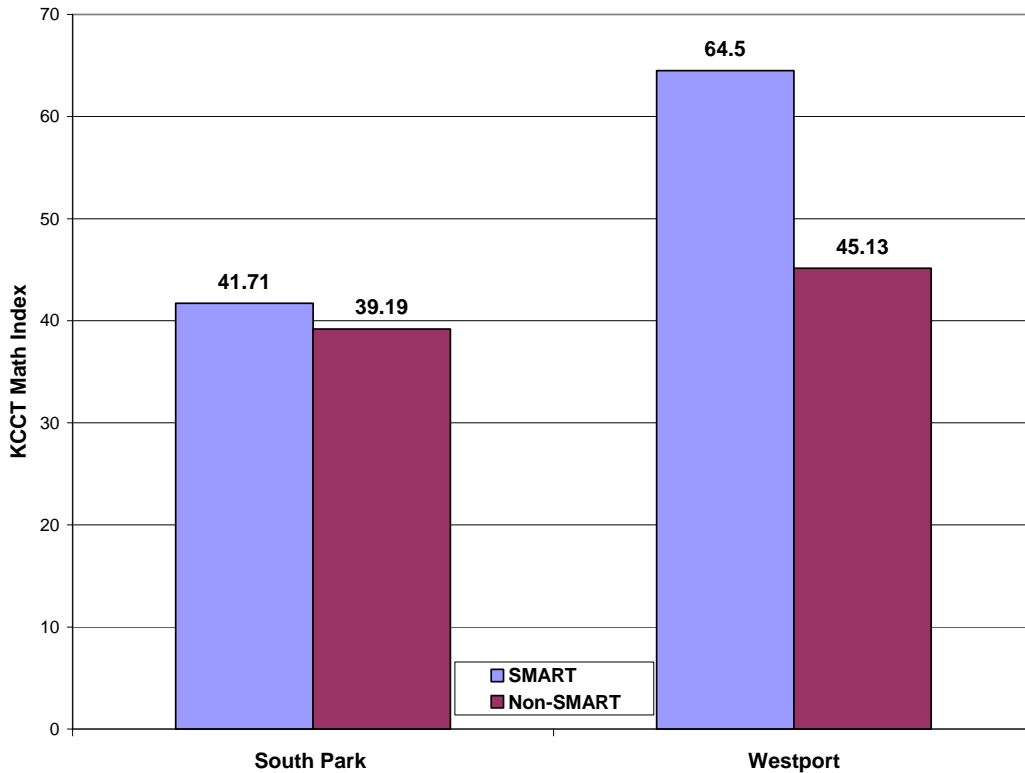


Figure 1. 2007 KCCT **Math** Academic Index Results for SMART and non-SMART participants.

In terms of the science index, shown in Figure 2, the KCCT **science** index for **South Park** SMART participants is slightly lower than the science index for non-SMART participants. Conversely, the **science** index for **Westport** SMART participants is nearly 20 points higher than the science index for non-SMART participants.

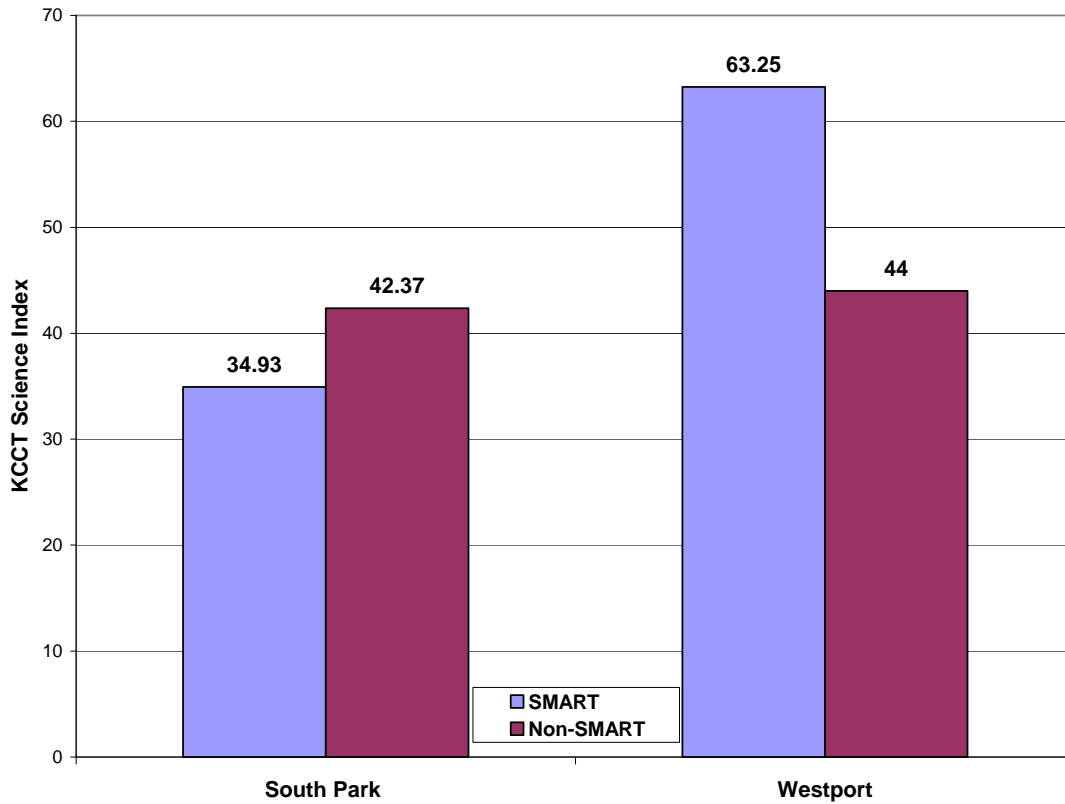


Figure 2. 2007 KCCT *Science Academic Index Results for SMART and non-SMART participants.*

## Technology Assessment

In order to assess the SMART participant's technology mastery as compared with those students not participating in SMART, the district-wide Computer Application Skills Assessment (CASA) test was analyzed for each TAPP school. As shown in Figure 3, the SMART participants at **South Park** scored an average of 88 % mastery while the non-SMART participants scored an average of 73% mastery. Conversely, as shown in Figure 3, the **Westport** SMART participants scored an average of 73% while the non-SMART participants scored a slightly higher average (74%).

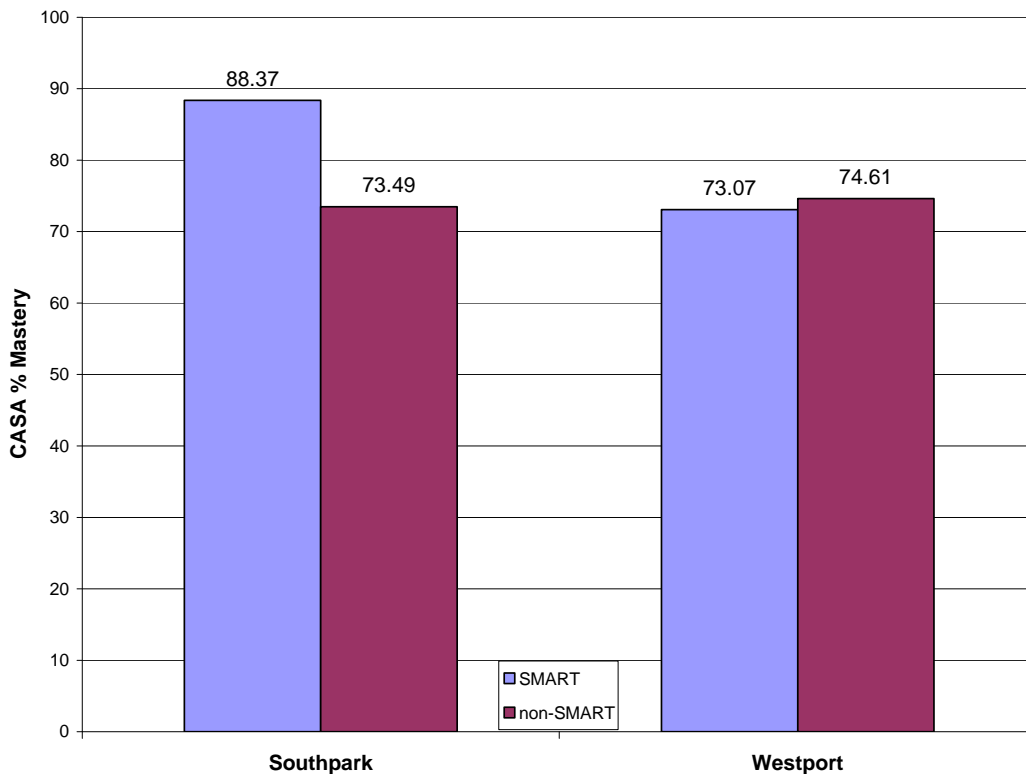


Figure 3. 2007 CASA Technology Mastery Test results for **South Park** TAPP SMART participants ( $n=4$ ) vs. non-SMART participants ( $n =19$ ) and **Westport** TAPP SMART participants ( $n=8$ ) vs. non-SMART participants ( $n =7$ ).

### ***Knowledge/Likelihood Growth Survey***

In order to determine if Project SMART had an impact on TAPP student knowledge of non-traditional career fields in related areas (i.e., math, science and technology), and, the likelihood of students continuing their education in some manner after high school, a retrospective survey was administered to all TAPP students in both locations. The day the survey was administered, many students, particularly upper level students (and many SMART participants), were out of the building due to a field trip.

The survey scale for the knowledge component was 1-5 (1 = no knowledge, 5 = highly knowledgeable). The survey scale for the likelihood component was 1-5 (1 = no likelihood, 5 = highly likely). Survey results were analyzed using paired sample t-test analysis excluded cases list-wise (i.e., only compared change in score for students who provided an answer in *both* the before and after column). For each school, the scores of SMART participants were compared with non-SMART participants.

The results for **South Park** are shown on Table 10. The overall results indicate a statistically significant mean increase in SMART participants' knowledge of each non-traditional career opportunities over the school year. The largest mean increase was with respect to knowledge of career opportunities in general (2.04) and the lowest gain was with respect to knowledge of electronics career opportunities (.86). While the SMART participants had greater gains in knowledge than non-SMART participants, the non-SMART participants did have statistically significant gains for general career opportunities, science career opportunity and math career opportunity.

Also shown in Table 6, **South Park** SMART participants reported a statistically significant increase in their likelihood of pursuing educational opportunities after high school.

The largest mean increase was with respect to the likelihood of attending a 4-year college (1.54). Interestingly, there was not a statistically significant increase in likelihood of graduating from college, however this is due to the fact that the SMART participants had already anticipated graduating from high school (as evidenced by 4.50 on a scale of 1-5). Non-SMART participants also reported statistically significant gains in likelihood of pursuing educational opportunities after high school.

Table 6: Results of Retrospective Survey of South Park TAPP SMART participants (N=22) vs. non-SMART participants (N =48)

Retrospective Results	SMART Mean			Non-SMART Mean		
	Before	Now	Change	Before	Now	Change
<b>Knowledge</b>						
Career opportunities in general	2.23	4.27	+2.04**	2.69	3.42	+0.73*
Science related careers	1.77	3.36	+1.59**	2.15	2.90	+0.75**
Math related careers	2.23	3.73	+1.50**	2.27	2.96	+0.69*
Information technology related careers	1.95	3.27	+1.32**	2.31	2.31	0.0
Computer science related careers	2.09	3.32	+1.23**	2.23	2.48	+0.25
Electronics related careers	2.00	2.86	+0.86**	2.19	2.40	+0.21
<b>Likelihood</b>	<b>Before</b>	<b>Now</b>	<b>Change</b>	<b>Before</b>	<b>Now</b>	<b>Change</b>
Graduate from high school	4.50	4.68	+0.18	3.50	4.63	+1.13**
Attend a 4 year college	2.41	3.95	+1.54**	2.58	3.46	+0.88*
Attend a 2-year college	2.64	3.64	+1.00**	2.31	3.25	+0.94*
Attend a post-secondary program other than College	1.59	2.64	+1.05**	2.02	2.79	+0.77*
Pursue career in math, science or computer science	1.59	2.68	+1.09*	1.79	2.54	+0.64*

\*\* p < .001 \* p < .05

The results for **Westport** are shown on Table 7. The overall results indicate a statistically significant mean increase in SMART participants' knowledge of each non-traditional career opportunities over the school year. The largest mean increase was with respect to student knowledge of math related career opportunities (1.69) and the lowest gain was with respect to knowledge of computer science related career opportunities (.84). While the SMART participants had greater gains in knowledge than non-SMART participants, the non-SMART participants did have statistically significant gains for each non-traditional career opportunities

Also shown in Table 7, **Westport** SMART participants reported a statistically significant increase in their likelihood of pursuing a post-secondary program other than College (1.31). The

largest mean increase was with respect to the likelihood of attending a 4-year college (1.54). There was no gain in participant reports regarding likelihood of graduating from college. Again, this is likely due to the fact that the SMART participants had already anticipated graduating from high school. Non-SMART participants reported statistically significant gains in each area of likelihood of pursuing educational opportunities after high school except attending a post-secondary program other than College.

Both TAPP locations have several SMART participants who are active in other TAPP programs (e.g., Future Business Leaders of America, shining stars, student leadership team, and debate team). Involvement in multiple programs is likely to be a contributing factor increasing interest in pursuing a career and/or post secondary education. As such, the program manager continues to work in collaboration with these programs.

Table 7: Results of Retrospective Survey of **Westport** TAPP SMART participants (N=13) vs. non-SMART participants (N =26)

<b>Retrospective Results</b>	<b>SMART Mean</b>			<b>Non-SMART Mean</b>		
	<b>Before</b>	<b>Now</b>	<b>Change</b>	<b>Before</b>	<b>Now</b>	<b>Change</b>
<b>Knowledge</b>						
Career opportunities in general	2.92	4.15	<b>1.23*</b>	2.50	3.35	.85*
Science related careers	2.00	3.46	<b>1.46*</b>	2.00	2.69	.69*
Math related careers	2.46	4.15	<b>1.69**</b>	2.15	2.77	.62*
Information technology related careers	2.31	3.46	<b>1.15**</b>	2.00	2.65	.65*
Computer science related careers	2.31	3.15	<b>.84*</b>	2.04	2.81	.77*
Electronics related careers	2.46	3.38	<b>.92*</b>	1.96	2.77	.81*
<b>Likelihood</b>						
Graduate from high school	3.77	3.77	0	3.31	4.19	<b>.88*</b>
Attend a 4 year college	3.62	3.85	.23	2.81	3.31	<b>.50</b>
Attend a 2-year college	2.54	2.62	.08	2.38	3.08	<b>.70*</b>
Attend a post-secondary program other than College	2.23	3.54	<b>1.31*</b>	2.12	2.58	.46
Pursue career in math, science or computer science	2.69	3.31	<b>.62</b>	2.00	2.58	.58*

\*\* p < .001 \* p < .05

As part of the survey, students are asked about their Internet access from home and if they know of women in related career field (i.e., math, science or technology fields). At **South Park**, as shown on Table 8, the percent of non-SMART participants that reported having Internet access from home was slightly higher than SMART participants. Conversely, the percent of SMART participants that reported knowing women in related career fields was slightly higher than non-SMART participants.

Table 8: *General Information Student Survey Results of South Park SMART participants (n=22) vs. non-SMART participants (n = 48)*

General Information	SMART (n=22)		Non-SMART(n=48)	
	N	%	N	%
Internet access from home	13	59.1%	31	<b>64.6%</b>
Know any women involved in related career field	10	<b>45.5%</b>	16	33.3%

Similar to findings for South Park students, at **Westport** (shown on Table 9), the percent of non-SMART participants that reported having Internet access from home was slightly higher than SMART participants. Conversely, the percent of SMART participants that reported knowing women in related career fields was slightly higher than non-SMART participants. A higher percent of SMART participants at Westport (69%) reported knowing women involved in related career fields than South Park SMART participants (45%).

Table 9: *General Information Student Survey Results of Westport SMART participants (n=13) vs. non-SMART participants (n = 26)*

General Information	SMART (n=13)		Non-SMART(n=26)	
	N	%	N	%
Internet access from home	8	61.5	18	<b>69.2</b>
Know any women involved in related career field	9	<b>69.2</b>	8	30.7

## **Non-Cognitive Outcome Measures**

### ***Activity Participation***

The total number of students who participated in the school-to-work activities collectively exceeded the Project target objective as defined in the federal grant performance report (i.e., target = 70, actual performance = 81). While 81 (83%) SMART students participated in activities, many SMART students participated in multiple activities. In fact, 48% of SMART students participated in either 2 - 3 different school-to-work opportunities that were specifically related to math, science or information technology.

With respect to the participation rate for each activity by school, while the participation level varied for each activity in both schools, it appears that overall participation in activities were equitable across schools. The number and percent of SMART students participating in each activity is presented in Table 10. These results reveal marked improvement in terms of activity participation between SMART participants at each school. This indicates that a concerted effort was made to ensure equity between schools in terms of activity participation – which is also reflected in the program manager and principal motto “Two schools, one campus.”

Table 10: *Activity Participation by School for SMART participants (N=98)*

Activity	South Park (n=49)		Westport (n=49)		Total (N=98)	
	N	%	N	%	N	%
Prepare College workshop	23	46.9%	25	51.0%	48	49.0%
Teambuilding trip	33	67.3%	31	63.3	64	65.3%
College Fair	29	59.2%	27	55.1	56	57.1%
ACT Prep	17	34.6%	10	20.4%	27	27.6%
Financial Aid workshop	25	51.0%	6	12.2%	31	31.6%
Interview Training	23	46.9%	10	20.4%	33	33.7%
Forensic Examiner Workshop	30	61.2%	24	48.9%	54	55.1%
Job Speakers	0	0%	23	46.9%	23	23.5%
Women in Engineering Day	36	73.4%	23	46.9%	59	60.2%
Shining Stars	0	0.0%	17	34.6%	17	17.3%
Future Business Leaders of America	19	38.8%	1	2.0	20	20.4%
Self-Esteem Fashion	10	20.4%	0	0.0%	10	10.2%
FCCLA	10	20.4%	14	28.6%	24	24.5%
<b>College Visits</b>						
University of Louisville visit	14	28.6%	7	14.3	21	21.4%
Jefferson Community College visit	14	28.6%	10	20.4%	24	24.5%
Western College visit	2	4.1%	0	0.0%	2	2.0%
Berea College visit	8	16.3%	16	32.7	24	24.5%
Louisville Tech/Sullivan	8	16.3%	5	10.2%	13	13.3%

In addition to frequency counts and percent, the distribution of activity participation for SMART participation in each school was analyzed. This is due to the fact that the majority of SMART participants participated in multiple activities. This is similar for both South Park (shown in Figure 4) and Westport (shown in Figure 5).

Figure 4: *Distribution of activity participation for South Park SMART participants (n=49)*

**opportunities**

@0607Loc: 50

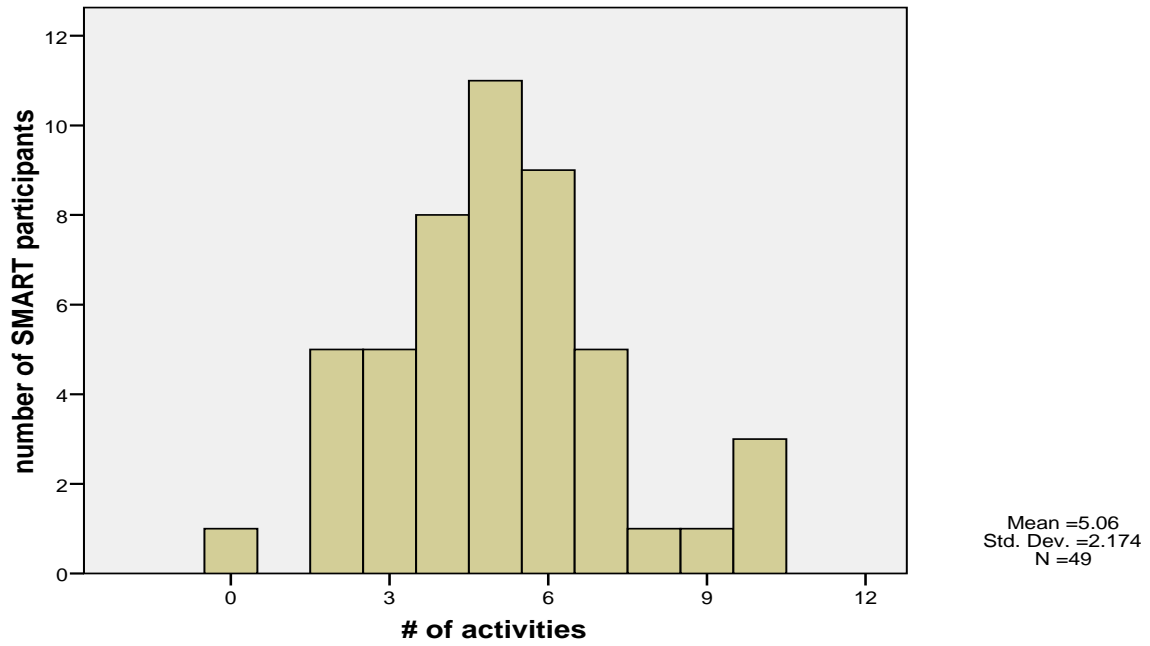
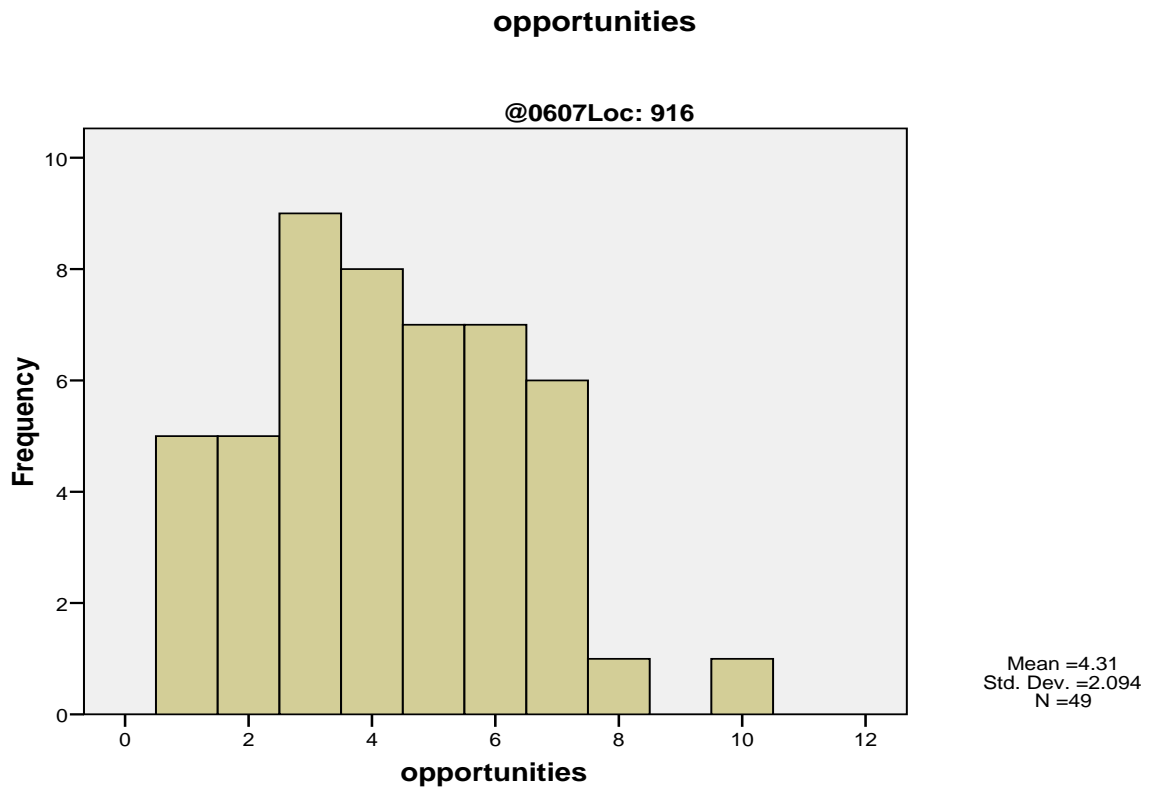


Figure 5: *Distribution of activity participation for Westport SMART participants (n=49)*



### ***Participant Perceptions/Recommendations***

In order to get the TAPP student perceptions of the SMART program, a survey was administered at the end of the school year with three open-ended questions that allowed SMART students to provide feedback with respect to (a) laptops in the classroom, (b) specific activities and (c) any recommendations for improvement of the SMART program. These open response data reflect all SMART participants who answered the open ended section of the survey.

In terms of how laptops are helping them learn in class, the three main themes that emerged from the open ended responses were convenience/speed, access, and increasing skill. With respect to activities, the main themes that emerged were increased awareness, and increased desire. Of the participants who provided comments/recommendations, 62% (15/24) responded with a positive comment about the program. In terms of providing recommendations for the program the two main themes that emerged were increasing freshman/sophomore participation in activities; and increasing the number of SMART meetings. The major themes and sample comments are shown on Table 11.

Table 11: Open Ended Responses of SMART participants in both TAPP schools (N = 29)

Themes	Sample Comments
<b>How Laptop computers are helping them learn</b>	
Convenience/Speed	“More convenient and you don’t have to wait for someone to get done.”
	“They help me research at a quicker pace.”
Access	“I have easier access to research tools and research engines.”
	“It gives everyone access to the web for our different classes.”
Increasing Skill	“It is helping me build my typing skills, math, and in science.”
	“I am able to go on to different programs that help me test my knowledge on the computers.”
<b>Activities</b>	
Increasing Awareness/Understanding	“The SMART program informed about the different fields of engineering on women in engineering day. It made me realize it’s a field I might be interested in.”
	“Hearing from the colleges and nurses, people who visited our school and helped more in depth my understanding of my career opportunities.”
Motivating	“The SMART program is a really thing because it helps us to open our minds and think on college.”
	“My trip to Berea changed my mind of not going to college. It made me realize I needed to do so not only for me but for my son.”
<b>Additional Comments/Observations</b>	
Commendations	“I love project SMART I think it is wonderful here at tap and I love the teacher of the program - she is so sweet.”
	“I really enjoyed my first year in SMART and I intend on saying in the SMART program until I graduate. I also love the teacher [project manager] she is so understanding and caring.”
Recommendations	“I think we need to do more activities for the freshman and sophomores.”
	“More SMART meetings.”

### ***Co-Op Participation***

TAPP student co-op placement is a critical part of the TAPP/SMART/LEEP partnership as they (a) provide students with exposure to career fields, (b) assist with skill development to successfully transition from high school to the workplace and/or college, and (c) help students financially. For the 2006-2007 school year, a total of 10 (20%) South Park SMART participants were working in a co-op. Of these placements 4 (40%) were in placements related to math, science or technology (e.g., bank, Dr. Office). The other placements (5) were in retail and fast food establishments.

At Westport, a total of 9 (18%) SMART participants were working in a co-op. Of these placements 5 (55%) were in placements related to math, science or technology. The other placements (4) were in retail and fast food establishments.

The placements of SMART participants are improved (i.e., related to SMART content areas) compared with the placements last grant year. This is due to the project manager's establishment of clear goals regarding the "type" of job placement appropriately related to the program. However, it is important to note that TAPP students face many challenges (e.g., scheduling conflicts, child care, transportation, and balancing school/work) that can often preclude them from placements in SMART content related areas.

### ***Enrollment/Attendance***

Because the TAPP student population is transient, the enrollment rate of the SMART participants and non-SMART participants were analyzed. The enrollment rate simply reflects the percent the school year that the students were enrolled. The attendance rate is calculated using enrollment and absence data.

As shown on Table 12, for South Park both the enrollment rate and the attendance rate were higher for SMART participants than non SMART participants. These findings are similar for SMART and non-SMART participants at Westport (shown on Table 13).

Because there are various factors that impact student attendance, the higher attendance rate for SMART participants is not necessarily caused by SMART participation, but it indicates that the program is likely to be a primary contributing factor to improved attendance – as good attendance is a criterion for participation.

Table 12: 2007 Enrollment & Attendance results for *South Park TAPP SMART participants (n=49 ) vs. non-SMART participants (n =171)*

Variable	SMART		Non-SMART	
	Mean	SD	Mean	SD
Enrollment	<b>167.65</b>	19.57	129.50	56.38
Attendance Rate	<b>84.7%</b>	.12	60.1%	.29

Table 13: 2007 Enrollment & Attendance results for *Westport TAPP SMART participants (n=49) vs. non-SMART participants (n =175)*

Variable	SMART		Non-SMART	
	Mean	SD	Mean	SD
Enrollment	<b>165.04</b>	21.63	127.69	56.388
Attendance Rate	<b>81.7%</b>	.12	55.8%	.27

## DISCUSSION

---

This 2006-2007 internal evaluation reflects quite positively on the continued implementation of the SMART program. The SMART program is serving a very high risk student population within the TAPP schools. The program has exceeded its target number of participants (98/70) and is serving TAPP schools equitably – as an equal number of TAPP students in each school participated in the SMART program (49).

The process evaluation results indicate high fidelity to program implementation within both TAPP schools. Increased stability of grant components at the end of year 1 (2005-2006) and excellent project leadership are primary factors contributing to the thriving implementation and positive participant outcomes. While there are slight differences between schools on implementation measures, (e.g., Westport teachers report slightly greater use of some technology than South Park teachers), overall, the implementation appears to be equitable across schools.

The outcome evaluation results pointed to the programs positive impact on participants as well as other TAPP students. While the results of this evaluation cannot establish causality (i.e., program participation caused increased achievement) the program is likely to be a significant/primary contributing factor to the positive cognitive and non-cognitive findings for program participants. In terms of cognitive measures, SMART participants had higher math index scores on the KCCT in both schools. At Westport, SMART participants had higher science index scores. In technology, South Park SMART participants had higher scores than non SMART participants. The retrospective survey results revealed a statistically significant increase in participant knowledge of non-traditional career fields, and student likelihood of pursuing post-secondary opportunities at both schools.

In terms of non-cognitive measures, in both TAPP schools, SMART participants had higher attendance rates than non-SMART participants, engaged in multiple school-to-work activities, and reported increased awareness of career field and opportunities. Additionally, in both TAPP schools, a higher percent of SMART participants reported knowing a woman in related career fields than non-SMART participants.

Importantly, the findings in this report reveal that the recommendations made in the internal evaluation report of year 1 (2005-2006) were addressed (e.g., current and reliable master data files, participation documentation, co-op placements and monitoring, equitable implementation across schools). Additionally, the project manager continues to enhance all grant components with extra initiatives such as mentoring and “project laptop.”

### ***Limitations***

The second year of Project SMART reveals continued program success. However, as with all programs, challenges and limitations are also part of the equation. First, due to the nature of the TAPP student population and the ethical dilemma related to random assignment, the findings in this evaluation can not establish causality. However, all findings reveal a consistent positive trend in terms of participant outcomes. Second, in terms of technology implementation, the teacher’s report on the usage of some of the different technologies in the classroom is not at the optimal level. South Park teachers ranked logistical issues as the greatest challenge and Westport teacher’s ranked knowledge of technology use as the greatest challenge. However, the ongoing professional development and on-call technology support is likely going to increase the use over year 3 of the grant. Finally, the student surveys were administered on a day when a field trip occurred. Thus, knowledge growth and perceptions from a good number of SMART participants were not assessed.

## ***Recommendations***

The evaluation findings lend support for several recommendations for program improvement. First, student survey responses reveal that a large percent of SMART participants do not have access to the Internet at home. Due to the difficulties this student population faces in terms of access, transportation and time limits (coupled with the importance of the JCPSESchool component) increased leasing of laptops or individualized assistance to aid Internet access outside of school would be beneficial for participants. Further, in light of student open ended responses, freshman and sophomore participation in grant related activities should be considered.

Second, while the quality and relevance of co-op placements have improved since Year 1 for many students, there is still a need to increase the number of student co-op placements into “career” related fields and minimize the number of co-op placements in service work fields.

Finally, additional evaluation activities for the third year of Project SMART may provide useful information for Project stakeholders. The collection of focus group data from SMART participants, non-participants and teacher focus groups may provide important information to inform stakeholders with additional meaningful, qualitative data. Also, classroom observations during the year would provide data regarding the degree of technology implementation in a more direct manner than teacher self-reported survey data.

## REFERENCES

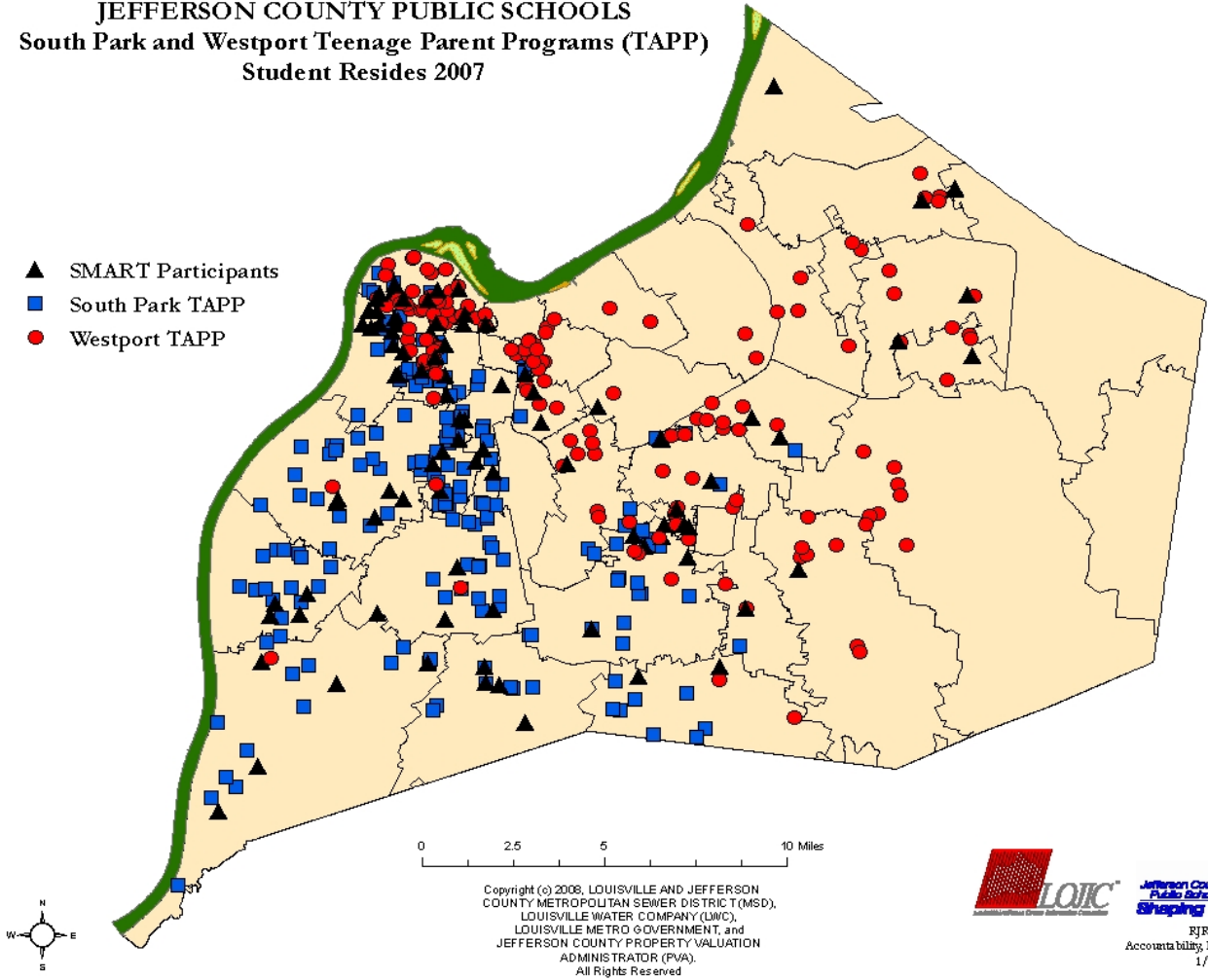
---

- Anderson, J. (2007). Encouraging Girls in Math and Science: Questions with Assistant Professor Jon Star. *Harvard Graduate School of Education Newsletter* (November 2007).
- Campbell, D., & Stanley, J (1963). *Experimental and quasi-experimental designs for research*. Chicago: RandMcNally.
- Howard, G.S. (1980). Response-shift bias: A problem in evaluating interventions with pre/post self reports. *Evaluation Review*, 4(1), 93-106
- Vogel, C (1999). Improving the odds for children of teen mothers: What matters most? Digital Dissertation, University of Pennsylvania.

**ATTACHMENT A**  
South Park and Westport TAPP students & SMART participants

**JEFFERSON COUNTY PUBLIC SCHOOLS**  
**South Park and Westport Teenage Parent Programs (TAPP)**  
**Student Resides 2007**

- ▲ SMART Participants
- South Park TAPP
- Westport TAPP



Copyright (c) 2008, LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT (MSD), LOUISVILLE WATER COMPANY (LWC), LOUISVILLE METRO GOVERNMENT, and JEFFERSON COUNTY PROPERTY VALUATION ADMINISTRATOR (PVA). All Rights Reserved

LOJIC  
Jefferson County Public Schools  
Shaping the Future  
RJR-IV.pmd  
Accountability, Research & Planning  
1/7/2008

