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A Randomized Evaluation of Ohio's Personalized Assessment Reporting System (PARS)

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A Randomized Evaluation of Ohio's Personalized Assessment Reporting System (PARS)

Abstract

In the 2006–07 school year, the Ohio Department of Education (ODE) launched a pilot of its Personalized Assessment Reporting System (PARS) for the Ohio Graduation Tests (OGT). The PARS program included several new OGT test score reports for teachers, administrators, students, and parents along with two new websites for educators and students. The new PARS test score reports and associated websites are designed to provide teachers, administrators, students and parents with more detailed information about student performance as well as numerous suggestions and resources for improving performance. One of the primary goals of PARS is to increase student motivation to pass the OGT and graduate high school. ODE hopes that by providing clear and detailed information to each student about his or her performance relative to the state standards, along with resources for improving performance and planning for the future, PARS may lead to improvements in student attitudes and behaviors that are fundamental to success in high school and beyond. Research suggests that grades or scores in the absence of constructive feedback can have a detrimental effect on student achievement (Butler 1987; 1988). The PARS reports are designed to provide this kind of detailed constructive feedback. Furthermore, by providing clear and detailed information to teachers and administrators about student performance, along with tools for making sense of the data and resources for improving and targeting instruction, PARS has the potential to inform numerous aspects of instruction.

This research report presents program evaluation findings from the first-year pilot of PARS. The primary goals for the evaluation were to (a) document the implementation of the program and (b) provide scientifically based evidence of potential impacts on instruction and student learning. The evaluation involved a district random assignment design and a mixed-methods approach to measuring program implementation and impacts. A total of 100 high schools in 60 school districts participated in this research, with 51 schools in 30 districts randomly assigned to participate in the PARS pilot during the 2006–07 school year. A subsample of 5 schools agreed to site visits during which researchers conducted interviews with teachers and students to learn more about PARS.

Disciplines

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A Randomized Evaluation of Ohio's Personalized Assessment Reporting System (PARS)



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December 2007

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A Randomized Evaluation of Ohio's Personalized Assessment Reporting System (PARS)



Henry May

Marian A. Robinson

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Executive Summary



In the 2006–07 school year, the Ohio Department of Education (ODE) launched a pilot of its Personalized Assessment Reporting System (PARS) for the Ohio Graduation Tests (OGT). The PARS program included several new OGT test score reports for teachers, administrators, students, and parents along with two new websites for educators and students. The new PARS test score reports and associated websites are designed to provide teachers, administrators, students and parents with more detailed information about student performance as well as numerous suggestions and resources for improving performance. One of the primary goals of PARS is to increase student motivation to pass the OGT and graduate high school. ODE hopes that by providing clear and detailed information to each student about his or her performance relative to the state standards, along with resources for improving performance and planning for the future, PARS may lead to improvements in student attitudes and behaviors that are fundamental to success in high school and beyond. Research suggests that grades or scores in the absence of constructive feedback can have a detrimental effect on student achievement (Butler 1987; 1988). The PARS reports are designed to provide this kind of detailed constructive feedback. Furthermore, by providing clear and detailed information to teachers and administrators about student performance, along with tools for making sense of the data and resources for improving and targeting instruction, PARS has the potential to inform numerous aspects of instruction.

This research report presents program evaluation findings from the first-year pilot of PARS. The primary goals for the evaluation were to (a) document the implementation of the program and (b) provide scientifically based evidence of potential impacts on instruction and student learning. The evaluation involved a district random assignment design and a mixed-methods approach to measuring program implementation and impacts. A total of 100 high schools in 60 school districts participated in this research, with 51 schools in 30 districts randomly assigned to participate in the PARS pilot during the 2006–07 school year. A subsample of 5 schools agreed to site visits during which researchers conducted interviews with teachers and students to learn more about PARS.

Teachers’ and Students’ Experience with PARS

Despite significant delays in the development and implementation of PARS components, the final versions were very well received by teachers and students. Nearly everyone interviewed strongly preferred the new PARS reports over the traditional OGT reports. Teachers found the Educator Website to be relatively easy to use and felt that it provided them with useful tools and information. However, teachers also reported very limited time to use the PARS website resources, with most teachers logging in a few times or less. Although teachers generally reported limited use of the PARS reports and website, most were very optimistic and eager to incorporate these new resources in their instructional

planning for the following year. The teachers who tended to report greatest use of PARS resources during the 2006–07 school year were often involved in tutoring students who were preparing to retake one or more sections of the OGT.

Conversations with teachers and students also suggested that many remained unaware of some or all of the PARS resources throughout the pilot year. Some students could not remember receiving a PARS report, and most teachers had never seen some of the more detailed PARS reports (i.e., the Intervention Report, the Retake Report, and the Student Roster). Many teachers also complained that their introduction to the PARS website was too superficial and that they would prefer an interactive training session instead of a simple demonstration or PowerPoint presentation.

A majority of students used the PARS report to diagnose their performance in individual subjects, reporting that it helped them recognize their strengths and weaknesses or what they “needed to work on.” Although the Web address for the PARS student website was shown on the first and last page of every printed Student Report, not one student we talked to had noticed the address on the report until we pointed it out in the interview. Not surprisingly, student use of the PARS website was very low, possibly because students were simply unaware of its existence. When asked if they would have visited the PARS website had they known about it prior to our interview, many students said yes, although most students showed a preference for other OGT websites that included practice tests or sample responses.

Impacts of PARS on OGT Performance

Statistical analyses of OGT data from this randomized study showed little evidence of effects on the performance of 10th grade students (who were taking the OGT for the first time), suggesting little change in schools’ overall instructional programs. However, the analyses did reveal numerous large and statistically significant positive effects on the performance of students retaking the OGT. More specifically, students who failed the March 2006 OGT (prior to the implementation of PARS) were up to four times more likely to attempt at least one retake of the OGT during the 2006–07 school year if they attended school in a PARS district. Students in PARS districts also scored significantly higher on retakes compared to their counterparts in control districts. The largest effects occurred in Science and Social Studies, where students in treatment districts were 27% more likely to score proficient in Science and 22% more likely to score proficient in Social Studies than were students in control districts. Slightly larger effects were observed for African-American students. In Science and Social Studies, African-American students in PARS districts were about 40% more likely to score proficient on a retake of the OGT than their counterparts in control districts. An exceptionally large positive effect in Writing was observed for students with limited English proficiency. Students with limited English proficiency (LEP) were nearly four times more likely to score proficient in Writing if they attended school in a PARS district.

Conclusions and Recommendations

The large positive effects on student retake rates suggest a positive impact of PARS on student motivation to pass the OGT. Interviews with students suggest that these motivational effects were driven primarily by the increased clarity and detail of the PARS reports, which students then used to guide their efforts to improve their performance on a retake of the OGT. The influence of PARS tools and resources on teachers' and schools' instructional processes during this first year appeared to be limited by time constraints and weak support for teachers to use these new tools. Those who made greatest use of the PARS tools were teachers who were directly involved in tutoring students who were preparing to retake the OGT. This finding is congruent with the statistical results showing significant impacts for students preparing for an OGT retake, and no impacts for students taking the OGT for the first time.

As an intervention for improving performance on the OGT, the PARS program appears to have been successful in affecting the retake rates and performance of students who initially failed one or more OGT sections. While this is an excellent start for this kind of program, it could have a greater impact. With extensive use of PARS limited to teachers involved in OGT retake tutoring and a lack of impacts on initial 10th grade OGT scores, results suggest that PARS is a promising program, but one that has not yet been embraced by the majority of regular teachers. More resources will be needed to support teachers' use of these tools (e.g., dedicated time and more individualized training) in order to maximize impacts on classroom instruction and student learning. Given other research on data-driven instructional improvement, it is also likely that the PARS program could benefit from an enhancement that provides more frequent data on student performance and progress. With this additional support, PARS has a greater chance of influencing systemic change in instructional practices and student learning.

I. Introduction



Ohio has been working to enhance its statewide programs to promote the use of assessment data to inform instruction. What is especially interesting is that Ohio's recent initiatives are designed to promote formative use of data from the state's accountability tests. One such initiative is the collaboration between the Ohio Department of Education and The Grow Network/McGraw-Hill (Grow) to launch a 2006–07 pilot of its Personalized Assessment Reporting System (PARS) for the Ohio Graduation Tests (OGT). The new PARS Score Reports and associated tools were custom designed for Ohio to provide teachers, administrators, students, and parents with more detailed information about student performance on the OGT along with resources and advice for improving performance.

This research report presents program evaluation findings from the first-year pilot of PARS. The primary goals for the evaluation were to (a) document the implementation of the program and (b) provide scientifically based evidence of potential impacts on instruction and student learning. The evaluation involved a random-assignment design and a mixed-methods approach to measuring program implementation and impacts. A total of 100 high schools in 60 school districts participated in this research, with 51 schools in 30 districts randomly assigned to participate in the PARS pilot during the 2006–07 school year.

This introductory chapter continues with a discussion of the background and context of the PARS pilot and describes key features of the PARS program in contrast with previously existing OGT reports and websites. The remaining chapters present the conceptual framework guiding the evaluation, the research methods for monitoring implementation and measuring impacts, and finally the results and conclusions regarding program implementation and impacts.

The Intervention: An Overview of the PARS Program

Presenting information from state tests in attractive and meaningful ways has become Grow's claim to fame. Their "Grow Reports," which provide detailed numerical and graphical accounts of a student's strengths and weaknesses in relation to standards, have been thoroughly embraced by many teachers, administrators, students, and parents in large districts (e.g., New York City, Philadelphia) and in several states (e.g., California, Florida, Texas). In Ohio, Grow sought to expand its approach to personalized feedback with the Ohio Graduation Test (OGT). During the 2005-06 school year, Grow worked in collaboration with ODE staff to develop several types of new OGT score reports—one for students, one for districts, and four for schools. In summer and fall 2006 and spring 2007, Grow provided these new hard-copy OGT Score Reports to each district, school, and student showing performance by subject, by standard, and even by item. These printed reports also included Internet addresses for two new websites (one for educators and one for students) developed by Grow (again, in collaboration with ODE) to help

teachers and students to use the OGT reports and data. The PARS website for educators allows teachers, principals, and administrators to analyze test data, learn about instructional strategies, and access professional development tools. The PARS website for students includes resources for students preparing to take or retake the OGT including online tutorials along with advice to all students regarding high school course selection and planning for college and career.

The PARS Student Report

The individual OGT Student Report provided by Grow to each student was personalized based upon each student's performance profile. Depending on the student's scores in each subject area, different written explanations and suggestions for improvement were presented. The degree of customization was substantial, with literally thousands of possible variants of score reports across the population of students. The format of the Student Report was a single-sheet booklet with four 8.5x11 pages. Each page was divided into two to five subsections through the use of alternative background colors, font colors, and font sizes. **Figure 1** shows the first page of a sample Student Report (with a fictitious student name).

Figure 1



This front page is dominated by a graphical representation of the student's performance across the five OGT subjects. The five performance levels on the OGT are shown in a color-coded series of horizontal bars. The three passing proficiency levels (Proficient, Advanced, and Accelerated) are shown with a green-grey background and the two failing

proficiency levels (Basic and Limited) are shown with a yellow-brown background. The student's scores are labeled on markers placed within the proficiency levels corresponding to the student's scale scores. The text surrounding this graphic serves to describe and interpret the student's scores.

The sidebar to the left of the graphic, with a light green background, presents suggestions for what the student should do next. Students who did not pass all five subjects are encouraged to prepare to retake the OGT sections they failed. Students who passed all five subjects are encouraged to prepare for college and career. The sidebar also includes, regardless of the student's scores, the Internet address for the student website developed by Grow (see the section on the PARS student website below). For students who did not pass all five subjects, this page-one sidebar also included an Internet address for a preexisting OGT practice test website (see the section on the OGT practice test website below).

The second page of the PARS Student Report presented more detailed written interpretations of the student's scores. The interpretations varied by subject and performance level and were about 30 words long. For example, a student scoring proficient in Math would have read, "By scoring at the Proficient level in Math, students demonstrate understanding of mathematical concepts and terms. They use informal reasoning and some problem-solving strategies. They adequately communicate using mathematical language." A sidebar at the bottom of page two presented a bar graph showing the percent of students who passed all five subjects on the OGT for the student's school, the student's district, and the entire state.

The third page of the PARS Student Report presented bar graphs and counts of the number of items the student answered correctly and the number of items tested within each content standard for each subject. For example, in Mathematics, each student was shown the number of points earned and the total number of points possible for five content standards: Numbers, Number Sense and Operations; Measurement; Geometry and Spatial Sense; Patterns, Functions and Algebra; and Data Analysis and Probability. Student performance on a standard determined the color of the bar chart for that standard as above the minimally proficient range, within the minimally proficient range, or below the minimally proficient range.

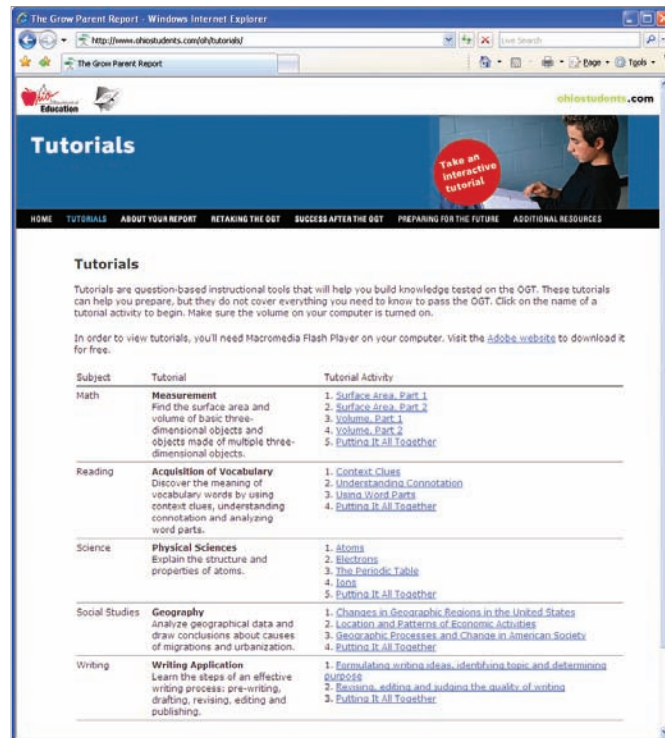
The fourth and final page of the PARS Student Report entitled "Map Your Future" included three sections intended to motivate students to pursue college and/or a successful career. The first section presented statistics on the unemployment rate and average weekly earnings of Americans for six different levels of education from college dropout to master's degree. A bar graph was included to show how unemployment rates go down and earnings go up as level of education goes up. The second section on this page presented statistics on the association between advanced math classes and future salary along with the proportion of adults who say that they "would have worked harder" if they could repeat high school. The third section on the final page of the Student Report included specific suggestions that students actively choose to take more challenging classes. This section also included a small screenshot from the PARS Student Website along with the Internet address.

The PARS Student Website

In addition to the new hard-copy PARS reports for students, Grow also developed a website for students that included interactive tutorials within a single content standard for each subject. The purpose of the tutorials was to provide students with an opportunity to enhance their knowledge and skills in OGT subjects through an interactive multimedia site accessible via the Internet. The content standards for which tutorials developed were

- Mathematics – Measurement
- Reading – Acquisition of Vocabulary
- Science – Physical Science
- Social Studies – Geography
- Writing – Writing Applications

Figure 2



Each PARS tutorial was built using the Adobe/Macromedia Flash multimedia authoring program. The Flash platform allowed for the use of audio recordings of descriptive and explanatory prose, with relevant portions played in response to specific student input. For example, the tutorial instructor's recorded voice would introduce a problem and ask the student to select a response from a multiple-choice list. If the student selected an incorrect answer, the tutorial would vocalize an explanation of why the selected answer was incorrect. If the student selected enough incorrect answers across a series of items,

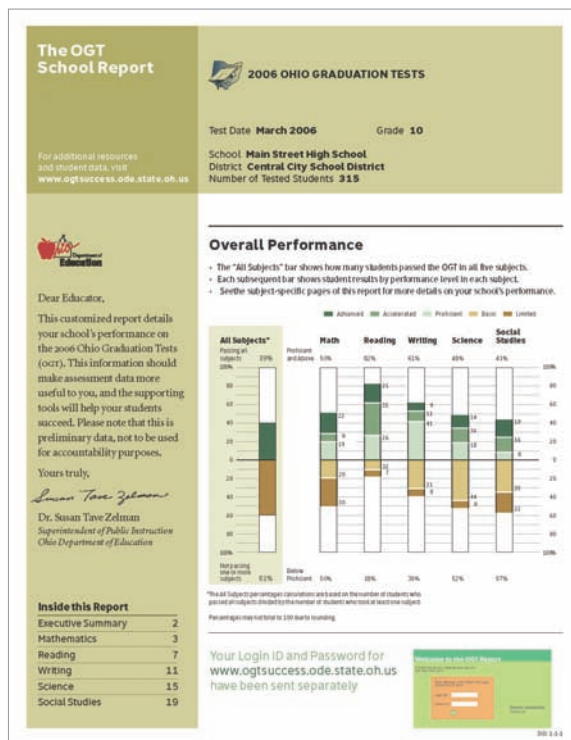
the tutorial would play a sequence of explanatory recordings with supporting visualizations. At the conclusion of the review, the tutorial would then prompt the student to revisit the items answered incorrectly and select alternative responses.

The PARS Student Website also included a brief section on interpreting the OGT results and reading the PARS score report along with four more sections focused on planning next steps. One of these focused exclusively on preparing for an OGT retake test and described eight different strategies for success (e.g., working with a tutor, participating in OGT preparation programs, using online resources). The remaining sections of the PARS Student Website described the importance of taking challenging courses and working hard in high school, how to best prepare for college and/or a successful career, and how to apply to colleges and obtain financial aid.

The PARS School Reports

Four different printed PARS reports were developed for distribution to schools. The first of these was a 24-page overall report that presented statistics on student performance across the entire school in graphical and numerical form. The first two pages of this School Report summarized performance for each of the five subject areas and across the OGT tests as a whole. The next 20 pages were grouped into five sections of four pages each—one section for each subject. The four pages of each section compared the school’s performance to that of the district and state, presented the school’s performance within a subject broken down by content standard, compared the school’s performance on each

Figure 3



individual OGT item to that of the state, presented the school's performance separately for subgroups of students (i.e., gender, race, special education status, and English proficiency). The final pages of the PARS School Report presented 12 strategies for enhancing teacher's professional knowledge and increasing collaboration and communication among school faculty.

The second of the four school reports was the PARS Retake Report. This report was similar to the School Report, but restricted the results to just those students who were attempting to retake sections of the OGT. The PARS Retake Report included all elements of the School Report except the item analyses, subgroup results, and the teacher professional development strategies. The item and subgroup analyses were excluded because the sample sizes of retakers in most schools would be too small to produce precise results.

The third school report was the PARS Student Roster. This report presented a multipage table of results for individual students with the following columns: student name, birth date, overall performance, and performance level in each of the five OGT subjects. Performance was indicated as two colored icons for overall performance (i.e., passed all subjects versus failed at least one subject) and five colored icons for each of the five OGT performance levels: limited, basic, proficient, advanced, and accelerated. Additional icons were used for invalidated scores (e.g., as a result of cheating) and for subjects not attempted by the student.

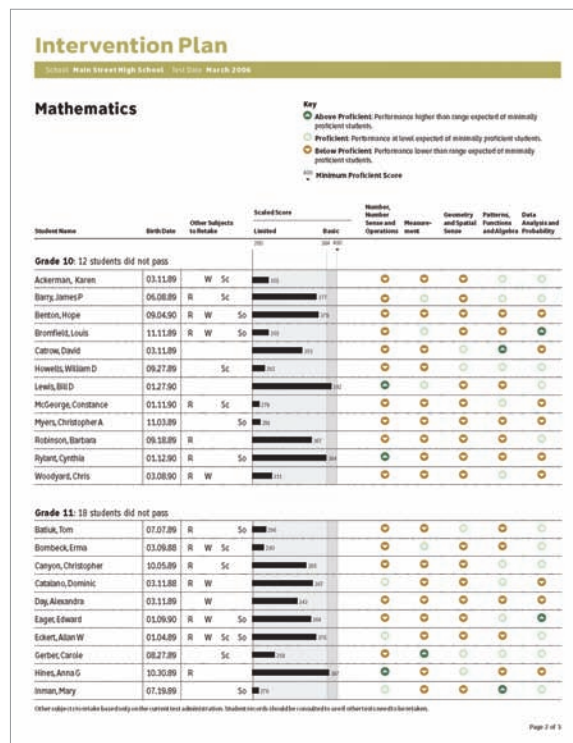
The fourth school report was the PARS Intervention Plan. This report was unique in that it presented overall and subscale results (by content standard) for individual students who failed at least one subject. The Intervention Plan was divided into five sections—one for each subject. For example, the Math section presented data for students who did not pass mathematics.

Data in the Intervention Plan were presented in a form similar to that of the student roster, except that the columns in the table represented overall performance or performance for each specific content standard within the subject for that section. Overall performance for each student was shown as bar graph showing proximity of the student's scale score to the proficiency cutoff of 400 points. Performance within content standards was indicated with three icons with labels "above proficient," "proficient," and "below proficient." An additional column included flags for other OGT subjects the students may have failed. For example, the Math section of the Intervention Plan would present overall and subscale results for the Math portion of the OGT along with indicators of whether each student also failed one of the other four subjects.

The PARS District Report

The PARS District Report was nearly identical to the School Report, except that it did not include item analysis results, data were aggregated across an entire school district and also presented for each school in the district and for similar districts.

Figure 4

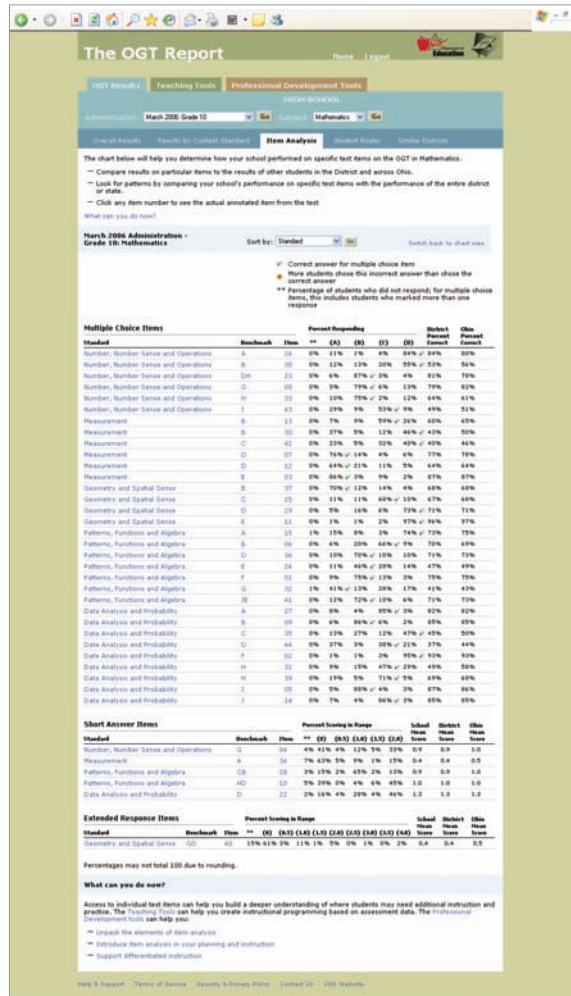


The PARS Educator Website

Grow also worked with ODE to develop an extensive website for teachers and administrators. This website was password-protected with individual usernames and passwords provided to district administrators, school principals, and teachers. The website was divided into three sections: OGT Results, Teaching Tools, and Professional Development Tools.

The OGT Results section of the website consisted of a data analysis tool that allowed teachers and administrators to view and manipulate data from multiple administrations of the OGT, beginning with the March 2006 administration. The initial display of the tool presented aggregate results for the school (if the user was a teacher or principal) or the district (if the user was a district administrator). Results could be viewed graphically or numerically, and data could be displayed for student subgroups or longitudinally. As with the printed reports, the user had the ability to view OGT results by content standard within each subject, displayed as average points earned and percent below proficient, proficient, and above proficient. One could also use pull-down menus to filter the results by gender, ethnicity, disability, and English proficiency. An Item Analysis section of the tool (see **Figure 5**) allowed one to view the distribution of responses to individual items as the proportion of students who chose answer A, B, C, or D.

Figure 5



An important feature of the Item Analysis section was that the actual test item from the OGT test booklet could be viewed in the PARS website by clicking the item number in the item analysis table. Other hyperlinks in the table were connected to content in the Teaching Tools section of the website (described below) so that a teacher could link directly to relevant teaching strategies. A Student Roster section of the OGT Results tool allowed one to view OGT results by subject for individual students. This section also allowed one to select students to include in “custom groups,” which could then be used to filter results in other sections of the OGT Results tool. For example, a teacher could select students into a custom group representing her third-period geometry class, and

then view aggregate results and item-by-item results for that class. The last feature of the OGT Results tool allowed one to compare the overall and subscale performance of one's school to other schools in the same district and also to other schools in similar districts.

The Teaching Tools section of the website included detailed descriptions of the Ohio Content Standards, explanations of common student misconceptions within content areas, and descriptions of instructional strategies within each content standard. When visiting the PARS Educator Website, one could navigate directly into the Teaching Tools section, or one could end up there after clicking on a content standard or benchmark link attached to an OGT item or subscale from the OGT Results data analysis section of the website. For example, a teacher might find that many of her students selected the same incorrect response to an item that was relatively easy for students in the district as a whole. She might click to view the item, and then click the link to view the corresponding standard or benchmark for that item, and finally read descriptions of common student misconceptions and instructional strategies to address them.

The third section of the PARS Educator Website, Professional Development Tools, was divided into four subsections. The first was simply a tutorial on how to use the OGT Results data analysis tool section of the website. The second PD Tools subsection included descriptions of strategies for increasing collaboration and communication among teachers. The third PD Tools subsection included descriptions of strategies for using OGT data and the PARS Educator Website to differentiate instruction and plan instructional interventions. The final section of the PD Tools section of the website included links to other print and Web resources.

Figure 6



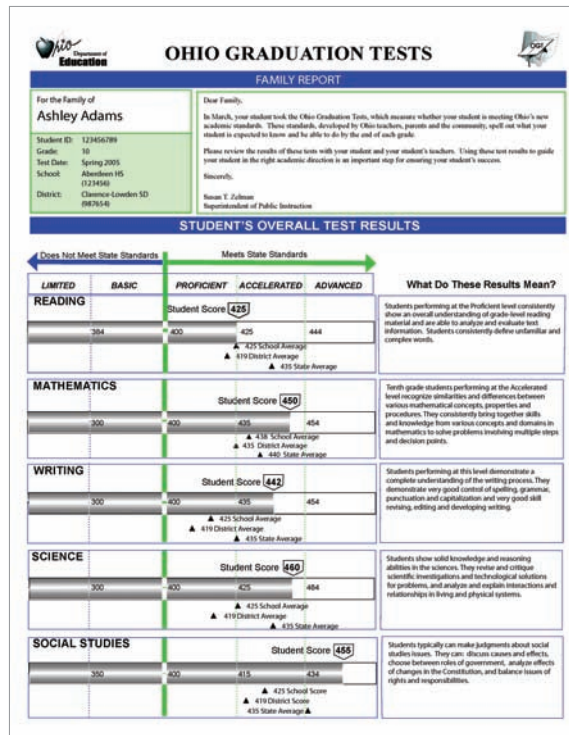
The Counterfactual: Preexisting OGT Reports, Websites, and Other Resources

The PARS system was designed to enhance a preexisting set of OGT reports and online resources. Given that a primary goal of this evaluation research is to estimate the impacts of PARS on instruction and student performance, it is essential that we understand and describe what teachers, students, their schools, and their districts were already doing to prepare students for the OGT. This is often referred to in the evaluation literature as the “counterfactual” (Bloom, 2005; Shadish, Cook, & Campbell, 2002), and it represents the conditions that would exist in the absence of the intervention. In a randomized experiment such as this one, the counterfactual is represented by the experience of the control group. Although it is impossible to describe every approach to OGT preparation taken by control schools in this study, the following sections describe some of the primary statewide resources available to teachers and students in control schools along with descriptions of two district-specific programs focused on OGT preparation.

The Standard OGT Student Reports

The standard OGT student reports were produced by Questar Educational Systems, and although they use minimal color and different graphics, they present much of the same data as the new PARS Student Reports.

Figure 7



The Questar Student Report was eight pages long with the first page dominated by five large bar graphs showing the student's performance in the five subjects relative to the proficiency cutoffs at each level. A written interpretation of the student's performance was placed to the right of each graph. The subsequent pages of the Questar Student Report presented performance results and written interpretations of the student's performance for each subject and for each content standard within the subjects. The results by content standard also included strategies for improving performance in that domain. Lastly, the Questar Student Report also included an Internet address for an Ohio Department of Education webpage that included links to the two student websites described below.

The OGT Practice Test Website for Students

The testing contractor for the OGT, Measurement Inc., developed a website for students in which they could take practice OGT tests that were identical to OGT tests used in previous years. The practice tests were administered online, with students viewing items and submitting their answer choices through a Web browser. After completing each OGT subject test, the student's overall score was immediately calculated. Students could also view which items they answered correctly and incorrectly, although items were not grouped by content standard.

The OGT Scoring Practice Website for Students


Measurement Inc. also created a website where students could view sample student responses and scores from open-ended OGT items from previous tests. The purpose of this website was to give students an opportunity to see the kinds of responses to open-ended items that would earn zero points, partial credit, or full credit. Each sample response and score was accompanied by an explanation of why the response received the score it did. Students visiting this website could practice scoring the sample responses on their own and then compare the scores they assigned to the actual scores assigned by the OGT scorers.

The Standard OGT School Reports, District Reports, and Data Files

The standard OGT reports bore little resemblance to the new PARS reports. Although the reports presented much of the same data (e.g., overall results, results by content standard, subgroup results, student roster), they used few graphics and little or no color. Figure 8 presents a sample school summary report, with overall performance for each subject broken out by student subgroup.

Data files containing student-level OGT data were also provided to each school and district. The file format was a Microsoft Excel spreadsheet, with one row for each student tested. Columns in the spreadsheet included the student's identifying and demographic information, and OGT scores for each test and content standard.

Figure 8



**OHIO GRADUATION TESTS
SUMMARY OF SCHOOL PERFORMANCE**

PAGE 5

MARCH 2005

SCHOOL NAME: OHIO SCHOOL SCHOOL IRI: 000000
 DISTRICT NAME: OHIO DISTRICT #2 DISTRICT IRI: 000000
 COUNTY NAME: OHIO COUNTY GRADE: 10

	Total Tested	Mean Scaled Score	SOCIAL STUDIES											
			Limited		Basic		Proficient		Accelerated		Advanced			
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Total Group	176	401	18	9%	80	47%	34	20%	10	6%	30	18%		
Male	86	398	2	2%	50	60%	18	18%	0	0%	10	12%		
Female	84	406	19	11%	24	29%	18	21%	10	14%	20	24%		
Other														
EP/LEP Group														
IEP Total	11	350	4	36%	5	45%	2	18%	0	0%	0	0%		
LEP Total	3													
Ethnicity														
American Indian														
Male														
Female														
Other														
Asian/Pacific Islander														
Male														
Female														
Other														
Black/African American	50	350	6	20%	10	32%	14	47%	0	0%	0	0%		
Male	18	355	2	12%	6	38%	8	38%	0	0%	0	0%		
Female	14	345	9	64%	4	29%	8	57%	0	0%	0	0%		
Other														
Hispanic														
Male														
Female														
Other														
White	140	401	10	7%	70	50%	20	14%	10	7%	30	21%		
Male	70	396	0	0%	50	71%	10	14%	0	0%	10	14%		
Female	70	406	10	14%	20	29%	10	14%	10	14%	20	29%		
Other														
Multi-Racial														
Male														
Female														
Other														
Other/No Response														
Male														
Female														
Other														

Note: No counts of 9 or fewer in an ethnic group are reported in "OTHER"

The OGT Teacher Resources Website

The ODE also provided a teacher resources website with components similar to the Measurement Inc. student websites. Teachers were able to download and print hard copies of previous OGT tests for use as practice tests in their classrooms. Teachers were also able to use the scoring practice website to learn how open-ended OGT items are scored.

Other OGT-Related Websites

In addition to OGT resources provided by ODE, some districts and schools throughout the state are already using websites that have some overlap with the functions of the PARS website. For example, one school in the control group has purchased a license for an online OGT practice test website. This website allows students to take multiple practice tests and produces score analyses that highlight strengths and weaknesses for individual students and groups of students (e.g., classes). Another school district in the treatment group has developed a districtwide website that allows teachers and administrators to view longitudinal data on individual students' test scores across multiple assessments including the OGT. Although these two websites have functions that overlap with the PARS online data analysis tools, they do not include any components that parallel the instructional supports or content included in the Teaching Tools and Professional Development sections of the PARS website.

II. Theory of Action and Conceptual Framework



Grow advocates an integrated approach to supporting the use of data to improve teaching and learning (The Grow Network/McGraw-Hill, n.d.). Grow's print reports are customized for most clients and are designed to provide information to teachers, administrators, and parents in a form "that is tailored to their roles in helping students." Grow also describes how they are able to guide educators and parents on what to do next by providing "action-oriented resources for educators and parents" that "integrate the instructional materials of the state or district with Grow's standards-based, proprietary analyses of how students performed on the tests." While this approach makes intuitive sense, there exists a larger body of peer-reviewed empirical research that supports the general idea of using data to inform instruction and improve student learning.

The PARS program may achieve positive impacts through two primary pathways. The first pathway focuses on student motivation and behavior. By providing clear and detailed information to each student about his or her performance relative to the state standards, along with resources for improving performance and planning for the future, the PARS approach may lead to changes in student attitudes and behaviors that are fundamental to success in high school and beyond. The second pathway through which the PARS program may achieve positive impacts focuses on changes in school-wide instructional policy and individual teachers' instructional decisions. By providing clear and detailed information to teachers and administrators about student performance, along with tools for making sense of the data and resources for improving and targeting instruction, PARS has the potential to inform numerous aspects of instruction.

Previous research confirms that data-driven interventions can have positive effects on instruction and student outcomes. Two studies of similar interventions confirmed that technology-based tools and intuitive data visualizations allowed educators to identify learning gaps as part of an instructional planning process (Mandinach, Honey, Light, Heinze, & Nudell, 2005; Sharp, 2004). Two additional studies found that teachers were able to use information about students' strengths and weaknesses to plan targeted instructional interventions for individual students or groups of students (Marsh, Pane, & Hamilton, 2006; Supovitz & Klein, 2003). A recent literature review suggests that effect sizes for formative assessments and feedback-based instructional interventions can have substantially large effect sizes on student achievement, often exceeding one full standard deviation (Young & Kim, 2007). Additional research by Butler (1987; 1988) suggests that specific formative feedback relative to an absolute standard also has positive effects on student motivation, while just providing grades or scores may actually have a small negative effect.

The actual impacts of PARS on instruction and student outcomes may be mediated by several factors. These include timeliness of delivery, clarity of information, level of detail, perceived value, ease of use, and most importantly, actual utility. There is a substantial body of research

that suggests that the key to high utility and positive effects of a promising data-driven intervention is the provision of intensive and ongoing support and professional development for teachers (Corcoran, Shields, & Zucker, 1998; Elawar & Corno, 1985; Fuchs & Fuchs, 1986; Fuchs, Fuchs, Hamlett, & Stecker, 1991; Garet, Birman, Porter, Desimone, Herman, & Yoon, 1999). For example, Fuchs et al. (1991) found that the effects on student achievement of a formative assessment intervention were largest ($ES=.84$) when teachers had access to expert advice in interpreting data. Additional research suggests that formal school leaders (e.g., principals, department chairs) play a very important role in determining whether a data-driven intervention is actually utilized by a school's faculty (Herman, & Gribbons, 2001; Mason, 2002; Supovitz, & Klein, 2003). Unfortunately, there is also evidence that most school leaders feel they do not have the necessary technical skills to lead a data-driven instructional reform (Supovitz, & Klein, 2003). This brings us back to the ideas that collaborative efforts are an essential part of any data-driven instructional reform (Boudett, City, & Murnane, 2005; McLaughlin & Talbert, 2001; Wayman & Stringfield, 2006), and that instructional reform can be achieved only when the intervention builds instructional capacity through new knowledge and insights about learning, which then results in changes in practice (Cohen & Ball, 1999).

The more theoretical components of this conceptual framework include the interaction-based theory of instructional capacity developed by David Cohen and Deborah Lowenberg Ball (1999) and a theory of formative assessment practice developed by Dylan Wiliam and Siobhan Leahy (2007). The application of the Cohen and Ball theory of instructional capacity is clear in that the PARS intervention is designed with the primary intention of enhancing the interactions between teachers, students, and material technologies. Cohen and Ball point out that the efficacy and adaptability of instruction is dependent upon the "interactions among teachers and students around educational material," and that improving instruction is not as simple as introducing new materials or technology. In order for an intervention to have maximum impact on instruction and learning, the intervention must first "create adequate conditions for teachers to learn about or develop the knowledge, skills, and beliefs needed to enact these interventions successfully in classrooms." Ultimately, the intervention must enhance the interactions between teachers and students in such a way that teachers gain increased insight into student learning (e.g., through better use of instructional materials and technology) and use this new knowledge to adapt their instruction in response to students' needs.

This theory of enhancing the interactions between teachers and students is connected more directly to the PARS intervention through a theory of how teachers can use assessment data to inform instructional decisions (Black & Wiliam, 1998; Wiliam & Leahy, 2007). While the original conceptualization of formative assessment in this literature focused on frequent assessment with continuous feedback (Black & Wiliam, 1998), a more recent conceptualization of formative assessment points out that an assessment is not inherently formative, and that it is what practitioners do with assessment data that makes the process formative (Wiliam & Leahy, 2007). Essentially, the process by which assessment data are analyzed and/or interpreted for the purposes of informing instructional decisions is the keystone of formative assessment. In the simplest sense, formative assessment is the process

II. Theory of Action and Conceptual Framework

by which assessment data are analyzed to determine students' strengths and weaknesses and then adapt instruction to address relative weaknesses. In the best-case scenario, reliable and valid data are collected and used frequently to make decisions for individual students. In the case of PARS, while OGT data may be used to inform decisions about the instructional needs of individual students, the data are collected on a relatively infrequent basis (i.e., March, June, October), and only collected repeatedly for those students who retake an OGT test. Therefore, while the PARS intervention has the potential to promote formative assessment, the OGT data are collected only once for the majority of students. Nevertheless, the detailed feedback provided to students may result in motivational effects regardless of overall performance (e.g., students who passed all subjects still see their areas of relative strength and weakness) and the ability to monitor classroom-level and school-wide trends may help to inform changes in curricular emphases and pedagogy.

III. Methods



This chapter of the report presents the details of the research design and methods used in this evaluation. Following a presentation of the primary research questions, we outline the study design, instruments, procedures, and analytical methods. Like many large-scale field trials, problems encountered in the field (some anticipated and some not) required that the original research design be modified. The challenges we encountered and the subsequent design modifications are described in the final section of this chapter.

Research Questions

The research design for this evaluation of PARS is based upon a set of research questions focusing on access, clarity, utility, and impacts of PARS for educators, students, and parents. These research questions and subquestions are as follows.

Access: Were the PARS reports and websites delivered in a timely manner? Were teachers and students in PARS schools made aware of the new reports and websites?

Clarity: Have the PARS reports and websites helped educators, students, and parents better understand their OGT results?

Utility: How and to what extent were the PARS reports and websites actually used by educators, students, and parents?

- Have teachers used the PARS reports and websites to make instructional decisions or implement new practices?
- Have students and parents used the PARS reports and student website to prepare for an OGT retake or plan for the future?

Impacts: Have the PARS reports and websites increased communication among educators, students, and parents?

Are there systemic impacts (e.g., through school-wide change) of PARS on OGT scores and proficiency rates for 10th Grade students taking the OGT for the first time?

For students who do not pass the OGT on their first attempt:

- Do those with access to PARS feel more informed about what they need to do to pass the test the next time they take it?
- Are those with access to PARS more likely to attempt to retake the OGT?
- Do those with access to PARS experience larger gains in their OGT scores than other students?
- Do those with access to PARS have higher passing rates when they retake the OGT?

How do the use and the impacts of the PARS system differ for various subgroups?

- What are the characteristics of students, parents, teachers, and administrators who made greatest use of the information from the PARS reports?
- Are the impacts of the PARS system larger or smaller for schools in certain areas or with specific characteristics?
- Are the impacts of the PARS system related to prior student performance?
- Are the impacts of the PARS system larger or smaller for specific subgroups of students?

Scientifically Based Research Design

The No Child Left Behind Act of 2001 (NCLB) contains a clear and consistent message that research on the effectiveness of educational programs should be “scientifically based.” The meaning of this term, as defined in NCLB, identifies the random assignment experiment as the most valid research design. Random assignment is a main component of good medical research on the effects of treatments, and policymakers are now requiring that impact evaluation research in education be based on similar methods. Of course, educational programs are not nearly as simple as drug-based treatments in medicine. Educational interventions are usually much more complicated, dynamic, and occur in contextualized settings.

In the case of PARS, the design of the intervention cannot accommodate random assignment of students or even schools. As such, this evaluation employs a place-based or cluster-randomized trial in which entire districts are randomly assigned to a treatment or control group (Boruch, May, Lavenberg, et al., 2004). Comparisons of results across the two groups of districts can provide strong evidence on the causal impacts of PARS.

Power Analysis

A statistical power analysis was conducted to ensure that the number of districts sampled would be sufficient to detect effects of the intervention on student achievement. Because the study involved assignment of entire districts to treatment and control groups, power analyses for a Cluster Randomized Trial were conducted using Optimal Design, v. 1.55 (Liu, Spybrook, Congdon, & Raudenbush, 2005). Conservative values of key parameters were set as follows: The average number of students participating in a retake across sampled districts would be at least 50, the intraclass correlation at the district-level would be .20, the R-squared for district level covariates would be .70 (similar to the district-level R-squared obtained by Huang and Yu (2002) using data from the National Assessment of Educational Progress, NAEP), and the effect of the program will be at least two-tenths of one standard deviation (i.e., a small but educationally important effect). The results of this power analysis revealed that sufficient power (80%) can be achieved with a total sample of 60 districts, corresponding to 30 treatment and 30 control districts. In other words, a study involving 60 districts will have an 80% chance of finding a statistically significant effect of the PARS system on student achievement if, in fact, the program impacts student performance.

District and School Sampling, Recruitment, and Random Assignment

In December 2005, a stratified sample of 60 school districts was selected using administrative data from the Ohio Department of Education. Because there were many small rural districts throughout the state of Ohio, the sample of districts was drawn with probabilities of selection proportional to the district size (i.e., a sampling approach similar to that used for NAEP). Letters announcing the PARS pilot and evaluation study were mailed to the superintendent at each sampled district and to the principal at each sampled school. Given that the study was sponsored by the Ohio Department of Education, the recruitment of schools and districts was done using an “opt out” approach. In other words, districts and schools selected for the study were informed that they had been selected to be part of the PARS pilot study, and that they could opt out if they were unable or unwilling to participate. Schools that did not opt out would be asked to distribute short surveys (accompanied by a postage-paid return envelope) to about 4 to 16 teachers and about 4 to 8 students at their school.

Shortly before the OGT administration in March 2006, districts were randomly assigned to treatment and control groups. The randomized control design of this evaluation is intended to produce estimates of the PARS program’s impact on teachers’ practice and student outcomes while minimizing or eliminating bias associated with potential confounding variables. Post randomization analyses confirmed that the treatment and control groups, prior to the PARS program, had no statistically significant differences with regards to prior student performance (e.g., scores from the March 2006 OGT administration), student demographics, or school contextual factors (e.g., school size, location).

Data Sources and Instruments

This study involves a mixed-method approach designed to ensure generalizability of overall impact results across the state combined with sufficient detail to understand the PARS intervention and its use. Broad data from large samples of schools, teachers, administrators, students, and parents were collected from administrative databases and targeted surveys, while interviews and focus groups were used to collect detailed, contextualized data from within the larger sample.

The primary measures of student performance are student test scores from four administrations of the OGT: March 2006, June 2006, October 2006, and March 2007. These data have been collected for more than 50,000 students across the 60 participating districts. Additional district, school, and student background data have also been collected for use as potential control variables. These include district location (urban, suburban, rural), school poverty concentration, school size, school attendance rate, school-average teacher experience and salary, student gender, student ethnicity, and student English proficiency.

The teacher survey was designed to collect information on teachers’ use of data to make instructional decisions, their perceptions of their students’ abilities, their perceptions about their schools, and their utility of the information from PARS and the PARS reports.

The survey of students was designed to gauge students' utility of the information from the PARS reports, their perceived self-efficacy, and their efforts to improve their academic performance. The survey of parents was designed to gauge parents' understanding of the information from the PARS reports, their reactions to the information from the PARS reports, and their efforts to help improve their child's academic performance. The surveys used in the control groups are identical, but focus on the use of information from the traditional OGT Reports instead of the PARS reports and websites. The teacher, student, and parent surveys for both treatment and control groups can be downloaded from www.cpre.org.

Interview and focus-group protocols for teachers in treatment schools were developed to collect information on teachers' use of the information contained in the PARS reports, their use of PARS tools, and their ideas on how the PARS reports and websites might be improved. The structure of the focus group and interview protocols was such that each participant was asked to look over and comment on printed copies of PARS reports and screenshots from the different sections of the PARS educator website. Since schools had received at least two types of performance reports during the pilot year, these artifacts served as memory aids and provided a common visual reference for participants and CPRE. This strategy served to improve the reliability of our interview data (Bernard, Killworth, Kronenfeld, & Sailer, 1984). Participants were first asked questions to establish access (e.g., "Have you seen this report before?") with a second round focused on clarity and utility (e.g., "Was it helpful to you?" and "Were there any plans you made based on this report?"). For those few participants who had not previously seen the PARS resources, the interview questions solicited their sense of its clarity and potential utility. The protocol was designed to take between 40 and 50 minutes. Similar interview protocols were developed for teachers in control schools, but these were limited to general OGT preparation strategies, the use of OGT data, and the utility of the traditional OGT reports.

Interview protocols for students were developed to gauge students' understanding of the information contained in the PARS reports, their thoughts on the usefulness of that information, and any actions taken based on that information. As with the teacher interviews, students were asked to look over and comment on printed copies of a 4-page mock PARS report for "Allison Ortiz" and selected screenshots of the PARS student website and the two other OGT websites described earlier in this report. The student interview protocol was designed to take about 30 minutes.

The protocol developed for parent interviews was similar to the student interview protocol. Recruiting difficulties required that the protocol be revised for a phone interview (see section entitled "Challenges to the Research Design"). Because parents would not be able to view samples of the OGT report, the protocol included questions designed to help the interviewer determine if the parent had seen the new PARS score report or just the traditional Questar score report. Each of the interview and focus group protocols developed for this study can be downloaded from www.cpre.org.

Survey Sampling and Administration

In January 2007, stratified random samples of teachers, students, and parents from the 60 participating districts were selected to receive surveys. A random sample of 800 teachers, evenly distributed (i.e., stratified) across treatment and control schools and across the four subject areas were selected from a complete sampling frame of teachers built from ODE administrative data. Each teacher's primary teaching assignment was used as his or her subject area in this sampling process. A random sample of 400 students and their parents, evenly distributed across treatment and control schools were selected from the OGT database from the March 2006 administration. Surveys were placed into individual envelopes labeled with the selected survey participant's name. Each envelope included a second preaddressed postage-paid return envelope. Surveys were then grouped by school and mailed to each principal with a request to distribute them to the selected respondents. The number of surveys sent to each school ranged from 1 to 16 for teachers 1 to 8 for students for all but five schools.

Fieldwork Sampling and Participant Recruitment

Because the primary intent of PARS was to improve passing rates for students who must retake the OGT, our qualitative sample recruitment focused on schools that had at least 15% of their students fail one or more sections on the OGT during the March 2006 administration. The selection process involved stratification of schools by location (i.e., urban, suburban, rural) and by OGT performance. One rural school, one suburban school, and two urban schools were selected from both the treatment and control groups to produce a total sample of four treatment schools and four control schools.

This sampling strategy was adjusted in early fall due to access issues. Shortly after the OGT retake administration in October 2006, letters were mailed and faxed to each principal at the eight sampled schools. The letter requested permission to conduct brief interview and focus group sessions at the school during a single day selected by the school three weeks into the future. Follow-up phone calls were made during the week immediately after the letter was mailed and faxed. Getting responses from schools proved very difficult, and with winter break approaching, it was decided that fieldwork would have to be postponed until January or February 2007. By late January, a total of three schools (one control and two treatment schools) had agreed to participate and dates for their site visits were set during a week in February 2007. Three control schools had failed to respond at all, and one treatment school responded that they would not be able to participate. As such, recruitment efforts were intensified with more frequent faxes and phone calls to the remaining treatment schools and a request for additional recruiting support from the ODE and Grow staff. Recruitment was also expanded to include replacement schools. By March 2007, two additional treatment schools agreed to participate. Their site visit dates were set for early May 2007. The remaining control schools remained unresponsive or actively declined to participate. The reasons behind these recruiting difficulties, possible solutions, and actual solutions are discussed in the next section entitled Challenges to the Research

Design. The final sample of five schools included two rural schools, one suburban school, and two urban schools with performance ratings ranging from “Academic Watch” to “Excellent.”

In each of the four treatment schools that agreed to participate in fieldwork, the principal or other primary contact was asked to recruit teachers as volunteers for the interviews and focus groups. We asked that the focus groups be limited to 10th grade teachers (for whom PARS applies to last year’s students), while the interviews be restricted to 11th grade teachers (for whom PARS applies to this year’s students). We also asked that the distribution of teachers across the OGT subjects be as even as possible for both the interviews and focus groups, and requested inclusion of teachers who may be working with students preparing to retake the OGT. Teacher recruitment was smooth in three of the four treatment schools. In order to achieve our recruitment goal in the fourth school, we offered teachers gift certificates.

Participants for the student interviews were preselected via a stratified random sample based on OGT data from March and October 2006. From each school, we selected two students who passed all five OGT subjects in March, two more who failed at least one subject in March and then passed in October, and two more students who failed at least one subject in March and again in October. Recruitment packets including a parent consent form, a student assent form, and a parent contact information form (for a phone interview) were mailed to participating principals for distribution to students. Students who returned their signed consent form and participated in an interview would receive a gift certificate for \$20. An additional \$20 gift certificate would be sent to parents who participated in a phone interview.

In the one control school that agreed to participate in fieldwork, the principal was asked to recruit teachers as volunteers for two focus groups. We asked that the focus groups be split—one for 10th grade teachers and another for 11th grade teachers. As with the treatment schools, we also asked that the distribution of teachers across the OGT subjects be as even as possible for both focus groups, and that any OGT intervention teachers be included if possible. The final sample sizes are summarized in **Table 3.1**.

Table 3.1 Final Sample Sizes for the Evaluation of PARS

	Districts	Schools	Teachers	Students	Parents
OGT Test Score Analyses	60	100		51,580 ^A	
Surveys (Target Sample)	60	100	800	400	400
Interviews/Focus Groups	4	5	42	16	

^A Includes two cohorts of students participating in the OGT from spring 2006 to spring 2007.

Unstructured interviews were also conducted with the principal or an assistant principal at three of the five fieldwork schools. Due to the small sample sizes, we do not report separate findings for administrators; however, we do use data from these interviews in our descriptions of how and when PARS components were delivered, how teachers were trained, and what other kinds of OGT-related resources were being used.

Methods for Statistical Analysis of Quantitative Data

As mentioned earlier, this study involves a cluster randomized experimental design in which entire districts were randomly assigned to treatment or control conditions. Statistical analyses of data from such a study must recognize the multilevel structure inherent in the data, else results may be biased. In education research, the most widely accepted approach to analyzing multilevel data is through the use of Hierarchical Linear Models (Raudenbush & Bryk, 2002). The most common form of the HLM model accounts for the hierarchical structure of the data by including additional parameters representing the influence of cluster membership (e.g., schools) on individual outcomes (e.g., student achievement). HLM can also be extended to nonlinear models (HGLM) to model categorical outcomes such as OGT proficiency levels. See Appendix A for a more detailed description of the theory and mathematics behind HLM and HGLM.

In this study, we identified three levels for analysis: students nested within schools, which are nested within districts. Therefore, all statistical models of student achievement data in this study involved a three-level structure. Because random assignment was used to create equivalent treatment and control groups prior to the implementation of PARS, estimates of the impact of the program are calculated as the difference between the treatment and control groups. Additional student and school background variables are used to increase the precision of the model and improve statistical power for detecting effects of the program.

Several stages of statistical models of impacts on OGT performance were estimated for each of the five OGT subjects and across the three OGT administrations since the beginning of the PARS program. The first stage of these analyses compared performance on the March 2007 OGT for both first-time takers and retakers in order to answer the research question, “What are the overall impacts of PARS on OGT scores and proficiency rates?” Data from the June and October 2006 administrations of the OGT were not included in this stage of analysis because those OGT administration dates were limited to include only retakers.

In the next stage of analysis, we compared the rate at which students who previously failed a section of the OGT actually attempted a retake during the June 2006, October 2006, and March 2007 administrations. Results from these analyses are used to answer the research question, “Are those with access to PARS more likely to attempt to retake the OGT?” In order to further increase the precision and statistical power of these models, we included the student’s prior OGT scaled score as a covariate at the individual and the district levels.

In the third stage of analysis, we compared the performance of OGT retakers on the June 2006, October 2006, and March 2007 administrations of the OGT. Results from these analyses are used to answer research the question, “Do those with access to PARS experience larger gains in their OGT scores?” and the question, “Do those with access to PARS have higher passing rates when they retake the OGT?” As in stage two, we also included the student’s prior OGT scaled score as a covariate at the individual and the district levels in order to further increase the precision and statistical power of these models. The inclusion of the prior score and additional covariates is also done to address potential sample selection problems that may result from differences in the retake rates of the treatment and control groups (see the Technical Appendix A for a detailed discussion).

In the final stage of analysis, we expanded the models from stages two and three to include parameters representing interactions between the PARS treatment variable and student or school characteristics. These analyses answer the research question, “Do the impacts of the PARS system differ for various subgroups?”

Methods for Analysis of Qualitative Data

Site visits were conducted by two researchers (the authors of this report), and transcribed interviews and focus groups were coded by the same two researchers assisted by two research assistants. All interviews and focus groups were transcribed and checked for accuracy by at least three readers. We used Atlas.Ti, a textual analysis software, to code these data for analysis. A fixed code list was generated that aligned with the research questions and theory of action underlying PARS. Coding proceeded in waves where the subject of the conversation was identified first (e.g., PARS School Report, PARS Data Analysis Tools website), then the content of the conversation was identified (e.g., access, utility, recommended changes), and finally the tone of the conversation was coded (e.g., positive, neutral, negative, mixed). Since teachers and students had used only some elements of the PARS resources before our interviews, we coded for two types of utility: actual and perceived. Each interview was coded by two researchers, which facilitated the identification of discrepancies in coding. Discrepancies typically focused on classifying teacher opinions about PARS as based on actual experiences or perceived value.

To analyze all interview and focus group data we relied upon two methods. First, we generated data matrices to summarize and display the data. For each participant, we recorded background and contextual information (e.g., subject/grades taught, tutoring responsibilities). We also created brief summaries of teacher experiences accessing the PARS resources (e.g., the website, in general, and each section of website, in particular) and their sense of its clarity and needed changes, and whether a view of the perceived or actual utility of each resource was offered. A school matrix summarized important contextual features such ODE performance status, department activities, introduction to PARS, and levels of OGT preparation (e.g, individual, department, or school). These matrices facilitated a view of the whole dataset and provided a broad sense of the variation in participant engagement with PARS and the local environments into which PARS was

introduced. Second, we reviewed cross sections of interview data that corresponded to key research questions regarding participant access to particular features of PARS (e.g., Student Report), and views on its clarity and utility (perceived versus actual). The layered coding strategy used to structure the ATLAS.ti database facilitated this highly targeted approach to data output. For each PARS feature, participant comments were reviewed for common themes and subtopics within those themes. Contrasting experiences, here considered discrepant evidence, were identified and further explored using the data matrices to identify potential patterns in terms of participant background or school-based features.

Challenges to the Research Design

As is usually the case in large-scale education research, there were several challenges to implementing the planned research design. Most of these were anticipated prior to the start of this evaluation; however, the extent of these potential problems was not known until the study was underway. As such, we have documented these problems in order to understand their potential limiting effects on this research.

Perhaps the biggest challenge encountered in this research was a lack of resources to provide incentives for individuals to complete surveys or for schools to participate in interviews and focus groups. Previous CPRE research typically used monetary incentives (up to \$25 per respondent) to promote high response rates on surveys. Another method used successfully in previous CPRE research has been to administer surveys during a researcher site visit; however, this approach is most appropriate when the number of schools sampled is small due to the cost of travel and staff time required. Because neither of these approaches could be used in this research, the intrinsic incentive for teachers, students, and parents to respond would be very low. In an effort to compensate for this, the surveys were designed to fit easily on two pages and asked straightforward fixed-response questions such that the entire survey could be completed in less than 5 minutes. Although the incentive to respond to the survey was expected to be low, the degree of burden was thought to be sufficiently low that a reasonable response rate could be achieved. Survey administration costs were further reduced by mailing the surveys to principals for distribution to teachers and students.

As with the surveys, there were no resources available to provide incentives to schools to participate in fieldwork. Previous CPRE research typically offered schools \$300 to \$500 per site visit. In this study, due to teachers' and administrators' initial excitement about the intervention and the direct support of the ODE, we expected to be able to recruit four schools in the treatment group and four schools in the control group for the fieldwork portion of the study. Although we were eventually successful in recruiting four treatment schools, the required effort was far more substantial than anticipated. In the early stages of school recruitment, repeated attempts to contact school principals or assistant principals via email, fax, and phone were largely ignored. In fact, the first couple of treatment schools to reply to our request felt that contacting parents and organizing parent interviews would be an excessive burden. As a remedy, we attempted to recruit parents directly for

telephone interviews to be conducted after the school visit. Ultimately, we were able to recruit four schools in the treatment group, but only one school in the control group. Arguably, the resultant delays to our fieldwork schedule may have actually improved the quality of the data collected. Had we visited schools when originally planned (fall 2006), they would have had access to the PARS websites for only one or two months as a result of the late roll-out of the PARS system. By visiting schools in the spring of 2007, we may have been able to get a clearer picture of how PARS was used during the entire school year.

While the individual burden of responding to the surveys could be reduced to compensate for a lack of incentives, the burden of participating in an interview or focus group could not be substantially reduced. Because previous CPRE research projects had success recruiting teachers for interviews and focus groups without individual monetary incentives, we felt confident that a significant number of teachers would be willing to participate in this research. However, we were far less confident that students and parents would be willing to participate in interviews. As such, providing incentives for student and parent interviews became a budget priority and a small amount of funds was set aside to purchase \$20 gift certificates for 24–48 participants. While over two-thirds of students sampled agreed to participate in an interview, only five parents provided their phone number and preferred time for a phone interview. Four of these parents were unreachable after multiple attempts to call. One other parent who did answer the phone had a change of mind and declined to participate before the interview began. It is clear that monetary incentive alone was not enough to engage parents. The support of someone in each school to help recruit parents would have likely improved participation, but without additional monetary resources to support this extra work, schools were not able to contribute the staff time necessary to recruit parents.

The ramifications of these difficulties are as follows. First, the lack of survey incentives and resultant low response rates limits the degree to which conclusions can be drawn from the survey data. Second, the lack of participation in the fieldwork by control group schools limits our ability to compare perspectives and practices between treatment and control schools. Third, the lack of interview data from parents limits our ability to describe or make inferences about parents' opinions about and use of PARS components.

Even with these difficulties and limitations, the randomized design was implemented faithfully (i.e., no control schools received PARS reports or website logins) and the student achievement data were obtained successfully. As such, the student achievement analyses, coupled with the data from the treatment schools interviews and focus groups, provide scientifically rigorous evidence of the impacts of PARS during this pilot year.

IV. Delivery and Implementation of PARS



This chapter of the report describes when and how PARS components were provided to schools and students, and how and to what extent educators were trained on the use of the PARS reports and the website. The data underlying this summary come from progress reports and supporting materials provided by the PARS contractor (i.e., Grow) and the ODE, along with data from conversations (as formal interviews or informal discussions) with Grow staff and administrators at our study schools.

PARS Delivery

During the 2006–07 pilot year, the PARS program was implemented as a supplement to the previous OGT score reporting system. This meant that treatment schools and their students received duplicate OGT score reports. The standard OGT reports were mailed to schools a few weeks after each OGT administration. The PARS score reports were typically mailed to schools a few weeks later, although PARS reports for the March 2006 OGT were not delivered until July of that year. The late delivery of the first set of PARS reports was due in part to delays in the development and revision of the content and format of the reports. It was also due in part to delays in transferring OGT data from the OGT testing contractor, Measurement Inc., to the PARS contractor, Grow. Ultimately, the first wave of PARS reports were delivered after most students were out of school for summer break. One implication is that schools may have chosen not to distribute the student reports to students and parents during the school. This was the case in one study school where administration decided to withhold the PARS reports to prevent any confusion among students and parents.

To be honest with you, when they came to the school was my biggest gripe about this. It almost made these [PARS reports] unusable because we would send out the ones from the state department to the students and to the students' parents. As soon as they came in, we'd mail those out and get them taken care of. And then these [PARS reports] would come in two to three, maybe four weeks after that. And at that point, they are much easier to read, much more user friendly, I think they're great. But, since they were so late, we didn't want to send out a second group of reports and end up confusing parents—"Oh, this must be the retakes. Oh no, my kid still failed."—and have them get all upset about it.

Although this was a serious issue for the 10th grade March 2006 OGT administration, PARS reports for the OGT Retake in June 2006, October 2006, and March 2007 were distributed somewhat closer to the actual test date.

Delays in product development also postponed the launch of the PARS websites until late summer 2006. The educator website launched with full functionality shortly after the start of the 2006–07 school year. The PARS student website went live at about the same time, but included only one working OGT tutorial. Additional tutorials were added to the website during the course of the school year.

Professional Development

The PARS pilot also included professional development (PD) provided by Grow. To inform teachers about the new PARS reports and website, the PARS project utilized a “train-the-trainers” model. The expectation guiding this model was that representatives from individual schools would receive training directly from Grow staff and, in turn, introduce PARS to teachers and administrators in their respective schools. This model is less expensive than direct PD, however, its effectiveness is highly dependent on the capacity of districts and schools to provide quality training to teachers.

The PD sessions provided by Grow were carried out in two phases. The first phase (spring 2006) involved one-hour orientation sessions in which the PARS components were presented and described to representatives from the 30 PARS districts. The purpose of the orientation sessions was to familiarize participants with the PARS reports and educator website and to describe potential uses of the PARS resources. The orientation sessions were provided in person to 10 school districts, while the remaining 20 districts participated via ODE's Web-conferencing system. These sessions allowed participants to view and ask questions about the new PARS reports and website. However, it did not provide participants an opportunity to begin using the website.

The second phase of PD sessions provided by Grow during September and October 2006 were all provided in-person and included a power-point presentation followed by a demonstration of the PARS educator website. Some sessions were carried out in computer labs in which participants were able to begin using the website on their own. Each session lasted approximately 2 hours. A total of 342 educators from 26 districts attended PARS training sessions. In the end, Grow held over two dozen training sessions in the state. Administrators, coordinators, and guidance counselors were typical participants from schools. At least, three quarters of the sessions also included teacher representatives, either those teaching 10th grade or a team of department chairs. Four PARS districts declined to host a training session.

Overall, the PARS introductions and training provided by Grow were well-received by participating teachers and administrators. According to surveys completed by participating teachers and administrators, the formal in-person training sessions led by Grow Professional Development Staff were helpful. A final report submitted by Grow showed that 94% of participants thought the session increased their knowledge of PARS resources and provided strategies to connect data to instruction, and 92% of participants thought the session provided them with immediate next steps to implement what they learned. With nearly 350 educators participating in these sessions, a substantial number of potential trainers were available to train teachers in individual schools. However, given that treatment schools included upwards of 1,500 core subject teachers, and that many PARS professional development participants were school administrators or district office staff, the success of the PARS professional development approach would hinge on the capacity of the initial PD participants to return to their schools and provide training to hundreds of teachers.

The chapter that follows describes the end results of these efforts in terms of how teachers were introduced to PARS, what they thought of the program, and how they ended up using its components.

V. Teachers' Perspectives on PARS



Forty-two teachers responsible for the four OGT subject areas (English, math, science, and social studies), elective courses, and OGT tutoring shared their views of and experiences with the new PARS resources. Perhaps because our school visits were in close proximity to OGT retake administrations, we were struck by how hard teachers were working to help students pass the OGT. The following comment from a secondary school teacher illustrates the concern felt towards students and their performance:

I think in our school we really care about these kids and we want them to pass the OGT. It's not just numbers and statistics that can be linked to teachers but it's that we really care for these kids and we will take the time, I believe, like the community here, the staff, to do that.

Teachers often talked about the high-stakes nature of the test and appeared motivated to make sure their students graduated.

Summary of Findings

Overall, teachers experienced limited access to the full set of PARS reports. About half had seen individual School or Student Reports, but only a few had seen the Intervention and Retake Reports and the School Roster. Teachers received only photocopies of the color reports and typically reviewed its contents on their own. Most teachers found the PARS reports easy to understand and well-organized. They thought the new format and colorful graphs helped make the data more quickly meaningful compared to their black and white counterparts. A few teachers suggested changes in the performance descriptions, color scheme, and use of symbols in the reports.

Teachers thought the PARS reports could be useful in a number of ways, namely informing their instructional decisions, facilitating teacher-student communication around their OGT performance, expediting school responsiveness to students who needed to retake the OGT, and focusing school attention on students at risk of not graduating. These uses were shared by teachers who had a chance to use the reports and those who assessed its value during the interview. In particular, teachers tutoring out of their certification area felt strongly that access to the Student Reports could greatly improve their instructional guidance to students retaking the OGT. One intended use of the report was to facilitate parent-teacher communication about student performance; however, no teacher had used the report to that end.

Most teachers who visited the PARS Website focused their attention on its Data Analysis Tools, specifically the Student Roster and Item Analysis features, and the Benchmarks and Teaching Strategies available in Teaching Tools section. The Professional Tools section

was only visited briefly by a few teachers. Teacher access to the website was inhibited by limited training opportunities and the distribution and functionality of passwords. Overall, most teachers found the PARS website fairly easy to understand and navigate and liked its capacity to pull together and link so many resources—OGT data, benchmarks, test items, and teaching strategies—into one central location. However, the customized Student Roster feature proved cumbersome and time-consuming for some teachers. Teachers were unclear of the purpose and potential value of the Professional Development Tools section of the website.

Teachers saw a variety of uses for the PARS website and felt it provided a diagnostic and instructional capacity that teachers could tap throughout the school year and over time. Almost all teachers interviewed thought the website was valuable to their work and more than half highly endorsed many of its key features. Specifically, teachers thought the Data Analysis Tools the most innovative and intriguing feature of the PARS website as it helped them identify and analyze patterns in the performance of their students. The OGT retake results enabled teachers to identify the benchmarks or test items that proved a persistent challenge to students. Teachers also felt the website helped them make instructional decisions that could improve student performance on the OGT. The PARS Teaching Strategies were frequently associated with new instructional ideas shared by teachers, such as adjustments to course curricula and tutoring plans, and a regrouping of students for differentiated instruction. Teachers who struggled to prepare students for the OGT retake, typically new teachers and those tutoring in a subject different from their certification area, felt access to the benchmarks and links to associated teaching strategies and OGT test items could improve their efficacy. A few teachers felt the available teaching strategies were too general and inappropriate for tutoring situations. And a few teachers dismissed the usefulness of the Data Analysis Tools; however, these limitations were based on the characteristics of the OGT test, not the particular features of the PARS website. As to whether teachers preferred paper or online versions of the OGT data, most wanted a hybrid option that included the PARS reports available in PDF format on the website to access as needed.

Accessing PARS Reports

Overall, teachers had limited access to the full set of PARS reports. About half had seen an individual School Report or Student Report; however, only a few had seen the Intervention and Retake Reports and School Roster. In most cases, teachers received photocopies of the original color reports. Teachers who had an opportunity to view any one of the PARS reports typically glanced over its contents on their own; they did not have an opportunity to review the reports with other teachers.

No teacher received a formal overview about the new collection of reports. Teachers reported attending a meeting or in-service about PARS led by a school administration or Grow representative, but the presentation focused on the website, not the reports. Of all the new PARS reports, teachers spent the longest amount of time reviewing Student Reports with students, anywhere from 3 to 20 minutes.

Teacher access to the PARS reports was highly variable both across and within schools. OGT performance reports reached teachers from a variety of sources. Administrators distributed copies of the School Report during summer faculty in-service to discuss the school's OGT performance. In one school, teachers received a copy of their School Report through their department chair during a department meeting or during the first all faculty in-service of the school year when departments presented subject-level goals. Teachers preparing students to retake the OGT reported seeing their school's Intervention or Retake Report for their subject area as administrators organized tutoring resources. Teacher access to the new individual Student Reports occurred largely through happenstance when students approached them for assistance, administrators asked homeroom teachers to distribute copies, or guidance counselors updated student files. Many teachers in schools with higher proportion of students retaking the OGT tried to access these reports during one-on-one tutoring by requesting copies from guidance counselors or from students. While many were able to review copies with students, all felt it was a challenge to finally get their hands on them.

Teachers offered a number of explanations for their limited access to the PARS reports. In most schools, teachers cited recent budget cuts that had reduced school capacity to photocopy materials for widespread dissemination. In two schools, budget cuts were also linked to the elimination of subject-matter departments and department chairs who typically served as administrative liaisons and curricular resources for teachers. Without departments, these teachers felt somewhat "disconnected" from their colleagues, with no clear mechanism for systematically communicating with each other about their work and their students, which included reviewing PARS reports.

I'm feeling really bad even saying this. But since we did not have a department chair person anymore, we didn't do anything about it. I don't know how much the teachers looked at it. I will tell you that I think it is an excellent thing because we never had this kind of material before. I mean we would have to wait for such a long time to get a list of names from the counselors and by then it is the end of the first nine weeks. We should have known before that so we knew when school started that we need to work on these kids. So I think this is a great thing that [intervention] list was there...but if we had a department, we would have done that and we would have said in our next meeting, "Now in case you haven't looked, these are the [students] we should be concentrating on." I do wish that we had a more comprehensive plan.

Maybe last year we got more of broken-down item analysis....But we've lost a level of our organization at the high school this year where this type of report would have normally come to a department head for the five main departments here at the school....This is the type of information that I would have seen in the past as a former department head and then translated or reproduced part of it when we held department meetings. But we don't have those any more.

No school reported common time for grade-level teams or departments to meet during the day or week. Teachers also felt severe constraints on their time which suggested that even if widely distributed, the reports would still receive a limited review. Many teachers were tutoring students for OGT, teaching two subjects or multiple grade levels in their subject area and leading extracurricular activities. Time constraints made it difficult for teachers to track down information located in another part of the organization. Explained one teacher:

Sometimes somebody would get a hold of one copy of [the printout with scores] and you have to track that person down in the midst of a busy day. And you'd get home and think, "OK, I'm going to ask for that in the morning" and your day takes off in a totally different direction.

Another explanation for teachers' limited access came from administrative decisions about how to introduce and share the reports. The all-faculty in-service that teachers referred to at the start of school offered little or no time for teachers to review the report together and discuss its implications for their work. In some cases, teachers were learning about decisions based on their report; in other cases, administration used the report primarily to celebrate the school's OGT scores.

When we got the report [administration] said, "Great job!" Our high school got a high rating and we were like, "Whoohoo!"... And then as a department we didn't talk about it and this year we don't have department meetings anymore. So we are disconnected and do not have a lot of opportunity to talk about it.

Not surprising, some teachers were critical of guidance counselors' control over Student Reports and retake information. For these teachers, the PARS Intervention and Retake Reports represented an opportunity to bypass counselors to identify students on their own so they could begin tutoring to retake the OGT earlier in the school year. Teachers felt the summer, and the weeks before the start of the school year in particular, represented an optimal planning time. "[This is] something I'd look at and become familiar with during the summer," explained one math teacher. "Once school's started, I don't have time to browse and think about it, frankly." Accessing aggregate information about the initial administration of the OGT and subsequent retakes was critical during the start of the school year.

Clarity of the PARS Reports

Although most teachers had not viewed the full set of PARS reports, the interviews and focus groups provided an opportunity to assess their clarity. Most teachers found the PARS reports easy to understand and well-organized—describing them variously as “clear cut” and “self-explanatory.” Teachers thought the new format and colorful graphs made the data more quickly meaningful compared to the traditional black-and-white Questar reports or even photocopies of the PARS reports. In reviewing the five reports during the interviews and focus groups, teachers tended to focus their comments on the School Report and the Student Report:

I do really like the color, because I think that makes it pop.

The format is really easy to follow and to be able to just get the information on one bar group for science is very, very helpful.

The school reports are good because visually they're easy to separate and read with a quick glance. I really like the color because visually you can assess and go straight to the numbers and everything.

I like the way it's broken down. I like the color-codedness. ...That is different than the reports that we get now. ... The colors make it obvious right away and the shapes too. So you can tell if somebody has those boxes, green squares, or if you are looking for the little triangle with the exclamation point—not passing. ... And you can figure it out right away. I don't recall anything like that sticking out to me on the black-and-white [Questar reports].

Many liked that the larger School Report was broken into distinct content-area sections that could be separated for additional focus. Some wanted a table of contents, given the size of the School Report and that it contained detailed information for each OGT subject test.

Teachers who closely examined the Student Report raised two issues. Some found the narrative descriptions on page 2 regarding student performance in each subject to be unclear. In one focus group, this was a lengthy topic of conversation that emerged after one teacher commented that the description of “proficient” performance on the Student Report was ambiguous, saying, “I am confused and a little deterred by the wording, ‘Science is not an area of particular strength or need.’ ... Don’t you think that’s a little bit of weird wording?” Other teachers agreed and through discussion teased out intended meaning as an effort to identify the students’ “areas of strength,” “areas that need improvement,” and “areas that need much improvement.” Teachers felt the color scheme would be more intuitive if it paralleled a traffic light: “We all know what green, yellow, and red means,” explained one teacher. Some felt the use of distinct colors rather than shades would clarify performance levels. The meaning of symbols used to signal performance levels—square, triangle, and circle—were not immediately clear to a few teachers.

Utility of the PARS Reports

Teachers’ actual use of the printed PARS reports was somewhat limited. Even so, most teachers in both interviews and focus groups were eager to share how they intended to use these resources in the near future. Overall, teachers thought the PARS reports would inform their instructional decisions, facilitate communication with students around their OGT performance, and expedite school responsiveness to support those students still working to pass the OGT. Although the ODE intended for the PARS reports to facilitate parent-teacher communication about student performance, no teacher participating in the study had actually used the report for this purpose.

Influencing Instructional Decisions

During the interviews and focus groups, without much prompting, teachers started interpreting the data available in the mock performance reports and used their observations to reflect on their practice. In only a few cases did teachers not feel the reports directly informed their work. These teachers felt distanced from the test—teaching 9th or 12th grade—or believed test-taking skills, not content, was the issue.

Teachers found the Retake and Intervention Reports helpful in identifying kids who needed help. One teacher described it as enabling teachers to “laser in on those kids.” These reports help teachers and administrators assign resources because they also listed students’ scores. One teacher shared a working decision rule: Students who are closer to the 400 pass mark, with schools in the 390s, are candidates for tutoring while those with lower scores should receive more intensive services such as an OGT preparation class during the school day.

Some teachers thought the school, intervention, and student reports could inform decisions aimed at improving student performance on the OGT, first by seeing patterns in the performance and then exploring instructional options. To do this, teachers wanted reports that broke down student performance at the benchmark level.

Some teachers used their report to examine interactions across content areas such as reading and science. Many teachers framed the OGT as first and foremost a “reading test.” One teacher talked about attending to students’ reading issues in science class through an emphasis on vocabulary and found the report helpful in this regard.

After I looked at the report I realized that we still had a lot of upperclassmen that needed to pass yet. ... And the 20 or so I mentioned are just in my [11th grade chemistry] class. So I saw it was a need. ...For me, the Science part of the OGT is as much a reading comprehension test as it is anything else. Because the students have to look at graphs and interpret them or they have to read a passage and answer questions about the interactions between the organisms or what happened genetically. I took some time this fall to look at the item analyses and I could see there were some questions that had really, really difficult vocabulary. And when I looked at the form of the test the kids took, I could see that the stumbling block was probably vocabulary. And when you look at the breakdown, some of my students are Asian and for many of them English is their second language. I've given them some handouts and pamphlets to help with the vocabulary on the OGT. But it's prompted in part by looking and seeing what group performed well on the Science and seeing that some of our Asian students with the language barrier are having some difficulty.

Low scores in Reading and Science signaled two related issues that needed to be addressed. Other curricular decisions emerged as teachers considered how well they had addresses individual benchmarks in the curriculum during the school year. The following teacher comment was typical:

Now that I am looking at [the School Report] and it is Math that is interesting. So we can see what our curriculum is possibly missing, what topics that we need to buff up in for the school. For example, Data Analysis and Probability looks like a strength. But Geometry and Spatial Sense definitely not.

In one school where departments were active, the School Report helped teachers identify an area of weakness at the benchmark level in each subject. For example, one teacher shared that math teachers thought student performance in Measurement was very low and presented “a big hurdle” to students; improving performance in this area was adopted as a schoolwide goal for the math department. Teachers in other subject areas spoke of similar goals.

Teachers tutoring students who were working to retake the OGT thought the Intervention Report and the Student Report helped them focus instruction on weak areas, particularly if time was short. Across the schools we found a number of teachers who were tutoring out of their subject area, typically English, and math teachers helping students prepare to retake the OGT in Science or Social Studies. These teachers, some of whom had not seen the Student Report until this interview, felt strongly that detailed information about each student would have greatly informed their decisions.

[In the Student Report] you can see exactly where they are having problems. So you don't need to spend a lot of—I don't want to say—“useless time” but... For Allison, I don't want to spend a lot of time on Patterns or Functions in Algebra because she already passed it. It is helpful.

[The Intervention Report] is somewhat helpful if you're crunched for time and you want to focus on what they're not proficient in. You got this student here, who's below proficient in Number Sense and Operation, and that's basic. So you could start off just really tutoring him on all the items in that section, and Geometry and Spatial Sense, same thing. Do you ignore the other ones? No, but maybe you don't focus on them as much. You should still hit them for review purpose, but the other ones, he's obviously below proficient. So I think that would help.

Of note, noncore teachers working with special education students or English language learners explained that they preferred the Student Reports because they are typically working one-on-one with students and, therefore, tend to think in terms of individualized instruction.

I think the individual report is better than the school one because of my subject. If I were a math teacher, I would probably want to see the school one as well. Here I'm in special education and there is nothing on the front page that helps us. I'm just more interested in the individual.

I thought it was nice to be able to go over the report with students, especially the ones that I was tutoring who were seniors. It was nice to see, point out what areas were strengths for them and kind of made them feel a little bit less helpless to know that they were making success in some areas. Because I was tutoring these students, I was the one to distribute the reports to them here at the school. I had a chance to see them first and kind of look over them and then go through it with the students and say, "OK, let's take a look." How much they used it personally after that? Who knows. I think it was nice to point out some of their strengths and then say, "OK, look, there's only one area you need to target, or a handful of areas."... If I had a small group that day, we hit those topics. On other days with larger groups, we hit practice tests, and would just highlight those problems.

As these noncore teachers scanned the school report, they emphasized the importance of seeing how their specific student population performed as a group. Upon first scanning the School Report, most noncore teachers missed the page dedicated to exactly that type of disaggregation.

Facilitating Teacher-Student Communication

Teachers were particularly positive about the customized Student Reports and immediately spoke of how these reports could tailor their instructional guidance as students prepared to retake the OGT. In a few cases, teachers had actually used the reports in that manner. Teachers thought the color facilitated their conversations with students by providing a clear and common framework for exploring patterns in their OGT performance. One teacher described how he used the report when a group of students approached him for advice.

A bunch of kids came to me as a math teacher asking, "Oh, tell me why it looks like my section is green and it's wrong. I got four green sections and one yellow." It's a good jumping off point for those kids who don't pass. It's a good report for the fact that it tells them what they're missing and where the students need to [work]. This is a lot nicer than what we usually get because this is helpful. It's more colorful and it breaks it down by topics. What we used to get was just the black-and-white copy with just the little bit, "You got a 5 instead of 10." I know it is a simplistic thing—but when you're talking to a student who is beside themselves going, "Why didn't I pass? What am I going to do?" you can sit down with them and go, "Don't not work on everything else but here you can tell because of this color, you should be looking at this section." So that was really effective when I was talking students of where they needed to put their focus. So we did use that part of the report. That was a nice segue. ... That student I talked to for 20 minutes. We got into where did you go wrong? Where are the sections? And with Math it was always Measurement. And that is where this report is very helpful.

Teachers also felt the addition of color to the report helped signal important information to students and would potentially hold their attention.

V. Teachers' Perspectives on PARS

Noncore teachers, namely those teaching foreign language or special student populations, reported that the Student Reports helped them offer specific advice to students who approached them for help with OGT subjects, such as Math or Social Studies. It is not too surprising that students approached teachers they felt comfortable with and with whom they had a personal connection. Because of the content and graphical presentation of OGT performance available in the PARS Student Reports, these teachers felt comfortable offering students some general guidance before redirecting them to their math or social studies teacher, for example. As one noncore teacher explained,

This is useful when I am sitting down with a kid and they are coming in and asking "Why didn't I pass?" and I say, "All right, why didn't you pass?" And we can sit down with them as an individual. I think it is good sometimes for our kids to get it physically in their hands so they can write on it and stuff like that. And I think it is very helpful for each subject; they know what they did and they know what they need to work on. When they come in and they have it in their hands I know exactly how to read it. "Students do this. This is weak." They get it.

We also heard from teachers that some students approached them with specific requests for help based on their individual reports. Again, teachers saw the Student Reports as a positive resource that could guide students' attention and effort as they prepared to retake the OGT.

[The student report] is really effective for our student and some of our better students still have these as reminders—for those nine or ten kids this is a motivating factor for them. There are kids walking around this building who will pull this out and say, "We're down to crunch time, I need this one." And then as a teacher it allows you to focus in. So this is real nice report to have for a student.

Teachers who had access to the Student Reports also used them to guide their instructional decisions. For teachers who were tutoring students to retake the OGT, it guided their choice of topics. Also, many teachers used the report as a foundation for encouraging students to take charge of their preparation. For example, one social studies teacher used the individual Student Reports to create customized study packets for each student with targeted questions and testing tips by benchmark so they could study on their own. Each packet contained the following guidance: "Here's your student report. Here's what you need to work on. It's up to you." Other teachers used the report as the centerpiece of a conversation that aimed to guide students' preparation but also boost their confidence and sense of optimism as they prepared for the retake.

I thought this was great. I got a copy from the principal. I called the kids in one by one and talked with them. I said, "Look how close you were. You still have to take it. They are making you take it. So let's do it and get it over with." And then

we could look at these benchmark topics. We talked about writing process, applications, conventions, and so on. And I gave examples of those kinds of things. The report showed he was doing fine on the writing process. You know, I really enjoyed talking to those kids about it. We did a few practice multiple-choice questions and sample essays that reflected the areas they needed to work on. We had one interview at the beginning and got together for 40 minutes again. A couple of kids came in a couple of other times. But most of the time it was just one meeting. They were very close to passing.

Some teachers worked to provide personalized support to their students and customize their tutoring assignments to students' learning needs.

Expediting School Responsiveness

Teachers thought the Intervention Report could quickly raise teacher awareness of those students who still needed help preparing for the OGT. Some teachers reported delays in obtaining lists of students from guidance counselors or administrators until late in the school year. These teachers felt their immediate access to such a list could help expedite the process of identifying students and allocating tutoring resources. One social studies teacher explained the numerous advantages of these reports:

Instead of having to email a counselor or get on the phone and talk to the administrator, you have information at your fingertips. So you gain some efficiency there, I would say. It would free up administrators to do things that they need to do instead of hunting down teachers and telling them about a student.

In the same way, others thought guidance counselors would also benefit from the report because they were positioned to enroll students in specialized courses and involve teachers. Connecting guidance counselors and the PARS reports seemed particularly important in schools where a small percentage of students needed to retake the OGT and could potentially be overlooked.

Focusing Attention/Raising Awareness

All too often the energy and resources focused on preparing students to take a high-stakes assessment can dissipate after its first administration. Particularly at the secondary school level, followup can be minimal because students are expected increasingly to take responsibility for their learning. Not surprising then, while the School and Student Reports were familiar versions to teachers, the notion of an Intervention or Retake Report that identified students who failed the OGT was somewhat new. During our site visits, we observed teachers and administrators actively tracking down seniors who still needed to pass the OGT. This last-minute scramble was particularly prominent in schools where most students typically passed the OGT in 10th grade; such high-performing schools typically have weak organizational and professional routines in place to track at-risk students. One teacher's response to the availability and uses of the Retake Report suggested that such ready-made performance reports could raise awareness and focus attention on students at risk of failing the OGT.

The guidance counselor came down and told me the seniors passed. When I saw them, I congratulated them. And I didn't even think to go to see how the juniors did. This is not ingrained in me yet. So I didn't even think about looking it up. Maybe November or close to the New Year, I said, "How did the juniors do?" And the administrator brought me this [Intervention Report]. I looked at it and I said, "OK." I don't even know where it is now. The administrator recently e-mailed me and I got the idea that maybe he had been expecting me to continue with this tutoring. I thought I was just doing it in the fall. Maybe he's been thinking I've been working with these kids all this time. So you see we are very disjointed on this....We are an effective school district...so I think when they look at that they say, "Well, the high school is doing OK," and they just kind of go on, go ahead, and forget about this group.

The notion of tracking students until they pass or assisting them until they pass is perhaps somewhat countercultural in schools where student failure is typically low or nonexistent, at least when measured by course grades. The availability of ready-made reports, such as the Retake and Intervention Reports, called attention to this need and had the potential to promote action at both administrator and teacher levels.

Accessing the PARS Website

Most teachers had visited the PARS Website during the 2006–07 school year. However, teachers' use varied in terms of how deeply they explored its three main sections—and the multiple features within each section—and how much time they spent on the website overall. It is not surprising that teachers focused on different aspects of the website based on their interests and needs. Most teachers visited the Student Roster and Item Analysis under the first section called Data Analysis Tools, and reviewed the benchmarks, lessons, and outside websites under the second section called Teaching Tools. The third section of the website focused on Professional Tools was visited briefly by only a few teachers. Teachers typically visited only one or two sections of the PARS Website. Only a handful viewed all three areas. Teachers' total time spent on the website ranged from 5 minutes to a couple of hours. About half the teachers reported visiting the website multiple times.

The decision about how best to introduce the new PARS websites to teachers was left to districts and schools. In our fieldwork sample, almost all teachers first heard of the website through school administrators and typically during a formal training on PARS. These trainings varied significantly in timing (summer, fall), venue (faculty meeting or training session), format (presentation/computer-based exploration), and duration (5 to 90 minutes). Two schools used existing staff meetings to introduce faculty to PARS. Administrators provided upbeat PowerPoint presentations that were part a larger set of agenda items. One school offered a 5-minute overview in October and another school provided a 20-minute presentation before the start of school. A third school offered teachers an opportunity to attend one of two 40-minute PARS introductory sessions held during a school staff development day in the fall. A high number of teachers from different grade levels and departments chose to attend the sessions, which were led by an administrator

in the school's computer lab. In another school, administrators asked department chairs to attend a 90-minute regional training conducted by Grow staff in a neighboring district. This session also took place in a computer lab and provided teachers an opportunity to explore the website.

For two schools, these trainings represented the only opportunity to explore the website in depth. All trainings emphasized the Web resources, not the new reports, available through PARS, particularly the section on Data Analysis Tools. Administrators were positive about these resources and reportedly encouraged teachers to use them. Beyond the training, however, these resources were not emphasized again during the school year. Explained one teacher, "There was not a big push to implement this. We got, 'Here it is. Look at it when you have a chance. Play around.'"

Teachers cited a number of challenges to their capacity to access and fully utilize the PARS Web-based resources. First, many teachers felt their introduction to PARS was insufficient. Teachers wanted an opportunity to explore the Web resources while using a computer and they wanted to do so with their subject peers and under the guidance of someone familiar with the website and knowledgeable about how it might facilitate their work. In most cases, teachers were left on their own to log in and work through the website after their introduction. The following comments expressed the disappointment we heard from teachers over their limited introduction to PARS.

Honestly you have to give teachers time. You can't say, "Oh here, this is a really great tool. Now, let's add it to the stuff you already do," without providing you the opportunity to learn it. I think that is probably what you are going to hear from other science teachers because we talked about it. It's really good stuff.

It takes time and when you learn something new and you go "Wow! I am going back there!" For me, it didn't happen. We need time. We need an in-service day where we can work on stuff and not sit around and theorize.

Of note, when talking about their use of PARS, teachers did not mention the typical issues associated with the rollout of a Web-based program, such as computer access or quality or Internet connections.

Teachers who received the least intensive training—only a short presentation after school—reported lower levels of use and overall confusion over the form and function of PARS. This was particularly prominent during one focus-group conversation that was dominated by clarification questions about the purpose of PARS and expectations of use. Even in the one school that provided the most intensive and inclusive training—one conducted in computer lab for 40 minutes—teachers felt the session was too short. It sparked teachers' curiosity, but did not provide enough time to explore particular interests. Teachers provided descriptions of their experiences:

We just got into [the website] and kind of figured out how to get around in it. And by then it was time to get up and go. I didn't feel confident. If there was a group of us working together for an hour or so for those of us that have kids that have to pass the OGT, I think this would be helpful to be able to sit together.

A lot of us were trying to use the roster. When our meeting let out, we were still working on that. So a lot of people thought that was a pretty neat feature.

Teachers wanted a session that enabled them to pursue individual goals, as well as working with subject peers or others tutoring students.

Second, teacher access was delayed by issues related to the distribution and functionality of passwords for the website. Teachers in many schools reported a time lag between when they were introduced to PARS and when they first received a password to access the website. They also felt they had to hunt down administrators to get a password. And because administration managed the passwords, not a fellow teacher or department chair, a few teachers felt too self-conscious to request a replacement password. As one teacher explained, "You don't want to really let your principal know you can't find your password!" Other issues emerged around the temperamental functionality of passwords; some didn't work or didn't work all the time.

The password thing is tricky. We were given passwords and, like, one day my password will work and then the next day it wouldn't work. I got a new password and it worked beautifully and about a month ago I went through all this stuff but then this morning it didn't work. Maybe we have passwords that are just limited for some reason. I don't know.

As noted, teachers found this frustrating as their time to work on OGT preparation was limited; one teacher did not attempt to access the website again.

Third, teachers thought their first introduction to the PARS resources was too late in the school year. Teachers felt that course-level and department-level planning were already completed before school started. And teachers were generally skeptical that major planning could take place during the school year. From teachers' perspectives, because PARS arrived after their preparation for the school year, it was best viewed as a supplementary resource for individual teacher's use, characterized by one teacher as "a bell and whistle—information if you need it."

Teachers also wanted earlier access to the OGT data, specifically before the school year started, in order to prepare students for the October retake. The issue of timing also arose in terms of updates to the website with student performance on the OGT retakes. A few teachers reported that the website took longer to include this information compared to paper printouts available in the school. This frustrated teachers who first thought to use PARS to examine student performance.

I would like to use the roster a bit more. I was a little bit frustrated when I tried to get online and see the results and they were not available immediately. We had started preparing for the March OGT retake. So I was assigned many second tutoring groups. So I hopped online and tried to look but the results were not available.

For one teacher this limitation was a complete turnoff: "Once I saw there was nothing on the March [retake] results I never went back on there again. This became of no use to me." Teachers attributed the lateness to the developers. However, problems might also have resulted from misunderstandings about how to use the drop-down menu on the website, since each retake is a separate database that must be manually selected for display. While this single response was extreme and isolated, it does illustrate the time constraints and urgency that teachers are operating under when they do visit the website. This urgency was particularly pronounced in some schools around helping seniors pass the OGT in some schools. Within this fieldwork sample, the one school in which teachers received only a brief presentation and one later in the school year also reported the lowest level of use and interest in PARS. This is also a school that was already focused on learning a new district-sponsored data analysis tool, somewhat similar to PARS. Teachers in this school had received fairly intensive training on this alternative Web-based resource and they often compared it to PARS.

Teachers also believed their use of PARS would have been enhanced with some additional followup to the brief introduction or trainings they had received earlier in the school year. Many teachers admitted to simply forgetting about PARS once the school year was underway and realized that as the school year progressed and brought new tutoring assignments and the preparation for the OGT was underway, the PARS website was increasingly useful. For this reason, teachers wanted a resource person in their school building who could help them reconnect to PARS and answer questions about the website.

When I got to the place where I got confused about how do I find out about these kids, some supervised poking-around time is what we need. Because I can get to a place and then I need help and then I don't know where to go for help and then I just kind of stop. Just some time to explore and figure out what part of this is going to work for me.

Teachers also felt they needed help remembering these resources. Other teachers suggested administrators might send soft reminders to faculty about the availability of the website's Data Analysis Tools or Teaching Tools via email or by placing flyers in their school mailboxes. Some thought a quick "refresher" course later in the school year would also jumpstart teacher use. Explained one teacher, "[We need] an opportunity to go to a session during the year just to be able to brush up on it and be thinking about it."

Teachers shared these insights with the goal of improving their access to the PARS website. In fact, many teachers expressed regret at not utilizing this resource more fully during

the school year. To this end, our focus groups and interviews became a venue for teachers to learn from CPRE and from each other about the different PARS website features. Teachers frequently asked questions of one another during the conversation to probe the utility of different sections of website and to learn from a colleague who had spent more time using some features, such as the student roster. In one focus group, teachers used their final minutes together to design an ideal training for staff and mapped out a strategy for convincing the principal to dedicate a professional development on PARS for all teachers. A number of teachers voiced personal pledges to use this resource. "Well, next year I will find time," said one.

Clarity of the PARS Website

Overall, most teachers found the PARS website fairly easy to understand and navigate. When asked if there was anything confusing or unclear about the different sections, most teachers shared positive comments, describing it as "well laid out," "straight forward," and "pretty clear cut." As one teacher shared,

I think it is easy to navigate once you are in the website. I think it's useful. If you are willing to put forth the time as an individual, as a teacher...I think you can learn as much as you want to. I mean you can look at it as broad as you want...I was able to flow through it nicely and I understood where I could go to get something. On the second page, it says click here—get it, and you have a lesson right there ready for you.

Of course, these comments refer only the first two sections of the website, specifically the Data Analysis Tools and Teaching Tools, which most teachers visited and emphasized during our conversation.

Teachers made positive references to the many types of resources available through the website, which were characterized by a few as "deep" and "a lot of information." Many admired the interconnectivity of the website, how it pulled together different elements of a standards-based system—linking student performance to state benchmarks to test items to lesson plans—all in a single website. Teachers often commented on different features such as:

This is nice to see the different content standards and how many, what percent of students did below, proficient, and above. This is really helpful. It kind of splits it all apart, everything you need to know kind of basis. It gives you averages. I think it's great. I just want to say it is really easy to read and look at.

Everything on the left is connected. If you clicked on Earth and Space it pulled up the benchmarks, click the benchmarks and it pulls up the lesson plan. I mean it doesn't get any easier.

As these comments suggest, fully utilizing some of the website features required multiple steps, either clicking on related elements or several actions, as was the case in building a customized Student Roster in the first section. The Student Roster feature proved complicated for a handful of teachers, and their frustration seemed amplified by the fact that they could find no one to help them complete the task or “puzzle through” the problem in their respective schools, as one teacher characterized the experience. The few teachers who struggled with this section had either not received any training or described themselves as “computer illiterate.”

Those teachers who took time to create a student roster on-line had to be highly motivated to complete the task as it required multiple steps and was considered an awkward procedure. One teacher commented, “It’s a little hard to muddle through.” And depending on the size of the student group that teachers were building, the task could be more or less involved. Here, one teacher retells her experience using the roster feature.

While I was trying to make the [custom groups] list, there was some difficulty. You check the students and then you have to add them and then going back and forth between pages. Sometimes you would lose your data. It was definitely workable, but it took a couple of tries to get it to make sure to store what I wanted. But I did think it was neat from that respect, to make comparisons.

Those who used the feature found it somewhat cumbersome and time consuming. “It could have just been a little simpler,” commented one teacher. “For my purposes I needed something fast.” While many teachers were eager to explore patterns in their students’ performance, they often reported “crunch times” during the school year when the casual exploration of student performance patterns was not possible; during these times, teacher turned to PARS with a focused expediency to meet a student’s needs. When under pressure, teachers wanted a quick ready-made interpretation available on the website, particularly in the form of an individual Student Report.

Teachers seemed unclear about the availability of individual student item responses. Many wanted to access this information and tried to locate it on the website. Also teachers who were tutoring students during the year were eager to access OGT retake results as soon as possible. Our interviews and focus groups revealed much confusion among teachers about when the results from the OGT retake would be available to schools and then, more importantly, on the website. From the teacher’s perspective, the website did not include a feature for notifying users when OGT performance data was updated and available for analysis.

Finally, teachers were unclear of the purpose and potential value of the Professional Development Tools section of the website. This response was common across all schools. Teachers who glanced at its contents quickly returned to the Data Analysis Tools and Teaching Tools sections, which they described as more immediately relevant. No particular feature of the Professional Development Tools—neither the tutorials nor the collaboration guidance—caught their attention. A number of teachers found the layout of the section inhibiting—what one teacher characterized as a “turnoff.” Teacher comments included the following:

It does seem kind of wordy and a little more difficult. I just look at it here and see a bunch of text and I kind of lose my interest. I think graphics, I think the layout. Gosh, it's awfully wordy right there. I think maybe examples about how it's worked in classrooms before or difficult ideas would help. It seems almost overtaxing, like I don't really know...this is where you go?

It's a little overbearing. It just looks like a lot. I'm looking at these words and I'm like, "Who has time to do all this?"

Just by looking at it, it looks long and wordy and involved.

Teachers also found the purpose of the Professional Development Tools section difficult to discern. The interactivity of the Data Analysis Tools and Teaching Tools stood in sharp contrast to the flatness of this section, which contained PDFs and slideshow overview of the website. As teachers were glancing over the printed handouts during the interview, they struggled to make sense of its purpose and posed a number of questions to us, including why it would be available to teachers and even Web-based. One teacher's continuous questioning of the website printout illustrates this general confusion.

[The website is] like as an interactive thing? Or like a blogging or posting of ideas? Or just like these are some tips? What do you do here? ... This might be beneficial more to an administrator who was presenting it and so it might be OK for that, but just as a teacher logging on?

Since this was Web-based, some teachers expected the site to actually facilitate teacher conversations, perhaps through listservs or blogs, not just provide paper-based protocols for use in face-to-face meetings at the school. This confusion underscored what they perceived as a mismatch between form and function in this section of the website. It should be noted that during the interview, we offered brief descriptions of the section in response to teachers' questions and initial impressions. While this information did not change teacher views regarding the clarity of the website, it did reveal their general support for the idea of teacher collaboration. In the next section we will come back to the utility teachers perceived in this part of the website.

Utility of the PARS Website

Teachers saw a variety of uses for the PARS website and generally shared a positive view on this aspect of PARS. About half of participating teachers had an opportunity to actually use the website. Almost all teachers thought the website was valuable to their work and more than half highly endorsed many of its key features. Teachers thought the website helped them look for performance patterns at a class or school level and make instructional decisions that aimed to enhance student performance on the OGT. However, the website was not viewed as a resource for facilitating teacher collaboration around the use of data as originally intended by both ODE and Grow. We discuss each of these uses below.

Exploring Performance Patterns

Overall, teachers were generally interested and even intrigued with the Data Analysis Tool. Specifically, a majority of teachers were highly interested in the Data Analysis Tools as a mechanism for exploring performance patterns across different groups of students. Teachers understood how the Web-based Data Analysis Tools were designed to complement the PARS performance reports. Many teachers were excited about the possibility of building their own rosters, although only about half of those participating in the study had a chance to use the feature by the time of our school visit. Overall, teachers found the Data Analysis Tools to be the most innovative feature of the PARS website, and valued its capacity to help them examine the performance of students they were individually responsible for, as one teacher explained, “the students I can control.”

Teachers used the Data Analysis Tools section in many different ways and this diversity appeared driven by the specific questions, needs, or hypotheses that individual teachers brought to the PARS website. At many levels, the website tapped teacher curiosity about how different student subgroups performed on the OGT, which proved a motivation to use the tools to create customized rosters to explore those possibilities. “I was playing around with [the student roster feature] the other day, with the ethnic groups,” shared one teacher. “I was just kind of curious.” Indeed, the website is somewhat unconventional in its goal to provide teachers the capacity to manipulate student data on demand, to explore personal hunches drawn from their classroom experiences. Typically student data reach schools in a form that is difficult to access, analyze, and share. Moreover, the examination of student performance is often a task controlled by administration, and one typically framed by the pursuit of accountability, not exploration. Teachers were highly interested in the possibilities presented by this section of the PARS website.

Most teachers focused on 10th grade student performance data from the May 2007 administration of the OGT. Teachers who saw value in this tool were teaching different grade levels and different subjects. Some teachers had very specific student subgroups and relationships they wanted to examine using the website data, while others were interested in using the tool's different sorting features to explore difference across student groups. The following teacher comments reflect some of these lines of analyses:

I really like the Student Roster to manipulate the list of students who took the OGT so I can see who is having trouble....You can arrange the roster however you choose. You can put all the kids either in alphabetical order or you can put from the highest to lowest by scores, from accelerated to limited.

I did try to make my own custom groups. One was based on curiosity. I wanted to see how my students who enrolled in the algebra class that I taught last year, or the previous year, fared on the OGT compared to some of my students that were placed in our Algebra I part 1 class....I did think it was neat to make comparisons. The data based on students that I had in previous years. I do teach freshmen, and I am tracking them along down the road. I did like the feature of

being able to build the roster. And I did that with my tutor students too, which was a much smaller group.

I liked how on this page you can sort and filter students. That's great. I did female to male because I'm always concerned with that. Just interesting results with that... to see that females test higher than males in Math and that is surprising because of the norm. I don't know what I would do with it. But it's interesting to see.

As these teacher comments suggest, teacher exploration of student performance patterns was highly varied. Through the website they looked for patterns across different courses by level, e.g., advanced or on-grade English, or by student course enrollment at different grade levels, e.g., 9th grade Environmental Science versus 10th grade Biology classes. A few 10th grade teachers thought the student roster feature could help them understand their personal impact on the school's performance; these teachers created multiple groups in order to compare their students to other classes. For a number of teachers and those responsible for special-needs students, exploring performance differences by student characteristics such as gender, ethnicity, special education, and language learning status was a high priority. Those teachers who had not had a chance to use the tools shared similar strategies they hoped to use, either shortly after the interview or in preparation for the next school year.

Teachers also valued using the PARS website to access the OGT retake results and used their access to these data in a number of ways. A few teachers assigned to work with seniors who had failed numerous OGT retakes thought the website a quick mechanism for determining the standards and concepts students were having problems with. These teachers shared a particularly high level of urgency in identifying their students' needs; in most instances, teachers were able to find what they needed on-line. A particularly thoughtful example came from one teacher who used the retake data as a resource for identifying the common persistent problems students were having in math.

I was playing around on the website, the results section. There was a drop-down box where you could go to the March 2006 OGTs or you could go to the October retake and there were more dates. So I went to all the retakes. And it gives you a list of students who retook it. That's really helpful because then you can go to these retakes and see what they are continually having trouble with, see if they are getting better at anything. I really liked that option. ... This is what I'm most interested in—the Student Roster. And I can go through and see exactly what they are having trouble with.

Again, this comment reflects possibilities teachers saw in these data. While some were motivated by immediate tasks, such as tutoring obligations, many were turning to the website to explore differences they noticed while teaching a particular course or, perhaps, over the years.

Teachers were particularly eager to examine student responses to individual test items administered in the May 2007 OGT. This feature of the website organized each test question by benchmark and provided the percent of students in a given school who selected each answer choice. With the correct answer highlighted, teachers could compare and contrast the distribution of student responses across the 10th grade cohort. Although teachers did not have an opportunity to fully use this feature, many shared future strategies. One example comes from a particularly excited teacher:

For me individually, I'm definitely interested in being able to get where I can see how we're doing—question by question. I teach freshmen, so I don't necessarily need individual kid information. But to be able to look at this and say, "OK, most of our kids answered this question wrong and this is the answer they got, there was obviously a misunderstanding." We can look at that and we see how we present it to the freshmen next year.

Access to the test item responses was very important for teachers we interviewed. It helped them identify important concepts and procedures that students were struggling to understand. And it offered teachers direct guidance for preparing students for the OGT, which they highly valued. A number of teachers, however, also added that access to individual student responses to each test question would better inform their instruction when advising individual students. The following teacher comment illustrates the value teachers placed on this level of data access:

If I just see a little arrow going up, that doesn't tell me that they're really struggling with geology or something of that nature. I need really specific, specific things. We talk about custom-tailoring our instruction to the individual student. Why wouldn't we want to custom-tailor our OGT prep as far as seeing what students did before, what they're not getting right, at the individual student level? It's the individual question, that's where I want to be. That's what I want to see. I don't want to see just Earth and Space Science. Wow, that's great. I guess I'll hammer that home with them. But if a student comes up to you and says, "I need to pass this test, what can I do next week?" Jeez, I don't know. "Work on Earth and Space Science." They're going to say, "Oh, I don't know where to start with that." And I will tell them, "I don't know where you start with that either." I mean, that's a tough thing to do in that amount of time.

Most teachers understood the technical and financial constraints on the ODE to release additional test items each year. Even so, teachers were eager to access individual student responses for each test item to diagnose student's strengths and weaknesses. Some teachers used available OGT Practice Tests for this purpose. No teacher had access to a set of ready-made formative assessments to gauge student knowledge at an individual benchmark level. For teachers, the OGT test items were the best and, perhaps, only option for diagnosing student needs.

Most teachers felt the website was a useful resource they could return to at different points in the school year as their interests evolved or new duties or assignments required specific information about student performance. Some teachers reported visiting the website multiple times, each time returning with a different question to explore. One teacher described different uses of the website, which reflected a search for more specific performance patterns.

When I was doing the tutoring program, we did it once in the fall and once in the spring prior to the OGT. And the first time that I logged on [to PARS], it was probably just to get an overall sense of which kids had failed which parts. I was doing the intensive reading and writing part, but they were combined so I had just a mixture of kids some failed one and some failed the other. So I was trying to get a feel for that...So I guess the first time maybe 15-20 minutes just to get an overall view, print, and then held onto those. The second time would have been midway through the year after I got a better feel for where the kids might have been struggling. Maybe an hour each time. So total, we're looking at 2½–3 hours total this year on this...I had mostly ESL students. So just trying to get a general sense, is it mostly vocabulary or is it mostly literary devices that I need to be spending time on.

Teachers' return visits appeared driven by a new set of performance questions or new task assignments, typically tutoring. In one focus group, teachers talked positively about the longevity of the PARS website as a resource they could continue to mine on an annual basis. The following comment comes from a teacher who spent considerable time on the PARS website and used a number of its features:

I don't think it is something that would probably get older either because it is like looking through your grade book....It will change every year. ... And looking through your grade book—it's how to assess yourself. It is almost like instead of an administrator telling you what to change, in sitting down you can look at this and you can identify what needs to change. Sometimes you might not find a pattern. This year I found one, but in other years maybe not. This year I did see some things I needed to change.

Teachers also commented on the capacity of the Data Analysis Tools to help them more quickly and easily examine student performance compared to existing resources at their schools. They thought the Item Analysis feature would free them from the tedious and time-consuming task of manually calculating student performance and creating student groups, which was the standard practice in the schools we visited. When teachers were asked what they thought the school might lose if PARS were not available the following school year, a number of teachers pointed to this capacity to view disaggregated data through the website and, to some extent, the paper reports. The following teacher comments illustrate this view:

Well, it would be more work [if we didn't have access to the website next year] because it would take you longer to analyze. So teachers would lose time that they don't have to begin with. The website is more thorough. There's more information on the website and with the colorful reports, especially going back to that benchmark question correlation. I think that's a really powerful tool. And to have to go back and do the math [percentages] for that as we have done in the past, I don't think teachers would want to do that...In fact, maybe three years ago when the OGT first came on we did this all by hand with the original stuff that comes back, the black-and-white print copy. Our curriculum supervisor sat down question by question and did all of that.

Well, none of it was online so basically what you would do is take that old report that came from the state and it got to the principal's office and then you try to get your hands on one. And you literally had to go through and highlight each kid that you were either going to have, or you had in the past, or whatever kids you were looking for and go through. And I would kind of play this whole checkmark game. I know it sounds crazy. So this website would probably be a lot easier, to be able to do it online.

It should be noted that a handful of teachers did not find the PARS website a useful resource for identifying student performance patterns. These limitations, however, were perceived as limitations of the OGT test and performance data, not particular aspects of the website. For example, teachers felt students could improve their performance purely through test taking strategies, which were not included in PARS. Others believed that because the topics covered by the OGT were so broad, feedback from student performance was unreliable and not appropriate for diagnosing individual students and making curricular adjustments. A few teachers believed they already understood which concepts and procedures their students understood well or needed additional instruction in; from their perspective, secondary analysis of OGT data would not improve upon what they already knew from first-hand experience.

Informing Instructional Decisions

Teachers talked about how insights gained from the Data Analysis Tools and Teaching Tools of the PARS website informed their instructional decisions in how they prepare students for the OGT. Teachers followed a number of different routes or pathways through the PARS website as they explored different features and considered the implications for their classroom practice. In some cases these paths were short as when teacher identified topics that needed emphasis when using the website's item analysis. In other cases, teacher paths were more complex as when teachers explored a number of interrelated features on the PARS website, moving from item analysis to specific benchmarks to a review of suggested teaching strategies. Some of the reported paths leading towards changes in instruction included

- from OGT Item Analysis to Benchmarks to Teaching Strategies
- from OGT Student Roster to Benchmarks to Teaching Strategies
- from PARS Reports to Teaching Strategies

- from Benchmarks
- from Benchmarks to Teaching Strategies
- from Teaching Strategies
- from Data Analysis Tools
- from OGT Student Roster
- from OGT Item Analysis

Of course, this list is not exhaustive. It aims to illustrate that teachers reflected on their practice through the many different features of the website. Of note, no one path was dominant in our conversations, although the Web-based Teaching Strategies were associated with a number of new ideas teachers shared about how they intended to improve their practice.

A number of teachers used new insights gained from OGT performance data to make instructional plans about course curricula and approaches to tutoring students preparing to retake the OGT. Teachers thought the PARS website could improve their tutoring decisions. Teachers shared how they made decisions about which topics to focus on and how much time to devote to each topic based on what they learned from a review of OGT data. The following teacher's comment illustrates this use:

If we can break it down into content area, whether they're proficient or not, it would help if we're going to spend time on tutoring. Because we only have I think it was eight weeks. This gives me a good focus here—they need to work on Measurement and Probability. Anything helps us narrow it down because we don't have time to teach everything or to tutor everything. In that time, we're trying to really pinpoint the areas of trouble.

Another teacher believed identifying students' areas of strength and weakness through the Data Analysis Tool could bring a more systematic and rigorous approach to the school's tutoring program.

To be honest, I don't think our tutoring curriculum was scientific in its approach. I don't think it really tutored the parts where the students had misconceptions in science...because all tutoring for this test is catch-up on things they should have learned in the 6th, 7th, 8th, 9th, and 10th grade. And by the time I get them in 11th and 12th grade it seems like a lot of times I don't know where to catch up. I don't know which parts they didn't get. And I think this website could be a little bit more useful here...I mean that seems like a bit more of a scientific approach to figuring this out as opposed to just guessing what's going to be on the test and maybe you are wasting time.

The more "scientific approach" offered from PARS stemmed from a tighter match between the problems students have with a particular benchmark, as identified through OGT performance, and the focus of tutoring. Teachers in another school felt their use of the

PARS website would have provided a more fine-tuned approach to the district's tutoring strategy, which included a single book for tutors to simply work straight through. The following teacher comment represents a number of views shared in that school:

Now this would have been perfect for [our tutoring] program. I could have sat down and studied, figured out pretty much, what the majority of the incorrect responses were and then planned a curriculum more towards that as opposed to what was provided to the OGT tutors by the department and district which was a curriculum guide.

A few teachers talked about differentiating their instruction by creating smaller groups of students who needed help on a common benchmark. Here is one teacher's use of the PARS website:

Question: Did you make any plans after you looked through this part of the website?

Teacher: Again, I was able to look when I pulled up my student roster to see what areas were strengths and what weaknesses, and I pinpointed those, let the students know. And like I said, when we had small-group tutoring, one or two students were able to focus on those areas. And being a math teacher, I had a lot of math materials available that were already broken down by strand, so we really could hit those topics hard...you can give them that one-on-one attention.

Another teacher involving in OGT tutoring did not use PARS to guide grouping strategies during the past year; however, she described how she might use PARS in the coming year and how it would make a difference. Her comment below illustrates this intention:

If I did OGT tutoring next year, [the website] would probably help me more in planning and preparing what each person needed. And I think if you knew they were weak in Earth and Space, you could group a couple of students together to work on something. And if it was Life Science, you could group those kids and you'd have a better idea...I think for my students in the class that I have when I look at this, I'll focus around the things that they need to look at. I'll just be able to say, "Hey, you're weak in this. Look at chapter in this OGT book." And if I can find some supplemental thing, I think that is probably how I'd use it.

Other teachers responsible for 10th grade OGT subjects made connections between the Data Analysis Tools and needed changes to their course curricula. For example, teachers talked about plans to alter the time spent on topics in their course.

Question: Can you tell me any plans or decision you made after you looked at this section of the website?

Teacher: Actually, I can. When I was going through I saw that Measurement in Geometry and Spatial were what especially students did the worst in. So we already went through this section in my integrative classes. But next year when they go through them I'm going to take a little bit more time with it. Because past OGT results have shown me that this was the most confusing for students or the section that they did the worst in. So I'll take more time.

Teacher: I went on it—the website—for a total of 3 times. The first time I spent 10 minutes. The second time maybe an hour after school one day. And a third time for a little bit and I just made up my roster with the kids who took it last year—looking at who passed it then. Looking at more at-risk kids and looked at which questions they did not get right and I went right to looking at the standards and trying to see how I could change some of these lessons based on that. I found a correlation with some of my lessons. Some of things I don't spend as much time on with those kids—I could see it there, but that is all I spent on it.

Teachers also talked about their instruction after reviewing the Teaching Tools section of the website. About half the teachers interviewed had actually explored this section of PARS and made some decisions about how they intended to use some aspects of the website to modify their instruction for the following school year. No teacher had actually implemented these plans. Upon review and conversation with their peers during focus groups, most teachers thought the website would be highly valuable to them in the near future. They liked that it offered teaching strategies aligned with the Ohio Standards and connected to the OGT. Again, teachers understood how the Teaching Tools were designed to complement the PARS performance reports and OGT Results Data Analysis Tools, by providing resources to help students improve their performance on the OGT. “The school report gave me the big message,” explained one experienced science teacher. “And then the website is where I found stuff.” A number of veteran teachers characterized it as a “must-have” for new teachers. And in our interviews, beginning teachers agreed; upon receiving a snapshot of the Teaching Tools screen shot during an interview, a first-year math teacher quickly commented,

This is where I got all of my ideas from...I think it's great that they say, not only, “Here's how your students did,” but also “Here's what you can do to help them.” I think that is really a good idea.

Overall, most teachers were highly positive about this new resource, with many sharing strong intentions to make time to fully review its contents as they planned for the coming school year.

A number of teachers emphasized the importance of having access to the Ohio Benchmarks through the PARS website as they explore student performance patterns and made instructional decisions about how to address student needs. The availability of

Ohio Benchmarks on the PARS website proved useful to new teachers and those tutoring students in a subject area different from their certification area. Due to the lower pass rates on the Social Studies and science OGT, we encountered a number of English and math teachers tutoring for the OGT retake. For these teachers, the PARS was a useful resource for support their out-of-subject tutoring responsibilities.

I did actually look to this for help with science because I am certified in math. Still a lot of things I was seeing would break down as, for example, this is Life Science but I don't remember exactly what all that meant. So I was able to go online there to the Benchmarks and see exactly what it was that they were talking about.

It would be nice if I had these because I wouldn't just be able to pull Social Studies off the top of my head.

I am looking at [Teaching Tools] now, and I would have probably used them when I was tutoring the student that I had for Science. I was lost in the Science area. I felt that being a college graduate, one should be able to work through the OGT at any level. But I found Science so vocabulary-specific and so detail-oriented that I really should have used this but I had forgotten that it existed.

These teachers had few resources to support these assignments. Teachers asked to tutor out of their certification area often turned to their colleagues for guidance. One math teacher planned to use the PARS website to help other teachers also assigned to help tutor students in OGT Math.

The special education teacher and foreign language teacher come to me all the time for little resources. Something like this is nice for a teacher who is looking for resources who is not classically trained in the subject area. I would show this website to them.

Beyond tutoring responsibilities, other teachers responsible for elective courses or for upper-level courses thought access to the benchmarks helped them think about how to integrate students' areas of weaknesses into their curriculum.

Also I have kids come up to me. And I was working with one of my kids on science questions because they ask for help—"I can't pass the Science OGT." And I'm like, "Well what are you doing?" And we look at his last score and he had his papers in his hand. "OK, let's sit down and work with this." And this website is something that I can get ideas of things I can do. Even though I teach a foreign language, we do at some point during the day come across other subjects.

I teach specifically 11th grade chemistry and I wanted to see what kinds of things I could cover tangentially, because I have to cover my curriculum. Under Earth and Space Sciences, there are things that students have to know

about radioactive dating for the OGT. And it's like, "Oh, I can cover that in chemistry. That's easy. That's a nuclear function kind of a thing." So, basically I looked at the benchmark to see what kinds of things I could scoop up into chemistry... I get together with the two biology teachers that are in adjacent rooms to me like every week. And we talk about how are we doing on this and that with the OGT.

A review of the Benchmarks, and in some cases connections to the Teachings Strategies, helped some teachers to identify ways to touch upon content areas and build skill sets for students preparing for the OGT. This use of the website presents another example of how PARS was able to serve as a quick resource to help teachers respond to students' developing needs for the OGT.

Teachers shared a variety of different plans inspired by the PARS Teaching Strategies, such as altering an existing lesson plan or building huge classroom posters with descriptions of the Benchmarks or building activity stations for tutoring students. Of course, most teachers already had favorite instructional resources they turned to for inspiration and help, typically a textbook, workbook, website, listserv, or Web board. In reviewing the Teaching Strategies, some were attracted to new ideas they had not encountered before. As with any external resource, teachers recognized the need to make adaptations given local resources, scheduled course time, etc.

I have used a couple of the lesson plans they have had and if it works, well, great. And if it doesn't, I will try to alter that so we can alter it and move on. ...The majority of [the lessons] were great. It depends on how much time you are willing to put into it a new lesson plan. We only have 41 minutes so one might say two 1-hour periods is not necessarily the case for us or anyone else on a different schedule. It could be totally different.

Other teachers were interested to review the PARS Teaching Strategies as a touchstone for their current portfolio of lesson plans or units. A few teachers reported noticing that they were already using lessons similar those promoted by the website, which made them feel reassured.

When I looked through these lesson plans, I thought do my lesson plans look close to it? Am I teaching the subject matter? Although I may teach it differently, but am I teaching it? And I found, well, I am teaching it. So it made me feel like I am doing what the state is saying or covering. Like this one here. I looked at this one with the student doing maps and all that—I actually do that! Actually, I do that! I don't do this exact lesson, but I do a version of this lesson tailored to fit what I think my students can do and what they can handle. So I would view the website as a textbook. The textbook gives you examples of activities. This is the same thing and you can adapt them to your classroom; what you can use, what you can't use. It is a tool like a booklet of lesson plans for U.S. History that you think would be good.

Many teachers felt PARS was an unusual and valuable addition to their portfolio of resources as it was primarily focused on the OGT and integrated important aspects of their work—performance data, OGT test items, benchmarks, and instructional strategies. A few teachers liked having access to two types of instructional strategies—helping students with fundamentals in a content area or advanced work for those who had already mastered the basics. One teacher's comment captures the broad endorsement we heard for the Teaching Tools from so many teachers:

I think it's useful for teachers to have. This is where their problem is. These are specific things that you could do in your classroom and then does have the active links to lessons that work on that particular benchmark.

The website also included links to additional resources available on other websites. Very few teachers, however, had a chance to explore these external websites. A couple of teachers were positive about the links they found and hoped to return in the near future. They cautioned, however, that teachers will likely need to make adaptations and use their judgment about what is appropriate for their students. One teacher found the links “repetitious” and “duplicative” to those already available at the school. Given the limited amount of time teachers spent on the website, either during training or on their own, it is not surprising that links to external resources were largely overlooked.

A few teachers identified some limitations to the Teaching Tools section. A couple of teachers who glanced through the screen shots of different teaching strategies thought they were too general. “They seem kind of generic,” shared one teacher. “A lot of times I’m looking for something specific.” A few other teachers thought none of the teaching strategies they reviewed were appropriate for tutoring as they assumed students had no previous introduction to the topic and were designed for a class period, not a short tutoring session. These teachers were looking for short overviews and wanted to emphasize test-taking tips with the students preparing to retake the OGT.

These seniors I'm tutoring just want to get it done. "Show me how to pass it." That's what they want to know. So that's why I gave as many good little tips as I could about passing, "Read the question carefully." These lessons [on the website] are like breaking new ground. It's like they've never had any writing instruction before. It's like you are starting over. And [these students] don't necessarily want to hear about topic sentences any more. So you have to get to it without sounding like you are teaching a lesson. They don't want you to teach all of writing over again.

In the limited time we had I didn't want to spend time on miniprojects or activities and everything and I just felt that it might be better spent with practice, with questions in that topic instead, because the activities were so focused on one topic. Just didn't feel that I wanted to dedicate a lot of time to just that one topic.

A few teachers thought the Teaching Strategies would be improved if they included links to additional practice-test items they could use with their students. Every teacher we spoke with was using test items from released OGT assessments in some capacity and was eager to access more items.

In general, most teachers found the Data Analysis component of the website helpful for uncovering classwide trends in student performance and the Teaching Tools section of the website helpful in validating or supplementing their current instructional choices. This discussion of teacher use of the PARS website to inform their instruction suggests that teachers tended to interpret the OGT data and lay out plans that reflected a fine-tuning of their existing practice rather than any radical rethinking of what or how they design learning opportunities for their students. The actions reported—both those intended and implemented—tended to reflect a set of strategies already in use at these schools: (1) Practice taking the OGT test using old OGT items, (2) learning and using test-taking tips, (3) aligning curriculum in terms of selection of topics and time allotment to the OGT topics, (4) and grouping students for focused instruction.

Facilitating Teacher Collaboration

One goal of the PARS website was to foster teacher collaboration around the analysis of OGT performance data and related instructional planning. The Professional Development Tools section of the website contained strategies for guiding teacher meetings around the use of OGT data, from PARS reports or the web-based Student Roster Data Analysis Tool, to identify patterns in student performance, reflect on current curricular or instructional practices and resources at the school, and coordinate a response to meet student needs. However, no teacher we met with had used this section of the website. In fact, few teachers had spent time on this section of the website and those who briefly reviewed its contents during the interview were skeptical of its utility.

There are a number of explanations for these responses. As mentioned earlier in this report, teachers felt the Data Analysis and Teaching Tools sections were more immediately relevant than the Professional Development Tool section of the website. It is not surprising that teachers chose to spend their scarce time on those two sections. Moreover, the PARS overviews or trainings teachers received did not cover this part of the website. Teachers who did glance at the contents of the Professional Development Tools website on their own or during our interview were unclear about its purpose, a response examined in more detail earlier in this report. While teachers supported the general idea of collaboration, many felt this expectation was difficult to implement given time constraints or, for most teachers in this study, the lack of departments in their schools this year. In one school where department meetings were a weekly routine, most teachers dismissed the tools as not needed (“We already do this,” was one comment). Some teachers also felt time with colleagues was needed, particularly around data use, but existing friction in their departments driven by different personalities and work styles would continue to inhibit any inclusive dialogue regardless of the “tool” or time. The following teacher’s comment captures a number of these concerns shared by teachers participating in the study:

I think we've had a difficult time actually truly focusing on data and using the stuff that's available to us as much as we could. It's like we want to, we talk about it, we'll glance at it, but we never really go to that next level... I would say a lot of different things [are getting in the way]. I would say probably professional differences, time restraints. Maybe this [PARS website] would make it easier with more data-friendly access. So I think maybe some of that would make a difference because I think if you look at some of that professional development stuff—I'm just looking at increasing collaboration and communication using OGT data—I think that would, in turn, probably as a department, could lead you back into this kind of stuff... making sure that the problems that we find we go back and figure out, maybe get on there and say, "Well, maybe we should try it this way," with whatever section that we're having trouble with. But I think a lot of it has to do with time restraints and just professional differences.

Almost all teachers we interviewed were concerned about student performance on the OGT and working to make a direct or indirect contribution to student success. More often than not, these efforts were individually driven and not part of a larger coordinated effort at a school or department level. Tutoring programs in some of the schools was an important exception. While these programs were highly coordinated between administrators and teachers, there was little to no interaction across teachers. Most teachers who were responsible for preparing one or more students to retake the OGT reported working alone and had a high level of instructional discretion regarding their choice of topics and methods.

Almost all teachers used the PARS reports or websites as individuals and not in collaboration with colleagues. In reviewing and discussing the PARS website and reports, however, a number of teachers made reference to the importance of having some conversations with subject-matter colleagues or those also tutoring. For example, teacher requests for a better professional development around the PARS resources often included time to learn and discuss the resources with their colleagues. Many teachers felt the reports and performance patterns generated from the Data Analysis Tools would inform their departments' planning for the school year, which takes place in the summer and few weeks leading up to the opening of the school. Those teachers who already had developed informal support groups were continuously talking about student performance and sharing strategies; these groups were fluid and opportunistic, held together by the proximity of their classrooms, common problems, length of service, or shared students. The evolving tutoring assignments during the school year were also seen as opportunities for strategic coordination, particularly among teachers who were tutoring out of their certification field. From our perspective, teacher references to needed collaboration around student data and instructional decisions for the OGT were situational and task-driven, spurred by access to new data available for analysis, school planning schedules, and new tutoring assignments. This suggests that the tools for professional development should be more closely integrated with the types of opportunities that arise and the type of instructional decisions teachers face, such as curricular (re)design, resource selection, and student grouping for course and tutoring.

OGT Results Format Preference: Print Versus Online

We asked teachers if they preferred to access the OGT student performance data via printed reports or the new website. Their preferences varied according to the purpose and situation in which they wanted to access PARS resources. In other words, rather than preferring one format over the other, they saw value in both formats for different circumstances. The main challenges to teachers' use of student performance data on the OGT were timeliness (How soon can I get it?) and time to review (When can I review it given my busy schedule?).

Teachers felt a blending of the two forms would help them meet these conditions. For example, teachers wanted to access the PARS reports through the website as a PDF so they could download them as needed. Teachers saw many benefits to this option. First, a PDF version of the report would enable teachers to benefit from the color version of the report on their computer; since schools photocopied the reports for distribution, teachers thought this was their best chance of using the color to diagnose student needs.

Posting reports on the PARS website would also provide teachers with a virtual file cabinet to access when needed, choosing to review or print a full report or just relevant sections. Teachers thought access to Web-based reports would reduce paper overload, a chronic problem in most schools, and would ensure valuable information about student OGT performance would not be misplaced in their classrooms. Most importantly, teachers wanted access to reports "on-demand" as they found time to review the results or needed a portable paper copy to bring to meetings with individual students or faculty, which are sometimes planned but often spontaneous. This seemed particularly important for teachers involved in tutoring during the school year because the group of students they work with will likely fluctuate—expanding and contracting—based on when students elect to retake the OGT. One teacher's comments captured the need for this flexibility:

You know, we're bombarded by paper constantly. The website is going to be very important because if they get one copy here at the school and they copied it, it's black and white. And we lose a lot of this information here, this color-coded information.

Other teachers commented that anything requiring "detailed study" was best done in a printed form. Availability of PARS reports in printed form held high value in this regard.

Teachers saw a number of benefits to the website that could not be translated into paper. They liked the dynamic grouping available in the student roster feature. The interactivity of exploring test items, which are linked to benchmarks, and to teaching strategies would be lost if the website was reduced to a paper binder or set of manuals.

I like the website definitely, the interactivity about the website. This is nice as an organizing tool for me for when you organize those kids and go down through the list of what each one of those students needs. But for individual

students, the website is much more interactive and the ability to group students together is much more effective. But for just generally getting who needs what, a report like this student report is nice.

The website offered a level of access that teachers highly valued. They thought it would enable them to work any time and any place with the materials they needed.

Well, what I like about the website is I can go home and get on it and I don't have to carry around this big packet of things with me everywhere. I can get on it anywhere I am. So I do like the website in that it's easy—easy to use and it's easily accessible.

It might be somewhat duplicate, but I do like the fact that you can go to the website and pull this up, quickly if you needed to. If you don't have your books or what not, or be able to check on something for the student. If you've got time at home, a window of opportunity and you want to get on that would be really helpful because I never know how many days is going to work out.

The preferences teachers shared were geared towards streamlining their work. It did not appear driven by computer access, computer literacy, or teacher status as veterans or beginning teachers. A situational utility appeared the primary motivating factor.

VI. Students' Perspectives on PARS



Sixteen students shared their views and experiences with the new PARS resources. These students were in different stages of passing the OGT: 5 had passed all subjects on their first attempt, 7 had passed the OGT after retaking one or more subject tests, and 4 had not passed individual OGT subject tests and were still at risk of not graduating.

Summary of Findings

Many students were able to access and use the PARS reports delivered in summer or as a retake report during the school year. They spent up to 15 minutes reviewing the report, typically focusing on only the first few pages, which included graphs, charts, and descriptions of their performance in each subject. Students focused on the central graphics of each page and overlooked information placed in the sidebars. Students received their PARS report in the mail, or from a guidance counselor or teacher. Overall, students found the reports sufficiently clear and easy to understand. This clarity was attributed, in part, to the use of color in the report, which helped students focus their attention, see the different parts of their score, and motivate them to read their report. No student reported receiving a formal overview about the report's purpose or how to read its contents.

Students thought the reports could be useful in a variety of ways—namely, to hold conversations with parents, to understand their OGT performance, to prepare for the OGT retake, to improve their knowledge in a favorite subject, and, in a limited way, to think about college or career. Of note, although the report aimed to foster communication between students and teachers about OGT performance, no student had met with a teacher around the report. Even so, some students reported using what they learned from the report to guide their conversations with teachers, particularly when preparing for the OGT retake.

Students experienced less access to the OGT student websites than to the PARS reports. Only one student had visited the PARS website and used the Tutorials and advice under Retaking the OGT. Only five students had visited the Measurement Inc. website and used the Practice Tests and Scoring Practice features. Students heard about these websites through a teacher, tutor, or a specialized OGT study course. No student, either on his or her own or during the interview, noticed the Internet address and description of the OhioStudents.com website.

Students saw immediate value in the two websites to their preparation for taking the OGT. They saw the websites as providing valuable insights into how to improve their score, review what they should know in each subject, and strengthen their knowledge base. Most students valued the Practice Tests and Tutorials because they provided immediate feedback about the accuracy of their answers and helped them identify areas of weakness.

In a few cases students approached their teachers to understand this feedback. But students' understanding of these resources was limited as they interpreted the Tutorials as another Practice Test rather than as a tool for improving knowledge at the benchmark level. Student comments also revealed a simplistic understanding of the scoring criteria guiding the extended response. Only a few students who had passed the OGT were satisfied with their resources to prepare for the test. Finally, students valued the flexibility of Web-based resources as accommodating of their different learning styles and giving them access from locations where they felt more comfortable.

Accessing PARS Reports

As stand-alone paper products, the value of the PARS reports is latent until it is actually "accessed" by students. This is a multi-step process in many ways that first begins with the student receiving the physical report, taking time to read its contents, and storing the report for future reference. Our interviews were designed to probe student receipt of the report and how much time they devoted to its contents. In some interviews we were able to learn the extent to which students held on to their reports.

For the 16 students who had taken the OGT in spring 2006, about three-quarters had received the new PARS reports during the summer or as a retake report later in the school year. How deeply students reviewed their PARS report was reflected in two types of comments: How long they spent reviewing the report and which pages they focused on. Students' personal time with the report ranged from "a few minutes" to about 15 minutes. Most students had read through the first three pages of the report, which offered various graphical displays and descriptions of their performance in each subject area. The fourth page of the report, called "Map Your Future," was overlooked by most students who had received and reviewed their OGT reports. Students thought they skipped this section or only "glanced at it" because it was located on the back page of the report and looked wordy. Students tended to focus their attention on the graphical displays and adjacent descriptions of graphs, often overlooking information located in the sidebars on the same page. In addition, students did not store or hold on to their PARS report for very long. For most students who passed the OGT, their reports quickly moved into trashcan or were taken by parents or guardians. One student rediscovered it in her locker during an end-of-year cleanout. No student mentioned saving the report; in fact, during the interview most were working hard to think back to when they first received it.

One explanation for the short shelf life of the PARS reports, and for their Questar counterparts, is that students had a singular purpose in mind when they read the reports: "Did I pass or not?" and "What did I miss?" Another explanation comes from school-level dissemination strategies. Students reported receiving their OGT scores in a number of ways: From their guidance counselor, in the mail, or from a teacher during class. In no school did we hear of students receiving a verbal overview about the purpose of their report, specifically what it was, how to read it, and how to use. Even teacher interviews revealed no planned or systematic effort to meet with students to introduce or explain

the OGT results using their individualized student report. During interviews and focus groups, teachers reported brief interactions with student reports only if they were involved in the distribution of the reports or if students individually approached them with questions about their performance. Students seemed largely left on their own to interpret the report unless they chose to contact an adult for assistance.

Clarity of the PARS Report

During interviews students were also asked to identify features of the report that they did not understand or felt were confusing. Some students were able to share their initial experiences reviewing their own report, while others used the interview to assess the clarity of the mock report. As interviewers, we were also able to assess the correctness of student interpretations as we walked through each page of the report, asking students to review and explain what they did or could learn from its contents.

Overall, students found the reports sufficiently clear and easy to understand, including students who had not seen the report before the interview. When asked what they learned on the first three pages of the report, which focused on information about their OGT performance, students' descriptions of the content of the pages were accurate and reflecting an understanding in their own words. The following quotes illustrate students' understanding and assessment of the report's content:

When I first saw it, I got good grades on it, so I was happy. At first it was kind of confusing. I just seen the numbers. I really didn't know what it means. I read it and everything, and then it finally told me what it was and I ended up passing it all and stuff. [Student, Passed Retake]

It's pretty self-explanatory, really. Yeah, like if you look at the bottom, the score, you're passing OGT or whatever. I like how that is right there...to see...where you're advanced standing or whatever. I think it's pretty good, just looking at it. I actually think it's pretty good where you can see overall how are you doing and how you can improve. [Student, Failed]

I think [page 1] was a little easier to read because it puts it out there and then it shows about where it is in the range of the graph. It's easier to understand because it's more visual...I think it's pretty straightforward...Especially the part [page 3] where it breaks it down and it actually shows you how you did in each subject and shows the graphs for that. I think it's pretty elaborate and that it explains itself pretty good. [Student, Passed]

Students tended to identify the first and third pages of the PARS report as the most useful. These pages provided a graphic overview of student performance on all OGT subject tests (page 1) and a graphical breakdown of student performance in each subject area by individual benchmarks (page 3). Assessing the clarity of page 4 ("Map Your Future") was difficult since almost no students had noticed the page when they received their PARS

reports. Instead, during the interview we asked students to assess the content of the page and its value to them; these results are available in the next section.

Students also shared the view on the use of color in reporting their OGT scores. In some cases, we asked students to compare the color report used in the interview to the black-and-white report they received, which was either a photocopy of the PARS report or the Questar report. For those students who had received a color report, we asked directly what they thought of the use of color in the report or if they thought 10th grade students this year would mind receiving a black-and-white copy of the report instead of a color version. Of the 12 students who shared an opinion, most felt strongly that the use of color helped to make their report easy to understand. They found it to “attract” their attention, helped distinguish parts of their score, and made them want to read their report.

The color. It breaks it up. You see like where this one is limited. It's color-coded so people are more likely to look at it. The black-and-white one, it's boring. But I think color makes it easier to understand—just attracts attention. This [graph on] the front. I think that looks good, the color. It attracts my eye. [Student, Passed]

I just like the color because it actually draws your attention to it and you can actually tell, like, “OK. I did good. I didn't.”...It just gave you a visual, like with me visual learning helps me the most. I guess for every person it'd be different, but I just like that because it's got different colors and when you look at it you know what your problems were, what you did good in. [Student, Passed Retake]

This has colors, and, like the color draws people's attention on to what they want. A black-and-white paper is just dull, it sits there. But people would still want to read it so they know what their scores were. [Student, Passed Retake]

It would be worse for black-and-white. I mean, I don't know, but it's just like when I look at [this color copy] it's like I want to read it...people don't like to read stuff in black and white. [Student, Failed]

This perspective was also shared by students who were seeing a colored version of their report for the first time or seeing a PARS report compared to the mostly black-and-white Questar report.

I think it would have been better to get a colored copy because some of the parts in the black and white had started to fade out a little, kind of rough, so it was kind of hard to tell exactly where it was. It was a little harder to read...I think it's a lot better to have [this color copy] just because it adds a lot more detail into it and better explains it. I think it's easier to understand and better to get a little more insight into what you're reading. [Student, Passed]

Yeah, this is a lot better. [The PARS report]. It's separated; it doesn't blend together like the other one did. That confused me...I couldn't tell what was what, like I couldn't tell what was the maximum you could have and what my grade was. I couldn't tell. [Student, Failed]

Two students interviewed, however, felt the color “unnecessary” and “didn’t matter much” as long as the black-and-white version had the same information. Both students had passed the OGT by the time of the interview.

Utility of the Student Reports

During our interviews students described how they actually used the reports shortly after receiving them. But since all students had not received a report, or reviewed every page, particularly page 4 focused on “Map your Future,” the interview provide some students an opportunity to learn more about the report and share impressions of how it might be valuable. In this section we describe the actual and perceived utility of the reports to students. Overall, students used the report to communicate with their parents, understand their performance on the OGT, prepare to retake the OGT, and improve their knowledge in a favorite subject. They felt the PARS report could potentially help them plan for college and career. However, students did not review their PARS report with teachers.

Facilitating Communication with Teachers and Parents

One goal of the personalized student report was to foster communication between students and their teachers and parents. None of the students interviewed had actually reviewed their OGT performance report with a teacher. In two cases, students initiated contact with teachers after reading their report, one for help preparing to retake the OGT and the other for tutoring to prepare for the ACT and SAT. In two cases, students reported interacting with an adult regarding their OGT performance, however, these were administrative in nature, centering on the distribution of reports during class and group overview of the process by a counselor. From the perspective of these students, no teacher or administrator used the report either to help them prepare to retake the OGT or to plan next steps toward graduation or beyond.

Students reported considerably more communication with their parents. Over half of the students interviewed talked with parents regarding their performance; all of these students had received PARS reports. Communication with parents around the reports took many forms, varying in length and focus, such as: (1) a long conversation about the student’s specific performance and future plans; (2) a moderate discussion that emphasized the general importance of the student passing the OGT and of strong preparation; and, (3) a brief acknowledgment of the student’s performance. The first form reflected a fairly high level of interaction. For upwards of an hour, students reviewed their report with their guardians, examining their strengths and weaknesses in different subject areas, identifying sources of assistance, and/or starting to prepare for the college entrance exams.

I went over it by myself, and then went over it later when my mom got home. We spent about an hour. We talked about all the subjects and stuff and problems that I thought were kind of hard—whatever questions that I thought were really out there. We didn't really talk about the OGT during the week when I actually took it. But when I saw all my scores, we talked about certain ones that I thought might have altered that. [We made plans but] not in terms of the OGT, since I

passed all of them. [Our planning was] just more along the lines of the [other] tests like ACTs and SATs and stuff...We bought a whole bunch of books to help study for those tests...[I need to focus] more on my science and some of my writing. So [my mom and me] got a lot of books on those. [Student, Passed]

[After I got the report] I went home and told my mom and she was happy. And I kind of just, I knew, I mean I just worked on it, and worked on it more. Because, like I said, I'm trying to prepare for my SATs and everything. Really didn't do much after that...She was asking me what, like, what this meant and everything [in the report], and I said you have to score over a 400 in order to pass, 400 and above. She said, "All right." And I told her I passed them all. She looked through all this and everything. She was asking what these were—[the bars on page 3]. I told her those are what the questions, how many I got right out of that group of a subject. [Student, Passed Retake]

In other cases, students reported a moderate level of communication with their parents during which parents expressed a general concern about passing the test and emphasized the importance of studying and test-taking skills. The most minimal level of communication involved the student simply notifying the parent about passing the OGT. For example, one student recounted his conversation with a parent:

I told my dad I passed. That was good enough for him. He looked at "accelerated" and "advanced," [in the report] so he's happy with that. He looked at the ratings [in the report], and the second page where it tells you, it explains the ratings. [Student, Passed]

In these interactions, parents expressed satisfaction or pride and then most reviewed the report on their own. After the conversation, students reported that their parents took possession of the report, posting it in the house or filing it away for safekeeping.

A number of students interviewed, however, stated that they had no direct communication with their parents about their PARS report. Two shared examples of missed opportunities. One student discarded the report in the trash at home, which took away an opportunity for conversation with a parent. Another student reported glancing at his report and leaving it on a table for a parent, but sought no conversation. Within our sample, all students who did not receive a PARS report also had no communication with either a parent or teacher when they received their performance summary.

Students' Understanding of Their OGT Performance

All students thought the PARS reports were helpful in understanding their OGT performance. The level of usefulness varied according to what the student wanted to learn and the extent to which they reviewed the report's content. Students looked to the report to first answer their big question—did they pass the OGT or not. Explained one student, who passed the retake, "At first I just looked at seeing what my scores were. I was just hoping that I passed. I did." In only a few cases, that was all the understanding the student

VI. Students' Perspectives on PARS

needed. For example, one student explained, "I had already passed the OGT so I didn't look too deeply into [my scores]. So it didn't matter to me too much."

A majority of students, however, also used the PARS reports to diagnose their performance in individual subjects. Students tended to take an improvement approach to reading their reports. Their descriptions included references to gaining an understanding of their "strengths and weaknesses" within individual subjects. This utility was prominent among students who had received a PARS report and focused on page 3 to examine their performance at the benchmark level.

I liked how it helped me out. It told me what I was strong in. And then it also gave you what you were weak in. I was able to build on what I was weak at and build a little bit on what I was strong at. [Student, Passed Retake]

Got to see how I did. Like for Social Studies I was proficient in Social Studies, and I got to see which part of it I got a low score in—it was History, People, and Societies and Economics. I didn't know that before. [Student, Passed Retake]

[The report helped me] to see the places I did terrible at, and the places I did good at... tells me what I'm good at, and my potential. Stuff like that. [Student, Passed]

This value was also noted by a few students who had not received a PARS report and reviewed one for the first time during the interview. When looking at page 3 of the report, one student commented, "This would be helpful. I could figure out what I missed or what I need to work on because it's broken down here." [Student, Failed] For these students the PARS report presented information about OGT performance that appeared new to them.

Finally, in reviewing their PARS reports some students talked about "surprises" and new insights that emerged as they examined their strengths and weaknesses in different subject areas.

[I was] a little bit surprised [by my scores]. Just a little bit. Some stuff I thought I was strong in, I was actually weak in, and then I knew that I had to work at that. And then what I was weak in, I was strong in. I was really surprised about that. I had no idea. I know I tried at the stuff, but like I don't know why I thought my strong points were weak...It was through all [subjects]. [Student, Passed Retake]

Math. I like math and I was kind of surprised [by my scores]. I think in my measurement I got like maybe three right on my measurement so I was kind of surprised. I thought I was a little more better in measurement. And I was surprised in science. I did well in science. I was kind of surprised at myself. I did pretty good. Social Studies, not my strongest point. I did OK. But I think it was really like the Government and Economics that I really didn't do good in. [Student, Passed Retake]

Preparing for the OGT Retake

Of those interviewed, almost three quarters had to retake one or more subject tests of the OGT. The most direct contribution of the PARS reports to students' preparation for the OGT was simply in improving their understanding of their individual performance—the strengths and weaknesses that most noted.

Question: *Of all of the things you've done to prepare for the OGT, how important or useful was this report?*

Student: *It was important to let you know what you got and why you got it. And useful? To let you know what you need to work on.* [Student, Passed Retake]

Few students reported immediate plans or strategies after receiving and reviewing their reports in terms of the retaking the OGT. One explanation is that they received the reports in the summer when such plans might be difficult to pursue. It is likely that they brought this new understanding to any school-based OGT preparation such as using practice tests and working with a tutor. In two cases students approached a teacher for help in the subject they needed to retake.

It was helpful because on mine I didn't pass the Writing. I missed by like two points. And it told me what I needed to work on. [Student, Failed]

I read so I could understand why I got the score I got and how they grade you on it and what it meant and all that stuff... I liked [page 3] better than the first two pages because I can see like how close I was to a certain score and what was I better at than one part of the test, and if I need to work on more than the other. And it helped you understand points earned and points possible, and how close you were and how far you need to go to get closer to the possible points. I was close in science—one question. [Student, Passed Retake]

Oh, well, I did good in some and then, with me, math, it's all right. But science, I actually like science, but I got really low scores and had to redo that one. But the second time I passed it...Because after I [read] I went to my science teacher and she gave me OGT flash cards and that helped me a lot more. [Student, Passed Retake]

The capacity of so many students interviewed to recall—well into their junior year—the strengths and weaknesses about their OGT performance suggests the new knowledge gained from these reports made an impression.

Many students—both those who had reviewed a PARS report and those who had not—felt the report could be even more helpful in their preparation for the OGT retake. These

students were seeking more precise diagnoses of their individual strengths and weaknesses that went beyond the benchmark level to focus on individual test items. Quite simply, students wanted to know which questions they missed.

If you came close to being more proficient than basic, why you came close and how they got you that close...[if knew that] probably would work on them more, like, while I missed two questions so I need to go and reread them questions and understand why I missed them questions to get higher next time if you failed that part of it... [Student, Passed Retake]

Like the questions they got wrong and the ones they obviously, maybe the ones that they got right too. They should have a list of all the questions. If I had had it, I'd study on it. If it gave me the right answers. I'd study on all the question so I'd know I'd get them right the next time. [Student, Passed Retake]

Improving Knowledge in a Favorite Subject

After passing the test, some students used the PARS report to think about their knowledge base in a subject of special interest. The following student responses emerged as we asked students what they were learning from each page of the report and what plans they made or actions they intended to take.

Question: *After you saw the report, were you more motivated to do anything, or do anything differently?*

Student: *I would continue [studying after the OGT test] because I know I could go higher than what I am now. I [would] just continue on, because I was happy in social studies this year. So now I got to do it next year. So working harder.*
[Student, Passed Retake]

Student: *Yeah, I read all of [the performance descriptions on page 2]. Just to better understand what each of them meant...Well, what each accelerated mean, or whatever, in terms of each subject. That way I knew, OK, well, I got proficient, so that means I need to work a little harder and these are things that I need to work on because it listed, like, this is for understanding of the Reading and stuff like that. [Page 3] was really easier to understand because then it broke down each part, so if I was OK, like, with geometry... but not so good in measurement, then I'd have to go back and be able to work on measurement more than geometry.* [Student, Passed]

These students talked about wanting to address their strengths and weaknesses as they continued to take classes in a favorite subject.

Planning for College and Career

The PARS Student Report aimed to encourage students to plan for college and consider their career choices. When discussing their performance on the OGT and what they learned, a few students immediately talked about preparing to take college entrance tests. These students used the strengths and weaknesses they learned from their PARS report to inform their preparation for the SAT and ACT. This was reflected in decisions to purchase study books or to seek a tutor. One student explained:

I read [page 3] and after that I just, I went and talked to teachers and stuff, asked for help and everything. And I did a little bit of tutoring with some of my teachers. Because I still got to take my SATs and everything. Like I said, I mainly focused on what I thought was my weak points and my strong points. Both of them. [Student, Passed Retake]

Other comments about college and career were in response to the fourth page of the report, called “Map Your Future,” which focused on raising student awareness of the relationship between high school performance and college and career opportunities. Since many students had overlooked this last page when they initially reviewed their report, the interview was an opportunity to review the page and solicit their opinion about its potential value. Overall, almost all students were highly positive about the general goal of this page and most of the information it presented.

Yeah, I think it's the right topics because they tell you, like, average student graduates high school, you should go to college because to better your education. You can, you know, get further, go further in the workplace, get higher, make more money. I think, yeah, it's a start. [Student, Passed Retake]

Students tended to focus on the two graphical displays on this page. Many students were already aware of the relationship between education and earnings presented under the header “Continue Your Education.” This was not too surprising since most high school students have summer or part-time jobs. Even so, students felt the last page was valuable because it reminded them of the connection and provided statistics or “facts” that firmed up their intuition. Some reported feeling motivated to work hard in high school and pass the OGT after reading the information on “Map Your Future.”

[Anything surprising on page 4?] This part right here. It was the poll about the college students and non-college students— important to continue to work hard in high school...It made me want to try to pass [the OGT], to try to study more and go over my aptitudes, and get better in writing...I just wanted to shoot for the well paid jobs, low paid skilled jobs for anywhere from \$25,000-\$40,000 a year. That's what I'd maybe want to shoot for. [Student, Failed]

I knew the higher the education you get, the more money you make. That wasn't so much of a surprise. It was just that I didn't know the percentages before... Some people are really driven, and it helped me a little bit. Just reality checking, I mean. I know some people who would base stuff off of this. [Student, Passed]

I found that the statistics that were on there were very helpful, and it made me want to continue my education so I could be earning money, more money. [I felt] just a little bit because I already knew this a little bit—that your pay increases as your education increases. [Student, Passed]

Although the relationship between higher education and a higher income was familiar, many students were less aware of the relationship between a high-paying career and the courses they take in high school, such as geometry or precalculus. Students first noticed this information during the interview. Their comments reflect a perceived value for themselves and students who might later read the report.

[This information] is actually good. I take precalculus now and Algebra II. Actually, when they say that professional jobs and challenging courses like Algebra II. I didn't know math—well, I know math— math is money. But understand that more likely the higher you go in high school in math, the more you'll probably succeed. That's what I just read right there. If they did [keep this section in the report], I think [students] would read it because mentioning it now, I wish, I mean, I still have time you know. But if I had seen this [when I read the report] I'd have been like, Dang...I think it would be helpful...Because, you know, people come up to me, "You know, are you Pre-Calculus, Calculus, whatever?" Like, "Yeah." And they go, "I wish I can get into that." But yeah, I think this would get more people in Algebra II and the Pre-Calculus. [Student, Failed]

Question: *What would you say is the most interesting or more informative part of the report, and why?*

Student: *I think that the last page where it's talking about the dollar values and how many college students and stuff, and I think it's just because it's more about your future and what you do now. You don't think it's going to matter in a couple of years, but if you look at it, it's really going to matter. So, I wouldn't think that geometry is going to have anything to do with anything, but in a couple of years, it might.... I kind of like math, but I do more math just because I want to be a science major, so a lot of that's incorporated with science, so I'd still have to do it so I think it would motivate me a little more to do it too, because I might get paid more for using a lot more math in science, so.* [Student, Passed]

Although most students hadn't spent much if any time reviewing this section on course-taking decisions, they did agree that it contained important information for students to know in order to plan for the future.

Only two students offered a strong critique of the "Map your Future" page. One student, who was still working to pass the OGT, thought only students who had already passed the OGT should see information about the relationship between high school graduation and potential earnings. For this student, the information seemed too deterministic and might discourage students from retaking the OGT and even staying in school.

I don't like that because...that's basically saying if you don't get a good OGT, you ain't going to have a good job. Some people ain't gonna like that either... That's like saying if you don't get good OGT, you ain't going to have a good life. That's not cool. They should do it for people who passed not the people who didn't...It could demotivate somebody, to be honest with you...People just having bad thoughts and eventually drop out. [Student, Failed]

Another student was disappointed that the information on page 4 labeled "Map Your Future" did not provide actual strategies for doing just that: developing a personalized plan for entering college or a career. The student offered the following critique:

Yeah, how do you get this done? You're giving us—OK, you're giving us a place to go, give us directions to that place. That's just like giving us the map without the routes...But I would just like some directions, like some way how to get the master degree. [Student, Passed Retake]

This student was ready to hear more detailed information about applying to college and about how to pursue a master's degree. The content of the PARS Website might have answered some of these questions, but this student, along with all others interviewed, did not notice the link for the website at the bottom of page 4 of the report.

Given that so many students had overlooked the page, we asked if students thought this page was necessary and whether it should be removed. Almost all agreed it should remain. For most students who needed to retake the OGT, it motivated them to keep trying so they could reap the benefits. Students who had already passed the OGT thought it would serve to remind them to keep planning for their future and to keep working hard in high school.

I think students might lose a little motivation because you see that you passed everything, and you'd be like, "Oh, OK, I passed. None of this stuff is going to matter now. I just needed to get through high school." But then this back page says, "You know, you're going to need this stuff," so it's not a good idea just to be like, "OK, I did it once for this big test, and now I'm done." So it shows a little bit more into your future. [Student, Passed]

One student, however, expressed a sense of loss at overlooking the last page. For this student, it represented a missed reminder that one's performance in high school can shape college choices.

That's neat. I wish I would have seen it earlier on. So I should [have] worked harder. I really do. I just slacked off.... It's just hard 'cause I'm a junior now and I just got slapped in the face seeing that I slacked my sophomore and freshman year—because I got college coming up. [Student, Passed]

Accessing the OGT Student Websites

During interviews students were asked about two student resource websites the ODE made available during the 2006–07 school year. The first website was developed by PARS and provided students with tutorials on a set of subtopics in each of the OGT subject areas, help with retaking the OGT and information about preparing for the future. The second website provided practice tests and scoring practice in each of the OGT subject areas.

Students experienced less access to the OGT Student Websites than to the PARS reports. Only one student had heard of the PARS website and visited two of its three sections: “Tutorials” and advice under “Retaking the OGT.” Only five students had visited the Measurement Inc website and used its two features: Practice Tests and Scoring Practice. Students heard about these websites from different sources—through a teacher, tutor, or a specialized OGT study course. None of the students who received a PARS report, and none who reviewed a report during the interview, noticed the Internet address and description of the OhioStudents.com website. Students said they expected to learn about these kinds of resources from their teachers.

For students accessing these resources at the right time was important. Many thought earlier access would have been helpful. These students wanted to learn about the two websites when they first learned of their OGT performance, preferably before the end of the school year.

[We need to see this by] the last month of school at least. So that way they can hand it to you and tell you what you did and what you need to work on over the summer, and give you websites like these two here to practice, and that would really help. [Student, Failed]

Some students appeared frustrated not to have known of these resources earlier. Students emphasized that they wanted to be fully prepared when they took the OGT for the first time. Others saw value in reviewing the practice tests during sophomore or freshman year just to gain a sense of the form and focus of the OGT tests.

I wish there was something like this before you take this. Like the beginning of your sophomore year, the beginning of your freshman year that you could go to kind of get a heads up on what's going to be on it, like, not exactly showing everything, but so you know what to study for. [Student, Passed]

As an early introduction, the practice tests and tutorials might demystify the OGT to students and reinforce that students can pass the test if they continue to build knowledge in the core subject areas. At the end of the interview, one student still working to pass the OGT requested copies of both websites.

Utility of Student Websites

All students shared opinions about the utility of the website. Since some had accessed the materials before the interview, these opinions reflected actual use. All others shared their impressions of how well it would or still could meet their needs. Only one student knew about and accessed all these web resources. This student, who was still working to pass the OGT, was highly positive about the PARS web resources.

We did the advice about the retaking. And we, she used the meet with a peer tutor. And that really helped me. We did "take advantage of opportunities in your school and community" and we also did "sign up for programs at school to help you prepare for retaking the test." And we had like a study group that met once a week right before the OGT and that really helped because we met like a day before we took and that made me remember a lot of stuff for it. [I learned about the website] through the teacher that was in charge of the study group. The practice test one. It really helped me 'cause I went home and still typed it in and practiced typing and it really helped my English skills a lot. [Student, Failed]

For this student, the PARS web resources seemed integrated with a broader school OGT preparation strategy. Overall, students thought the website resources had the potential to them prepare for the OGT and think about college.

Preparing for the OGT

Students saw immediate value in the two websites for their preparation to take the OGT. They saw the websites as providing valuable insight into how to improve their score, review what they should know in each subject, and help strengthen their knowledge base. Specifically, students thought the Measurement Inc. website, which offered Scoring Practice for extended response questions and the Practice Tests, could help them improve their score. These resources provided an opportunity to become familiar with the types of questions on the test. Students were most interested in the scoring of the extended response which seemed a mysterious process to many.

[I would have used the scoring practice] because it would have helped out on short answers and essays and stuff a lot better to be able to know what criteria you needed to meet...That way I can try to achieve the highest one, or closest to it before I had to take it. That way I would have done a lot better on my answers. [Student, Passed]

When I do open extended writing, I like to be very terse, to the point. So I just write small sentences and then I probably wouldn't show my work. I would some of them, then others when I just felt like it, all right. I don't know. I just want to get done with it. I'll just write it. [The "score practice"] would have gave me, showed me a way of how I could write responses in that right way... Because I've seen how not to do it, and I've seen how to do it, so I can make mine either in the middle or the right way. [Student, Passed Retake]

I wanted to know if at least some things were kind of important. You know, if this was wrong, but if it had some things right, I wanted to know, you know. Do I get half credit for it or something—some kind of credit for it. Because I put an answer down, but it might not be right...But I would have visited this website. [Student, Failed]

That's pretty cool. So you know what not to do. [Student, Failed]

The Scoring Practice provided insight into how to analyze their answer, understand what was "important" and "right" and how to "take that extra step," according to one student, "to take to get a higher score."

Students saw the practice tests and tutorials also as critical opportunities to get familiar with the test and to address limitations in their understanding of a particular subject. When asked which tutorial or practice test they were interested in, students first picked a subject they were weak in or one they had to retake for the OGT. These choices reflected the strengths and weaknesses they learned from their OGT performance report.

[I would have used] the practice one because it's a practice test. You know, it's like a review test, you're going to review. So, you know, I would have took advantage of this practice test...I would have seen how they did. Well, first, I would look at their example and then I would have figured it out and see what they had did. And then I would see what I did wrong or did right. So I think I would have took this practice. [Student, Failed]

Probably the practice tests [would be the most valuable for] just knowing ahead what's going to be on [the OGT]. What to look up. [Student, Passed]

I know the practice test because I took that a couple times mainly in Math and Science. It gave me an idea of what was going to be on the OGT. It helped me out a lot. [Student, Passed Retake]

Some of my teachers pulled some stuff off websites and gave it to us, maybe a math question or something...I remember like two teachers printing off maybe a question on a page or something and giving it to the whole class, an OGT problem. [Student, Passed]

Most students valued the practice tests and tutorials because they could provide immediate feedback and help them understand questions they missed. In a few cases students approached a teacher to understand this feedback. Students pursued opportunities to ask questions during class.

We did [this] last year, our preparation...I want to say my literature class. My teacher she had this on the website. We went to the computer lab and she had us do the Reading and the Writing...Maybe for about a month before we took the OGT. It helped out because while my teacher was there, I asked her questions about it and she told us. It helped out a lot because it really lets you know in-depth about really what the test was about, how it was going to be, how to do your extended response and stuff like that. That was really key. [Student, Passed Retake]

While I was doing [the practice test] I wrote down the questions and stuff and answers. And once I went through it, and did it on the computer, I marked which ones I had wrong and which ones I had right. And I went home and I studied on 'em, and I went and talked to teachers and I asked how to get to his point, like how they got that answer in there, and how come I didn't get the answer. Yes, they were able to help me...They answered it and then they showed me how to get that answer. [They] wrote it on the chalkboard and explained it out to everybody in the class. [Student, Passed Retake]

Probably the tutorial. Just because it'll show you the wrong answer, and then it just seems a lot easier to understand, so I think I would have chosen that one. Probably math, because I'm kind of bad at that. I think it would have been a lot—because I know when we did the OGT example packets in class before we took the test, it was pretty helpful because anything that we had problems on, we went over as a class or as individuals, as one-on-one and teachers. So I think it might have been helpful too, to have a little more extra and one-on-one time with trying to figure it out for myself using this website. [Student, Passed]

Student views were positive about these resources. However, their understanding of their value was limited in many ways. First, students saw no distinction between the Practice Tests and Tutorials. In reviewing their reports students spoke of specific strengths and weaknesses in terms of benchmarks. The PARS Tutorials, organized by benchmark, would provide one mechanism for students to review that content knowledge on their own or with a teacher. Yet students interpreted this resource as simply another practice test. The distinctive value of tutorials was lost. Second, most students had a simplistic understanding of the scoring criteria guiding the extended response. This was particularly

prominent among students who still needed to pass the OGT. The lessons they drew from this section reflected a focus on the size of their response (more or less) not its quality. Only a few students appeared to understand that the criteria for a high score reflected levels of sophisticated in understanding a topic.

Overall, student experiences preparing for the OGT seemed sporadic and last minute. Typically, students reported completing a whole practice test, or working on a problem of the day in some classes. Only a few students who had passed were satisfied with their resources to prepare for the test. Many students who still needed to pass the OGT did not seem involved in any formal preparation. They seemed frustrated by their status of having failed the OGT or by their lack of understanding why they continued to struggle in a particular subject. These student responses suggest that these Web-based resources had the potential either to strengthen existing strategies already available to students or fill a gaping void.

Finally, students were also positive about these Web-based resources because they thought they could meet students' individual needs in terms of their different learning styles and desired work environment. They talked about being able to access the website in locations where they could concentrate best, at home or at school, work on their own or with peers, and as a visual and interactive alternative to the paper versions they encountered in class. While a handful of students were able to talk about their actual experiences using the website, most quickly sized up its value in light of the effectiveness of their earlier preparation, namely what practices they felt worked and what proved insufficient.

Help Thinking About College

During our interviews, some students had an opportunity to scan the key topics that comprised the "Preparing for the Future" section of the PARS website. While these students were at various stages of passing the OGT, they were all thinking about college and career options. Many found a variety of topics appealing and wanted to return to the website to explore them.

Yeah [I'll visit the website], just because it has the post-secondary. Probably financial aid and college interviews. And then some of the placement exams.

[Student, Passed]

Yeah, I would have used that. [I would look at] the planning for a career. Because at my age, after your junior year, you think about your future, what you're going to do and what kind of career you'd want. So that would be helpful.

[Student, Passed]

I think it's interesting. If somebody told me about [this website] I'd probably go. [I'd look at] what kind of education to pursue after high school and the planning of a career and the financial aid and the exams. I think all of it actually looks pretty good. Pretty helpful for college kids, you need all of that you can get.

[Student, Passed Retake]

That's what I need. I need to go here to look at that. I want my major to be some sort of engineering, but I'm not sure if that's what I really want. And I would like to look at some scholarships, what type of scholarships I can get.

[Student, Passed Retake]

[I would look at this] in the future. Probably not right now...I'm really just trying to get out of here. I would probably use it right after high school... I'm going to have a year to save up money, get a full-time job so I'll have money so my parents don't have to put all they have in my books and my college... That's pretty cool. Probably use this. After high school when I get around the time of trying to find a job.

[Student, Failed]

The website topics held strong appeal to students who took time to scan the front section and found topics that reflected their interests and questions about college and beyond. What was not clear was whether the content of the website adequately provided actionable information for these students. Also unclear was whether the website was a resource drawn upon by school counselors; only one student reported hearing about the website from a school counselor.

VII. Survey Results



This chapter presents results from the survey components of this evaluation. As mentioned in Chapter IV, funds were unavailable to provide incentives for survey responses or follow-up survey administrations. Although measures were taken to minimize the burden of responding to the survey, these efforts were apparently ineffective at producing acceptable response rates. **Table 7.1** presents final response rates by treatment group for teachers, students, and parents.

Table 7.1. **Response Rates for Teacher, Students, and Parents by Treatment Group.**

Survey Group	PARS Treatment Group			Control Group		
	Full Sample	Number of Respondents	Response Rate	Full Sample	Number of Respondents	Response Rate
Teachers	400	30	8%	400	34	9%
Students	200	11	6%	200	27	14%
Parents	200	10	5%	200	23	12%

In both the treatment and control groups, and in all three target groups, survey response rates were exceedingly low, ranging from 5% to 14%. The respondent samples are very unlikely to be representative of their target populations, and the available sample sizes preclude any statistical comparisons.

In light of this, we present only descriptive results for survey items and scales. Tables B.1 through B.10 present summary results from the teacher, student, and parent surveys. Where possible, results are presented separately for treatment and control groups; however, it would be irresponsible to imply any relationships or draw any conclusions based upon these very sparse survey data. As such, we refrain from any such tenuous interpretations, and we include a disclaimer with each table warning readers of this report to avoid overinterpreting results.

VIII. Impact Analysis Results



This chapter of the report presents the results from the analyses of impacts on student OGT performance. The structure of this chapter parallels our research questions, focusing first on the overall OGT performance for 10th graders, then the rate at which students who failed an OGT test attempt a retake, then the performance of students retaking the OGT, and finally the degree to which effects of PARS differ for different groups of students and schools.

Impacts of PARS on the OGT Performance of 10th Grade Students

Although PARS is based primarily on data from last year's 10th graders, the information from PARS could be used to inform instruction for future 10th graders. For example, teachers and administrators could use the information from PARS to identify schoolwide areas of weakness within subject areas. This information may be used to address gaps or deficiencies in curriculum or instruction for the next year. To determine if PARS is having an impact on 10th graders' OGT performance, we estimate the effects of PARS by examining 10th graders' OGT scores at the end of the pilot year.

Because districts were randomly assigned to participate in PARS, the impacts of PARS on 10th grade OGT performance are reflected in differences in scaled scores and proficiency rates between treatment and control groups. Because the June and October administrations of the OGT are restricted to students retaking one or more sections of the OGT, the impacts of PARS on 10th graders can only be estimated using data from the March 2007 administration of the OGT. Results from HLM analyses of 10th grade student performance for the March 2007 administration are presented in **Table 8.1**.

Table 8.1
Impacts of PARS on 10th Graders' OGT Scale Scores and Proficiency Rates

OGT Subject	Effects on OGT Scaled Scores		Effects on OGT Proficiency Rates		
	Effect Estimate	Standard Error	Effect Estimate	Standard Error	Odds Ratio
Reading	-1.37	0.92	-0.11	0.11	0.89
Writing	-0.47	1.06	0.00	0.12	1.00
Mathematics	-0.93	1.33	0.01	0.10	1.01
Science	-1.08	1.19	-0.08	0.08	0.93
Social Studies	-2.86~	1.46	-0.14	0.10	0.87

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

Results suggest that the impact of PARS on 10th grade OGT performance was non-significant in all subjects except Social Studies. The significant effect in Social Studies is small and negative, suggesting that students attending schools in PARS districts scored, on average, almost 3 points below students in the control districts. With regards to OGT proficiency rates, effect estimates for 10th graders' performance are both positive and negative across the five subjects, with all of the effect estimates being small and statistically non-significant. Overall, the effects of PARS on 10th grade students taking the OGT for the first time are generally negligible.

Impacts of PARS on OGT Retake Rates

One of the primary goals of PARS is to increase student motivation to pass the OGT and graduate high school, having demonstrated proficiency in five key subject areas. The OGT is quite challenging for many students, with nearly one-third of first-time takers failing at least one subject. Students who fail to pass all five tests are likely at greater risk of becoming discouraged and possibly dropping out of school. Research suggests that grades or scores in the absence of constructive feedback can have a detrimental effect on student achievement (Butler 1987; 1988). Although students who fail the OGT have multiple opportunities to retake the test, the retakes are optional, and students may choose to drop out or receive a certificate of attendance instead of a diploma. Therefore, it would be beneficial if PARS actually increased the likelihood of students attempting to pass the OGT after having failed one or more subject tests.

In order to estimate the degree to which PARS impacts the rate at which students retake the OGT, we compare the OGT retake rates between the treatment and control groups for each subject. Because prior OGT performance and other background characteristics may also influence the likelihood of students' choosing to retake the test, we include March 2006 OGT scores and other student and school characteristics as control variables. This allows the comparison between treatment and control groups of retake rates for students who have the same prior OGT score and the same background characteristics. Results from HLM analyses of student retake rates for the 2006–07 school year (across all three retake opportunities) are presented in **Table 8.2**.

Results reveal consistent large effects of PARS on student retake rates across all five subjects. Students who failed the Reading or Writing sections of the OGT were more than 50% more likely to attempt at least one retake if they attended a school with access to PARS. In Mathematics, students in treatment schools were almost 90% more likely to attempt at least one retake. Effects in Science and Social Studies were even larger. Students who failed the Science section of the OGT were almost 4 times (400%) more likely to attempt at least one retake if they attended a school with access to PARS, while students who failed the Social Studies section of the OGT were over twice as likely (210% more likely) to attempt at least one retake if they attended a school with access to PARS. These effects on student retake rates are quite large and highly significant in all five subjects.

Table 8.2
Impacts of PARS on OGT Retake Rates

OGT Subject	Effects on OGT Retake Rates		
	Effect Estimate	Standard Error	Odds Ratio
Reading	0.43**	0.15	1.54**
Writing	0.41**	0.13	1.51**
Mathematics	0.63***	0.13	1.88***
Science	1.38***	0.14	3.97***
Social Studies	0.74***	0.12	2.10***

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

Impacts of PARS on OGT Retake Performance

Although PARS appears to have strong impacts on the rate at which students choose to retake the OGT, these effects will be much more important if PARS is also able to impact student performance positively when students retake the test. To estimate the effects of PARS on student OGT performance on retakes, we compare students' scaled scores and proficiency levels for the three retake opportunities during the 2006–07 school year. For students who attempted multiple retakes, we use their highest scores, regardless of treatment or control group assignment. Results from HLM analyses of student performance on OGT retakes during the 2006–07 school year are presented in **Table 8.3**.

Table 8.3
Impacts of PARS on OGT Retake Scaled Scores and Proficiency Rates

OGT Subject	Effects on OGT Retake Scaled Scores		Effects on OGT Retake Proficiency Rate		
	Effect Estimate	Standard Error	Effect Estimate	Standard Error	Odds Ratio
Reading	1.33	1.18	0.11	0.14	1.12
Writing	2.48~	1.36	0.17	0.13	1.19
Mathematics	2.04**	0.74	0.13	0.10	1.14
Science	3.27***	0.73	0.24**	0.08	1.27**
Social Studies	2.89***	0.86	0.20*	0.09	1.22*

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

Results are positive and statistically significant in most subject areas. The impact estimates for Reading scaled scores and proficiency rates are positive, but small and statistically insignificant. In Writing, there is a small marginally positive significant effect on students' scaled scores, suggesting that students in the treatment group scored about 2.5 points above students in the control group. In Mathematics, there is also a small positive effect of scaled scores that is clearly statistically significant. Students in districts with access to PARS scored about 2 points above students in control districts. In Science and Social Studies, results are positive and highly statistically significant for both scaled scores and proficiency rates. Students in treatment districts scored about 3 points higher in Science and Social Studies than students in control districts. In terms of OGT proficiency, students in treatment districts were 27% more likely to score proficient in Science and 22% more likely to score proficient in Social Studies than students in control districts.

Differences in the Impacts of PARS Across Subgroups

In order to estimate the impacts of PARS for subgroups of students, we perform analyses identical to those presented in the previous section on subgroups of students by gender, ethnicity, and English proficiency status. To estimate separate impact estimates for continuous variables (e.g., prior achievement) and for school variables, we include interaction effects in the models from the previous section.

Tables 8.4 and 8.5 present results by student subgroup or characteristic for scaled scores and proficiency rates respectively. In Reading, the previously insignificant overall effects hold true across the subgroups. The remaining OGT subjects show one or more significant positive effects across the subgroups. Female students show significant effects in Mathematics, Science, and Social Studies, while male students show significant effects in only Science. There are significant positive effects for African-American students in Mathematics, Science, and Social Studies. All but one of the effect estimates for white students are positive; however, none are statistically significant. There are significant positive effects in Writing for students with limited English proficiency, while other effects for these students are positive but insignificant.

We also estimate the impact of PARS on students with higher or lower prior scores on the OGT. Higher performing students are defined here as scoring below proficient, but scoring one standard deviation above the mean score of all students who scored below proficient. Lower performing students are similarly defined as scoring one standard deviation below the mean score of all students who scored below proficient. While PARS appears to have positive impacts in Science and Social Studies regardless of prior performance, there is some evidence to suggest that PARS is more effective in Writing and Mathematics for those students who previously scored closer to the OGT proficiency cutoff.

It is important to note that in cases where the effects of PARS are positive but not statistically significant, the true effect of the program may actually be positive but too small to detect with the present sample. Another interesting note is that while no statistically significant effects were evident in the scaled scores for students who have limited English proficiency (LEP), there were significant positive effects on those students' Writing and Science proficiency rates. This is likely due to the prior performance of many LEP students falling

VIII. Impact Analysis Results

very close to the OGT proficiency cut score. In fact, the median prior OGT score for LEP students was within 10 points of the OGT cut score in four subjects. In that case, a small gain of only 2 or 3 points is enough to push a student over the proficiency threshold.

Table 8.4
Impacts of PARS on OGT Retake Scale Scores by Student Subgroup

Student Subgroup	OGT Subject Area				
	Reading	Writing	Math	Science	Social Studies
Female	-0.63 (1.45)	2.52 (2.10)	2.64** (0.94)	2.06* (0.86)	2.74* (1.07)
Male	1.83 (1.60)	2.39 (1.56)	0.85 (0.96)	3.65*** (1.09)	1.71 (1.07)
African American	0.67 (1.67)	3.42 (2.24)	2.60** (0.95)	3.86*** (1.11)	2.34* (1.12)
White	0.08 (1.48)	1.40 (1.74)	0.94 (1.02)	0.36 (1.00)	1.64 (1.17)
Limited English Proficiency	2.78 (3.04)	3.75 (3.27)	0.33 (2.84)	4.12 (2.79)	2.57 (3.31)
Higher Performing Students	0.84 (1.41)	3.25* (1.58)	2.56** (0.85)	3.35*** (0.83)	2.69** (0.99)
Lower Performing Students	1.91 (1.5)	1.53 (1.68)	1.43 (0.89)	3.18*** (0.86)	3.12** (1.03)

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

Table 8.5
**Impacts of PARS on OGT Retake Proficiency Rates by Student Subgroup
(Expressed as Odds Ratios)**

Student Subgroup	OGT Subject Area				
	Reading	Writing	Math	Science	Social Studies
Female	1.02	1.13	1.13	1.13	1.22~
Male	1.25	1.20	1.10	1.28*	1.03
African American	1.14	1.22	1.05	1.45**	1.40*
White	0.99	1.21	1.16	1.04	1.05
Limited English Proficiency	1.62	3.76*	1.21	2.47*	1.17
Higher Performing Students	0.97	1.29~	1.27*	1.29**	1.27*
Lower Performing Students	1.34	1.08	0.98	1.24*	1.16

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

Additional analyses produced separate impact estimates for different types of schools. It is important to note that the small sample size at the school level (n=100) makes it difficult to produce precise estimates. As such, one must be especially careful to avoid making statements about effect estimates based solely on statistical significance. Although many estimates in the following tables are not statistically significant at the .10 level, these estimates are usually not significantly different from the largest effect estimates in the table (due to their large standard errors). **Tables 8.6 and 8.7** present results by school characteristic for scaled scores and proficiency rates respectively.

Results suggest that effects of PARS are generally positive for suburban, urban, and rural schools. There is some evidence to suggest that effects in urban schools are stronger in Mathematics, Science, and Social Studies, while effects in rural schools are stronger in Reading and Writing. There is also some evidence to suggest that lower performing students experience larger effects of PARS in Writing and Science. Lastly, results suggest that effects of PARS in Mathematics, Science, and Social Studies may be stronger in high-poverty schools, while the effects of PARS in Reading and Writing may be stronger in low-poverty schools.

Table 8.6
Impacts of PARS on OGT Retake Scale Scores by School Characteristic

School Characteristic	OGT Subject Area				
	Reading	Writing	Math	Science	Social Studies
Suburban	1.98 (2.26)	2.42 (2.71)	2.19 (1.50)	3.09~ (1.58)	1.26 (1.81)
Urban	0.40 (1.71)	0.39 (2.06)	2.49* (1.05)	4.20*** (1.02)	5.26*** (1.24)
Rural	2.17 (2.27)	5.46* (2.45)	1.06 (1.47)	1.61 (1.44)	0.20 (1.62)
Higher Performing	-1.12 (2.40)	1.06 (2.04)	2.27~ (1.20)	1.56 (1.29)	3.81* (1.60)
Lower Performing	3.59 (2.28)	5.06 (3.08)	1.75 (1.41)	5.11*** (1.37)	1.96 (1.64)
High Poverty	-0.49 (1.97)	-0.32 (2.33)	3.09* (1.22)	4.83*** (1.18)	6.42*** (1.43)
Low Poverty	2.80 (1.78)	4.66* (2.00)	1.16 (1.11)	1.83 (1.12)	-0.14 (1.29)

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

Table 8.7

**Impacts of PARS on OGT Retake Proficiency Rates by School Characteristic
(Expressed as Odds Ratios)**

School Characteristic	OGT Subject Area				
	Reading	Writing	Math	Science	Social Studies
Suburban	1.30	1.33	1.10	1.43*	1.09
Urban	0.87	0.88	1.16	1.40**	1.56**
Rural	1.57	1.67*	1.14	0.99	0.95
Higher Performing	0.83	1.01	1.13	1.03	1.37~
Lower Performing	1.48	1.58	1.14	1.57***	1.09
High Poverty	0.77	0.75	1.13	1.44**	1.72***
Low Poverty	1.58*	1.66**	1.14	1.15	0.96

Note. ~p<.10, *p<.05, **p<.01, ***p<.001

IX. Conclusions and Recommendations



In this chapter, we summarize the results of our analyses and describe a number of factors which appear to have limited the potential impacts of PARS. Based upon these conclusions, we then outline a number of specific recommendations intended to improve the accessibility and utility of PARS components.

Summary of Results

Results from this randomized field trial suggest that PARS has had positive effects on student motivation and OGT outcomes for many students. Effects on student motivation are evident in that PARS significantly increased OGT retake rates for students who failed one or more sections on prior attempts. While PARS did not appear to impact the OGT scores of students taking the tests for the first time, PARS did show positive impacts on the OGT scores and proficiency rates of students retaking the OGT. Interview data also suggest that while most teachers used the PARS reports and websites on only a limited basis, many teachers involved in tutoring students who had failed the OGT were able to use PARS in meaningful ways to guide their support for students.

The differential effects of PARS for students taking the OGT for the first time versus the effects for students retaking the OGT may be explained by the different degrees of use of PARS by different types of teachers. While most regular teachers showed limited use of PARS, the subset of teachers who were involved in tutoring programs for students who failed the test reported much higher use of the reports and the website. A second possible explanation for the differential effects of PARS may be larger motivational effects for students receiving feedback after failing the OGT. Furthermore, the large effects for retake rates versus small effects for improvements in scores suggest that much of the effect of PARS may be due to larger impacts on student motivation and smaller effects on instruction and learning.

Teachers' Use of PARS

Of the 42 teachers we interviewed, most teachers found the PARS reports easy to understand and well-organized. They thought the new format and colorful graphs helped make the data more quickly meaningful compared to their black-and-white counterparts. When we asked which reports teachers had seen prior to the interview, about half replied that they seen the PARS School Report or the individual Student Reports, but only a few had seen the Intervention Report, the Retake Report, or the School Roster.

Teachers thought the PARS reports could be useful in a number of ways, and some teachers were able to cite specific examples in their own practice. These included informing their instructional decisions about what to teach and how to teach, facilitating communication with students, improving responsiveness for students who needed to retake the OGT,

and focusing school attention on students at risk of not graduating. The teachers who tended to report greatest use of PARS resources during the 2006–07 school year were those involved in tutoring students who were preparing for a retake.

Most teachers who visited the PARS Website focused their attention on its Data Analysis Tools, specifically the Student Roster and Item Analysis features, and the Benchmarks and Teaching Strategies available in Teaching Tools section. The Professional Tools section was visited only briefly by a few teachers. Teacher access to the website was limited by scarce training opportunities and the distribution of passwords through school administration. Nevertheless, most teachers had visited the website at least once and found it fairly easy to understand and navigate. Teachers especially liked its capacity to pull together and link so many resources—OGT data, benchmarks, test items, and teaching strategies—into one central location. As with the PARS reports, teachers reported using the PARS website to inform diagnostic decisions for individual students and for adjusting course curricula. The customized Student Roster feature proved cumbersome and time-consuming for some teachers, suggesting that additional individualized support and training for teachers would be helpful.

Students' Use of PARS

Of the 16 students we interviewed, most remembered receiving a PARS report, and all students felt the report was or could be helpful to them. Students found the reports sufficiently clear and easy to understand, spending up to 15 minutes reviewing the report. A majority of students used the PARS report to diagnose their performance in individual subjects, reporting that it helped them recognize their strengths and weaknesses or what they “needed to work on.” Most students focused on the central graphics of each page and overlooked information placed in the sidebars, so much so that most students did not recall seeing the web address for the PARS student website printed on their report. No student received a formal overview about the report’s purpose or how to read its contents.

Students experienced less access to the OGT student websites than to the PARS reports. Only one student had visited the PARS website and used the Tutorials and advice under Retaking the OGT. Only five students had visited the Measurement Inc. Website and used the Practice Tests and Scoring Practice features. Students heard about these websites through a teacher, tutor, or a specialized OGT study course. Again, none of the students we interviewed, either on his or her own or during the interview, noticed the Internet address and description of the OhioStudents.com website until it was pointed out to them during the interview. Although many students had not used the websites, most saw the websites as providing valuable insights into how to improve their score, review what they should know in each subject, and strengthen their knowledge base.

Impacts of PARS on OGT Performance

Statistical analyses of OGT data showed little evidence of effects on the performance of 10th grade students (who were taking the OGT for the first time); however, the analyses did reveal numerous large and statistically significant positive effects on the performance

of students retaking the OGT. More specifically, students in PARS districts who failed the March 2006 OGT (prior to the implementation of PARS) were up to four times more likely to attempt at least one retake of the OGT during the 2006–07 school year. Students in PARS districts also scored significantly higher on retakes compared to their counterparts in control districts. The largest effects occurred in Science and Social Studies, where students in treatment districts were 27% more likely to score proficient in Science and 22% more likely to score proficient in Social Studies than were students in control districts. This may be due to higher sensitivity of Social Studies and Science scores to knowledge in specific topic areas where targeted feedback may be more useful for students. Slightly larger effects were observed for African-American students. In Science and Social Studies, African-American students in PARS districts were about 40% more likely to score proficient on a retake of the OGT than their counterparts in control districts. An exceptionally large positive effect in Writing was observed for students with limited English proficiency. LEP students were nearly four times more likely to score proficient in Writing if they attended a school in a PARS district.

Factors Influencing the Impact of PARS

During the study, we identified potential factors that may hold implications for the effectiveness of PARS. These factors emerged through our conversations with the ODE leadership, Grow staff, and school-based administrators and teachers participating in the fieldwork phase of the study. These include the PARS development schedule, roll-out strategy, approach to teacher training, and the quality of existing school-based professional communities. We have also included our assessment of the extent to which each factor may have influenced teacher and student access and use of PARS during the 2006–07 pilot year.

The PARS Development Schedule

The PARS resources arrived later than intended to treatment schools. Specifically, PARS reports from the March 2007 OGT administration were released during the summer rather than the spring, which may have influenced student opportunities to review performance information with teachers and to make plans. The late release may have also limited opportunities for teachers to consider the impact of the OGT results for their course planning for the upcoming school year. In addition, the Tutorials feature of the student website was not fully available until into the fall. The late availability of PARS resources was due in part to delays in project development. The implication for PARS was that students were on their own to interpret their reports. And teachers made limited use of the PARS website to plan towards the 2006–07 school year and advise students preparing for the October 2006 OGT retake. Because of this delay, we imagine the impact of PARS to be stronger in future years. Clearly PARS has greater potential to influence teachers' instructional decisions if the development schedule and delivery to schools better parallel the key planning points for teachers and administrators. If students receive the report during the school year, they are more likely to seek out their teachers for help planning next steps.

PARS as a Pilot Program

Another factor influencing the impact of PARS was the program rollout strategy for the pilot year. Rather than replace existing OGT reports with those of PARS, both traditional and new (PARS) OGT reports from the March 2006 administration were delivered to treatment schools. The confusion that accompanied the arrival of two reports was aggravated by the fact that the PARS reports arrived significantly later than the traditional OGT reports. This created some concern for principals who worried parents and students might become confused, and this concern may have affected the distribution of PARS reports in some schools. The implications cannot be fully known, but it is likely that the receipt of two reports initially diluted student and teacher attention to PARS during the pilot year. With the statewide adoption of PARS in 2007–08 school year, this will not likely be an issue.

The PARS Professional Development Strategy

Another influence on program impact was the use of a “train the trainers” model to disseminate information about PARS to teachers. While this model is cost-effective and adds flexibility to program delivery options, it has fairly weak mechanisms for quality control because it depends upon local discretion and capacity to design and deliver professional development to teachers. The range of professional development opportunities pursued in the four treatment schools participating in this study offer one snapshot of how the task of stimulating teacher use of PARS was interpreted at the school level. Teachers were critical of their introduction to PARS, which was typically an informational overview from administration about the website, not the reports, with no opportunity for hands-on training or time to collaborate with others. These teachers were interested in professional development opportunities that allowed them to explore performance patterns on their own and with others, preferably in a computer lab setting, and at different points during the school year. One school did provide training in a computer lab which teachers found helpful, but the session was too short and, since it was a one-shot introduction, the initial interest it generated proved difficult to sustain. While administrators offered general support for PARS, they refrained from setting expectations for its use and did not allocate resources to support its utility during the school year. This may have influenced teacher decisions about how much time to invest in reviewing and learning its features. One explanation is that because the program was in the piloting stage, administrators and teachers viewed the PARS project as supplemental or even temporary resource. Other local factors such as recent budget cuts, principal turnover, and pre-existing data and OGT preparation resources shaped local will and capacity to fully embrace PARS. The lack of a consistent and fully specified plan for supporting the use of PARS by individual teachers contributed to uneven teacher knowledge about and use of PARS across study schools.

The Strength of School-Based Professional Learning Communities

The PARS pilot also aimed to increase teacher collaboration and communication using OGT data. Yet, across all study schools teacher use of PARS was individually driven and rarely connected to peers. The PARS program, as we have seen in this study, has the capacity to influence individual teachers, but its capacity to influence groups of teachers

and stimulate organizational learning is not yet realized. This may be due in part to weakness in the PARS resources, specifically the design of the Web-based Professional Development Tools which many teachers found confusing. A more likely explanation is the quality of existing school-based professional learning communities in Ohio secondary schools. Only two study schools had active departments with scheduled time to meet, yet even teachers in these schools reported limited interactions due to workload issues and professional divisions. In fact, we heard many OGT strategies at an individual and school level, but few associated with teacher groups, such as grade level teams or departments. The variation we encountered in study schools serves as a reminder that the capacity of PARS to increase collaboration around the use of data depends on the strength of school-level organizational structures, e.g., department structures, scheduled meeting time, and collective accountability, to stimulate and sustain teacher collaboration. It will also depend on the quality of existing teacher communities within each school. Addressing this issue will be a challenge since much depends upon local decisions that sit beyond the state purview.

Recommendations

The PARS resources show much promise. By and large, teachers and students were excited about the new reports and Web-based resources. As with any new program, the opportunities for improvement are many. In some cases, this will require a fine-tuning of the existing PARS design. In other cases, it will require expanding PARS to include new capacities to meet teacher needs. We offer the following recommendations with the goal of strengthening PARS.

Improving Teacher and Student Access to PARS

- **Expand teacher access to the PARS reports through the PARS Website.**

Teachers saw great diagnostic value in the PARS reports, particularly the School and Student Reports, and they wanted to use them at different times during the year. Their access to the reports was limited, however, and those they did receive were typically black and white photocopies. One solution is to expand the PARS website to include PDF versions of each report. This would provide teachers access to the reports' color enhancements. It would also provide teachers flexibility to access and print reports as needed throughout the school year.

- **Improve teacher access to PARS passwords.**

One barrier to teacher use of the PARS website was the distribution of PARS passwords. At the school level, these passwords were typically managed by administrators. Some teachers misplaced their passwords during the year and had forgotten how to request another one. In another case, teachers were hesitant to approach administrators for fear of judgment. Schools could better encourage teacher use of PARS by involving department chairs or teacher leaders in the distribution of passwords. This strategy would connect teachers to peers, not administrators, who could also provide technical support and a professional community for using this resource.

- **Develop a job-embedded professional development and support system to help teachers make full use of PARS.**

Teachers felt the one-shot training they received at their school was inadequate and were frustrated that they could not identify a resource person in their school to resolve website issues. Furthermore, the Professional Development section of the website appears to have been used very little. A further complication arises from the fact that not all schools had active departments or time built into the school schedule for teachers to meet to discuss curriculum and instruction. For the most part, teachers' descriptions of how they used PARS individually suggest fine-tuning of existing practices instead of major instructional changes. For teachers to make full use of PARS, they need access to professional development that is ongoing, job-embedded, and focused on problems of practice. This includes broadening the professional development to include not only the mechanics of using the website but also examples from educators, both individuals and teams, about how the PARS resources informed their instructional decisions and improved student performance. Beyond learning the basic functionality of the website, schools need to provide teachers time to meet, and they need on-site technical assistance with some of the more complex features of the website, such as building custom groups. Teachers offered a number of suggestions such as using a faculty in-service day to review PARS tools on-line in pairs or teams or through a series of common planning periods dedicated to exploring patterns in OGT data and discussing instructional responses. Other ideas centered on identifying a knowledgeable individual in the schools to help teachers trouble shoot problems with accessing and using PARS. Ideally, these individuals would represent different subject areas and could touch base with department and grade level teams throughout the year.

- **Initiate a state-wide campaign to raise teacher awareness of PARS.**

During the pilot year, teachers' only source of information about PARS was an administrator at their school. State-based professional associations, such as teacher unions, subject-matter groups, and secondary schools, represent another resource for raising teacher awareness. State professional conferences also provide a meaningful venue for teachers to learn about the resources and explore its many features, particularly beginning teachers just becoming familiar with the OGT. Through these professional channels, teachers would encounter additional messages about the availability and use of PARS resources.

Improving the PARS Reports

- **Continue the use of color to enhance the presentation of OGT data in PARS reports.**

Both teachers and students felt the colorful displays of OGT data helped them better understand their school's scores and identify patterns in their performance. Although schools do not always have the resources to make color copies of the PARS reports, the availability of PDF versions on the Web would ensure teachers can benefit from this enhancement.

- **Address formatting choices that may obscure important information.**

Both teachers and students reported being put off by or ignoring sections of the reports and websites that were too “wordy.” Using call-out text and other techniques to break up the text and draw attention to main points may be helpful. Perhaps most importantly, the PARS paper reports also aim to raise student and teacher awareness of the PARS Web-based resources. Yet students did not notice the displays that advertised the Ohio students.com web address. Also, teachers skipped information located in the side bars of the report that displayed screen shots from the website that highlighted the Data Analysis Tools and Teaching Tools available on line. Finding a good way to raise teacher and student awareness about these complementary resources is important. If the reports are to be part of the dissemination strategy then revisit the placement, size, and prominence of these advertisements on each report. Another option would be to include a colorful supplement to the report that provides an overview of the website, perhaps as a one-page flyer teachers could store in their grade books for future reference or as a large poster for placement in the teacher lounge. A similar supplement could be distributed to students separately from their OGT score report.

- **Consider further customization of the final page of the student report.**

At least one student we talked to described feeling discouraged by the final page of the OGT student report. While this final page is designed to improve students’ motivation by relating performance in high school to future success in career and life, it may actually have a detrimental effect for students who repeatedly fail the OGT. A better use of that final page for these students may be to provide more specific guidance on what the student can do to increase their chances of passing the test on the next administration.

Improving the PARS Websites

- **Address issues regarding the usability of the custom group feature.**

Teachers reported difficulty using the custom grouping feature. We see two potential sources to this problem. Website usability might be a technical issue that requires revisiting the design of the custom grouping feature in order to improve its transparency and functionality to teachers. On the other hand, it might be a professional development issue that requires redesigning the training and support systems available to teachers as they start using the Data Analysis Tools throughout the school year.

- **Expand the Teaching Strategies feature to include instructional strategies appropriate for tutoring.**

The dominant strategy for preparing students to retake the OGT was tutoring. Yet teachers with tutoring responsibilities felt the available teaching strategies were inappropriate or would require considerable adaptation for use in a tutoring context. These are important instructional decisions that contribute to student readiness to retake the OGT. The website has the potential to provide guidance to teachers engaged in these specific tasks.

- **Expand the Test Item Analysis feature to include formative assessments.**

The PARS reports and website provided teachers with aggregate performance information at the benchmark level and for individual test items. However, teachers and many students were not completely satisfied with this level of feedback. They also wanted performance information that shed light on individual student understanding of particular concepts, procedures, or knowledge areas within each benchmark. They believed access to individual test item responses could address this need and, in turn, improve their preparation for the OGT. The capacity of the OGT to offer teachers guidance at this level of diagnosis, however, is fairly weak. Specifically, individual subject tests of the OGT have included only one test item for an individual benchmark concept and not all concepts are covered. From a psychometric standpoint then, the OGT data can be suggestive of performance patterns but cannot provide a reliable measure of student knowledge. Although the test is limited in this capacity, teacher requests for better diagnostic support are important to address as they speak to the very purpose of PARS. The ODE could expand key features of PARS to provide teachers additional assessment resources. One strategy would be to provide a pool of assessment items so that teachers can build their own formative assessments. Another strategy would be to provide teachers access to ready-made quizzes focused on each benchmark. This diagnostic support need not mirror the OGT test format. It could be designed more broadly to help teachers surface student misconceptions about specific concepts and procedures. Some of these resources may already be available from commercial publishers and assessment companies.

Concluding Remarks

The relatively high level of confidence with which we draw conclusions and make recommendations is due most certainly to the research design used in this evaluation. Despite a number of problems that rendered some data sources unusable or completely absent (e.g., survey data, parent interviews), we were able to compare outcomes for PARS districts to an equivalent sample of comparison districts and couple that with our understanding of how PARS was used by teachers and students (as described during dozens of hours of interviews). These multiple simultaneous methods of studying this intervention have allowed us to confirm and describe specific causal pathways in our conceptual framework. Moreover, we are also able to identify which pathways may be strengthened and how this might be done. The scope of this study was relatively ambitious, and we believe we have met most of our evaluation goals. We hope that this study becomes just one of many examples of large scale, mixed-methods, randomized evaluations of state programs and policies.

X. References



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Appendix A: Technical Appendix



Overview

This Technical Appendix describes the details of the statistical models used to estimate impacts of the PARS program on OGT retake rates and student performance. The first section describes the logic behind the general multilevel modeling approach used across all analyses in this report. The second section describes the models used to estimate the impacts of PARS on OGT scaled scores. The third section describes the models used to estimate the impacts of PARS on OGT retake rates and proficiency rates.

Multilevel Structure and Statistical Modeling

Because the experimental design for this evaluation employed cluster random assignment, and because the outcomes of interest were measured at the student level with students clustered within schools and districts, the statistical models used to estimate effects on students' OGT scores were hierarchical in nature. This hierarchical or multilevel modeling approach includes explicit parameters to model the grouping of students within schools and schools within districts. If a single-level student outcomes analysis were used to estimate program impacts in this study, the results would be biased, standard errors would be underestimated, and the Type I error rate and rates of statistical significance would be inflated.

The parameters which represent clustering in these analyses were specified as random effects, which is the customary approach for multilevel data from educational contexts. This approach treats the schools and districts as if they were a representative sample of schools and districts from the population of interest. This assumption is obviously appropriate in this case because the PARS districts and schools were sampled to represent the larger statewide population of Ohio schools and districts. The key benefit of the random effects method is that results can be generalized to the entire state. If instead fixed effects were used for schools and districts, then the results could not be generalized beyond the participating sample of schools and districts.

Theoretically, multilevel models can include clusters (e.g., districts) that have as few as one subcluster (e.g., school) or individual (e.g., student). However, such small sample sizes can make estimation of model parameters difficult or impossible. In this evaluation, while the number of students in each school and in each district was always relatively large ($N > 30$), the number of schools per district was routinely small. In fact, only 7 districts out of the total sample of 60 included more than one high school. For the remaining 53 districts, the influence of the district and the influence of the school on student outcomes are completely confounded. In other words, when all high school students in a district attend the same school, it is impossible to separate effects of the district from effects of

the school. To some degree, multilevel models are able to address this problem by allowing the relative size of school and district effects for larger districts to inform the estimation of separate school and district effects for smaller districts. The disadvantages of this approach are that the school/district relationships from large districts may exert undue influence on those of small districts, and that the successful estimation of the model requires that the number of large districts be high enough to allow accurate estimation of parameters. Both of these disadvantages are significant enough to warrant another approach to modeling the district and school effects in this study.

The approach used here to model the school and district parameters borrows from techniques used in Value Added Modeling (VAM), which has become a popular method for estimating separate effects of teachers and schools on student achievement (Sanders & Horn, 1994; McCaffrey, Lockwood, Koretz, Louis, Hamilton, 2004; Tekwe et al., 2004). Although these models specialize in estimating simultaneous effects for students, teachers, and schools, the methods used to estimate the complicated cross-classified multilevel structures (see Raudenbush & Bryk, 2002; Hill & Goldstein, 1998) inherent in VAM can also be used to specify incomplete multilevel structures. In the models estimating the impacts of PARS, we use these techniques to specify school-level random effects only for those districts that have more than one high school. More specifically, while the district-level random effects are specified in traditional form, the school-level random effects are specified as a series of indicator variables (i.e., 0/1 dummy variables) representing schools from districts with more than one schools. These are included in the model as random effects with a banded toeplitz covariance structure. The resultant model includes only a single random effect for districts with only one high school, and separate school and district effects for districts with more than one high school. The estimated covariance parameters from this model show the variability between schools in larger districts and the variability between districts statewide.

Statistical Models of Impacts on OGT Scaled Scores

The statistical models used to estimate impacts of PARS on students' OGT scaled scores were traditional three-level Hierarchical Linear Models (HLM) with the school-level random effects specified as described above. Model parameters were estimated using restricted maximum likelihood as implemented in PROC MIXED in SAS version 9.13. All models included the following control variables: student grade level, student gender, student race/ethnicity, student limited English proficiency status, school percentage of students eligible for free/reduced lunch, and school locale (urban, suburban, rural). Models which estimate effects of PARS on students' retake scores also include the student's prior OGT score and the school average OGT score as covariates.

The general mathematical form of the model is as follows:

$$Y_{ijk} = \beta_0 + \beta \mathbf{X}_{ijk} + \theta \mathbf{W}_{jk} + \alpha(\text{treatment}_k) + \eta_k + v_{jk} + \varepsilon_{ijk}$$

where: Y_{ijk} is the OGT score for student i from school j in district k

β_0 is the model intercept

β is a vector of coefficients for the \mathbf{X} vector of student-level covariates

θ is a vector of coefficients for the \mathbf{W} vector of school-level covariates

α is a parameter representing the impact of the PARS treatment

treatment_k is an indicator variable for treatment status for district k

η_k is the random effect for district k

v_{jk} is the random effect for school j in district k

ε_{ijk} is the residual term for student i from school j in district k

Random effects at the student, school, and district levels are assumed to be independent and identically distributed as Normal with constant variance σ^2 , τ_j^2 , and τ_k^2 , respectively.

Statistical Models of Impacts on OGT Retake Rates and Proficiency Rates

The statistical models used to estimate impacts of PARS on students' OGT retake rates and proficiency rates were three-level Hierarchical Generalized Linear Models (HGLM) with the school-level random effects specified as described above. These models are specifically suited for analysis of categorical outcomes; in this case, binary outcomes representing retake/not retake and passed/failed. More specifically, the models used are multilevel logistic regression models. Model parameters were estimated using restricted maximum quasi-likelihood as implemented in PROC GLIMMIX (June 2006 release) in SAS version 9.13. All models included the following control variables: student grade level, student gender, student race/ethnicity, student limited English proficiency status, school percentage of students eligible for free/reduced lunch, and school locale (urban, suburban, rural). Models which estimate effects of PARS on students' retake rates or proficiency rates also include the student's prior OGT score and the school average OGT score as covariates.

The general mathematical form of the model is as follows:

$$Y_{ijk} \sim \text{Bernoulli}(\pi_{ijk})$$

$$\ln\left(\frac{\pi_{ijk}}{1-\pi_{ijk}}\right) = \beta_0 + \boldsymbol{\beta}\mathbf{X}_{ijk} + \boldsymbol{\theta}\mathbf{W}_{jk} + \alpha(\text{treatment}_k) + \eta_k + \nu_{jk}$$

where: Y_{ijk} is the OGT retake or proficiency status (coded 0 or 1) for student i from school j in district k

π_{ijk} is the estimated probability of retaking the OGT or scoring proficient on an OGT retake for student i from school j in district k

β_0 is the model intercept

$\boldsymbol{\beta}$ is a vector of coefficients for the \mathbf{X} vector of student-level covariates

$\boldsymbol{\theta}$ is a vector of coefficients for the \mathbf{W} vector of school-level covariates

α is a parameter representing the impact of the PARS treatment

treatment_k is an indicator variable for treatment status for district k

η_k is the random effect for district k

ν_{jk} is the random effect for school j in district k

Random effects at the student, school, and district levels are assumed to be independent and identically distributed as Normal with constant variance σ^2 , τ_j^2 , and τ_k^2 , respectively.

Sample Selection Issues for Impacts on OGT Retake Performance

Students who scored below proficient on one or more sections of the OGT are given the opportunity to retake the assessment up to three times per year. While the majority of students who do not pass all five OGT subjects choose to attempt a retake of the OGT, students are not specifically required to do so. Some students who fail the OGT choose not to participate in a retake and others even drop out of school altogether. In this research, we seek to estimate the impacts of PARS on student performance on the OGT retakes, but we can only observe the OGT scores of students who actually participate in a retake. The lack of test scores for students who do not attempt a retake results in possible sample selection bias for analyses of OGT retake test scores. This is especially true when the retake rates differ between the treatment and control group, as is the case in this study.

For example, students in the treatment group in this study were up to four times more likely to attempt a retake than similar students in the control group, and the single most significant predictor of the probability of a retake attempt was the student's prior OGT score (i.e., higher prior scores corresponds to a greater chance of attempting a retake). This suggests that students in the treatment group with relatively low prior OGT scores were more prevalent in the data for the treatment group. In order to control for this difference, we include prior OGT scaled scores (and other background characteristics) as covariates in each model. This translates to estimating the average difference in OGT retake scores for students who had the same prior OGT scores. This method of covariate adjustment works best when the covariate(s) are perfect predictors of sample selection, as is the case in regression discontinuity designs (Shadish, Cook, & Campbell, 2002).

Other methods exist for correcting this kind of sample selection issue including principal stratification (Frangakis & Rubin, 1999), instrumental variables adjustment (Angrist, Imbens, & Rubin, 1996), propensity score matching or adjustment (Rosenbaum & Rubin, 1983), Heckman's method for selection correction (Heckman, 1976), and Bayesian methods (Imbens & Rubin, 1997). Unfortunately, each of these methods impose assumptions upon the data, they can produce conflicting results, and their use may fail to produce unbiased estimates of treatment effects (Holland, 1989; LaLonde & Maynard, 1987; Little, 1985; Murnane, Newstead, & Olsen, 1985; Wainer, 1986). Analyses of these data are planned to continue beyond this report for the purposes of comparing results from different methods for dealing with the sample selection issue and evaluating sensitivity of results to selection bias as suggested by Rosenbaum (2002).

Appendix B: Survey Results Tables



NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.1
Summary of Teacher Survey Responses Regarding Assess to OGT Reports and the New PARS Educator Website.

Survey Question	PARS Treatment Teachers			Control Group Teachers		
	No	Yes	I Don't Know	No	Yes	I Don't Know
Were OGT Reports distributed to teachers in your school?	8 (27%)	21 (70%)	1 (3%)	3 (9%)	24 (73%)	6 (18%)
Were usernames and passwords for the new OGT website distributed to teachers in your school?	11 (37%)	17 (57%)	2 (7%)			

Note. Response rates are 8% for the treatment group and 9% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.2
Summary of Teacher Survey Responses Regarding Use of the New PARS Educator Website.

Survey Question	Self-Reported Number of Website Logins Per Teacher					
	Never	1-2 Times	3-5 Times	5-10 Times	10-20 Times	> 20 Times
How many times have you logged into the OGT website?	11 (37%)	4 (13%)	7 (23%)	5 (17%)	2 (7%)	1 (3%)

Note. Response rate is 8%.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.3
Summary of Teacher Survey Responses Regarding Use of the Teaching Tools and Professional Development Tools Sections of the New PARS Educator Website.

Survey Question	PARS Treatment Teachers	
	No	Yes
Did you use the Teaching Tools section of the website?	17 (61%)	11 (39%)
Did you use the Professional Development Tools section of the website?	23 (88%)	3 (12%)

Note. Response rate is 8%.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.4
Summary of Teacher Survey Responses Regarding Use and Utility of the New PARS Reports and Educator Website (Treatment Group) versus the Questar OGT Reports and Excel Data File (Control Group).

Survey Scale	PARS Treatment Group			Control Group		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Use of Printed Reports	30	2.2	0.8	34	2.0	0.9
Clarity of Printed Reports	27	3.0	0.6	28	2.9	0.5
Utility/Helpfulness of Printed Reports	24	2.8	0.7	26	2.5	0.7
Use of PARS Educator Website	30	1.6	0.5			
Clarity of PARS Educator Website	20	2.9	0.4			
Utility/Helpfulness of PARS Educator Website	18	3.1	0.3			
Utility of Teaching Tools to Inform Instruction	13	2.7	0.6			
Utility of Professional Development Tools to Inform Instruction	6	2.4	0.7			
Use of Questar OGT Data Excel File				34	1.5	0.8
Utility/Helpfulness of Questar OGT Data Excel File				10	2	1.1
Overall Utility for Informing Instruction	22	2.9	0.5	30	2.4	0.8

Note. Response rates are 8% for the treatment group and 9% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.5
Summary of Student Survey Responses Regarding Access and Use of OGT Reports and Websites.

Survey Question	PARS Treatment Group		Control Group	
	No	Yes	No	Yes
Did you receive an OGT score report?	3 (27%)	8 (73%)	1 (4%)	25 (96%)
Did you visit http://www.ohiostudents.com ?	11 (100%)	0 (0%)	20 (74%)	7 (26%)
Did you visit http://ohio.measinc.com/content.htm ?	10 (91%)	1 (9%)	22 (88%)	3 (12%)
Did you use any online tutorials?	11 (100%)	0 (0%)	3 (43%)	4 (57%)
Did you review any of the sample responses?	10 (91%)	1 (9%)	1 (25%)	3 (75%)
Did you take any practice tests?	10 (91%)	1 (9%)	3 (43%)	4 (57%)

Note. Response rates are 6 % for the treatment group and 14% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.6
Summary of Student Survey Responses Regarding their Review of OGT Score Reports with Parents and Educators (i.e., Teachers, Guidance Counselors, Tutors).

Survey Scale	PARS Treatment Group			Control Group		
	Not Reviewed	Reviewed Briefly	Reviewed and Planned Next Steps	Not Reviewed	Reviewed Briefly	Reviewed and Planned Next Steps
Did you look at your report with your parent(s)?	2 (18%)	7 (64%)	2 (18%)	5 (19%)	15 (56%)	7 (26%)
Did you look at your report with a teacher, a guidance counselor, or a tutor?	8 (73%)	1 (9%)	2 (18%)	13 (54%)	11 (46%)	0 (0%)

Note. Response rates are 6% for the treatment group and 14% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.7
Summary of Student Survey Responses Regarding Use and Utility of the OGT Reports and Student Websites.

Survey Scale	PARS Treatment Group			Control Group		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Use of Printed Reports	11	1.7	0.3	26	1.8	0.3
Clarity of Printed Reports	11	3.0	0.3	26	3.0	0.3
Utility/Helpfulness of Printed Reports	11	2.9	0.5	26	2.8	0.5
Utility/Helpfulness of PARS Student Website	2	2.3	0.5	15	2.3	0.7
Utility/Helpfulness of PARS Online Tutorials	2	2.4	0.2	15	2.2	0.8
Utility/Helpfulness of Online Sample Responses	2	3.3	0.9	15	2.2	0.9
Utility/Helpfulness of Online Practice Tests	2	3.3	0.9	15	2.3	0.9

Note. Response rates are 6 % for the treatment group and 14% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.8
Summary of Parent Survey Responses Regarding Access and Use of OGT Reports and Websites.

Survey Question	PARS Treatment Group		Control Group	
	No	Yes	No	Yes
Did your son or daughter show you an OGT score report?	2 (20%)	8 (80%)	2 (9%)	21 (91%)
Did you visit http://www.ohiostudents.com?	10 (100%)	0 (0%)	20 (87%)	3 (13%)
Did you visit http://ohio.measinc.com/content.htm?	9 (90%)	1 (10%)	23 (100%)	0 (0%)
Did you ask your child to use any online tutorials?	10 (100%)	0 (0%)	22 (96%)	1 (4%)
Did you ask your child to review any of the sample responses?	9 (90%)	1 (10%)	23 (100%)	0 (0%)
Did you ask your child to take any practice tests?	9 (90%)	1 (10%)	22 (96%)	1 (4%)

Note. Response rates are 5 % for the treatment group and 12% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.9
Summary of Parent Survey Responses Regarding their Review of OGT Score Reports with Their Child and Educators (i.e., Teachers, Guidance Counselors, Tutors).

Survey Scale	PARS Treatment Group			Control Group		
	Not Reviewed	Reviewed Briefly	Reviewed and Planned Next Steps	Not Reviewed	Reviewed Briefly	Reviewed and Planned Next Steps
Did you look at the report with your son or daughter?	2 (20%)	6 (60%)	2 (80%)	3 (13%)	14 (61%)	6 (26%)
Did you look at the report with a teacher, a guidance counselor, or a tutor?	7 (88%)	0 (0%)	1 (12%)	14 (78%)	4 (22%)	0 (0%)

Note. Response rates are 5 % for the treatment group and 12% for the control group.

NOTE: Due to response rates below 20% and small sample sizes, any interpretations or conclusions drawn from these data are questionable and possibly misleading.

Table B.10
Summary of Parent Survey Responses Regarding Use and Utility of the OGT Reports and Student Websites.

Survey Scale	PARS Treatment Group			Control Group		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Use of Printed Reports	10	1.7	0.4	23	1.8	0.4
Clarity of Printed Reports	9	3.1	0.4	22	2.9	0.3
Utility/Helpfulness of Printed Reports	9	2.9	0.6	22	2.8	0.5
Utility/Helpfulness of PARS Student Website	2	2.5	0.3	9	2.8	0.7
Utility/Helpfulness of PARS Online Tutorials	2	2.4	0.2	9	2.4	0.6
Utility/Helpfulness of Online Sample Responses	2	2.3	0.5	9	2.4	0.4
Utility/Helpfulness of Online Practice Tests	2	3.5	0.7	9	2.5	0.7

Note. Response rates are 5 % for the treatment group and 12% for the control group.

Appendix C: Detailed Results from Statistical Analyses



Table C.1
Tenth Grade OGT Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	437.39***	1.14	444.33***	1.30	441.93***	1.62	432.43***	1.48	440.45***	1.82
Student Variables										
Male	-5.82***	0.27	-9.54***	0.28	2.81***	0.36	4.07***	0.38	3.51***	0.42
Asian	3.37**	1.14	3.22**	1.16	8.43***	1.54	2.35	1.61	2.57	1.77
African American	-10.34***	0.48	-10.21***	0.49	-19.34***	0.64	-20.81***	0.67	-18.49***	0.74
Hispanic	-6.60***	1.06	-5.34***	1.09	-8.90***	1.44	-9.32***	1.50	-9.80***	1.65
Other	-4.35***	0.93	-5.03***	0.96	-9.20***	1.26	-9.60***	1.30	-8.03***	1.44
Limited English Proficiency	-20.08***	0.94	-21.59***	0.97	-20.88***	1.27	-25.04**	1.34	-22.42***	1.46
School Variables										
Urban	-2.86	1.57	-1.74	1.80	-2.80	2.24	-4.81*	2.04	-3.78	2.51
Rural	-5.24***	1.16	-5.36***	1.34	-6.11***	1.66	-6.65***	1.51	-7.35***	1.86
Percent in Poverty	-0.22***	0.03	-0.27***	0.04	-0.35***	0.04	-0.34***	0.04	-0.37***	0.05
District Variables										
PARS Treatment Effect	-1.37	0.92	-0.47	1.06	-0.93	1.33	-1.08	1.19	-2.86	1.46
Random Effects										
District	9.28	2.21	13.20	2.97	20.47	4.67	14.57	3.66	23.24	5.52
School	37.28	8.80	35.96	8.61	45.21	11.11	87.32	20.24	122.29	28.24
Residual	386.61	3.76	402.64	3.92	707.08	6.85	776.25	7.52	932.65	9.06

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table C.2
Tenth Grade OGT Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	3.32***	0.13	3.97***	0.15	2.65***	0.12	1.96***	0.10	2.25***	0.12
Student Variables										
Male	-0.59***	0.04	-1.05***	0.05	0.00	0.04	0.16***	0.03	0.07*	0.03
Asian	0.05	0.20	0.42	0.24	0.55**	0.21	0.07	0.15	0.26	0.17
African American	-0.73***	0.07	-0.77***	0.08	-1.12***	0.06	-1.23***	0.05	-0.96***	0.06
Hispanic	-0.53***	0.14	-0.42**	0.15	-0.51***	0.13	-0.42***	0.12	-0.51***	0.12
Other	-0.50***	0.13	-0.55***	0.15	-0.53***	0.12	-0.53***	0.10	-0.46***	0.11
Limited English Proficiency	-1.72***	0.11	-1.72***	0.11	-1.36***	0.11	-1.81***	0.12	-1.46***	0.11
School Variables										
Urban	-0.27	0.18	-0.03	0.20	-0.11	0.17	-0.36**	0.14	-0.22	0.16
Rural	-0.40**	0.14	-0.44**	0.16	-0.31*	0.13	-0.34**	0.11	-0.33**	0.12
Percent in Poverty	-0.02***	0.00	-0.03***	0.00	-0.02***	0.00	-0.02***	0.00	-0.02***	0.00
District Variables										
PARS Treatment Effect	-0.11	0.11	0.00	0.12	0.01	0.10	-0.08	0.08	-0.14	0.10
Random Effects										
District	0.10	0.03	0.14	0.04	0.09	0.03	0.06	0.02	0.09	0.02
School	0.40	0.11	0.30	0.09	0.37	0.11	0.48	0.12	0.49	0.13

Note. * p<.05, ** p<.01, *** p<.001

Table C.3
OGT Retake Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	0.42	0.23	0.69**	0.20	0.88***	0.20	0.81**	0.27	0.78***	0.20
Student Variables										
March '06 OGT Scaled Score	0.02***	0.00	0.02***	0.00	0.03***	0.00	0.03***	0.00	0.02***	0.00
Grade 10	0.81**	0.28	0.57*	0.27	1.12***	0.28	1.49***	0.29	1.19***	0.27
Grade 12	-0.24**	0.09	-0.29**	0.09	-0.24**	0.07	0.01	0.06	-0.06	0.07
Ungraded	-2.97***	0.45	-3.10***	0.42	-3.07***	0.24	-3.27***	0.20	-3.54***	0.37
Male	-0.26**	0.08	-0.16	0.08	-0.34***	0.06	-0.41***	0.06	-0.26***	0.06
Asian	0.14	0.33	0.38	0.38	0.06	0.32	0.57*	0.28	0.41	0.29
African American	0.09	0.11	-0.03	0.11	0.27**	0.10	0.22**	0.08	0.02	0.09
Hispanic	0.47*	0.23	0.54*	0.24	0.65**	0.22	0.14	0.17	0.35	0.19
Other	-0.30	0.26	-0.07	0.25	-0.13	0.21	-0.28	0.18	-0.20	0.20
LEP	0.74***	0.16	0.40*	0.16	0.19	0.14	0.19	0.12	0.08	0.13
School Variables										
Urban	-0.23	0.30	-0.33	0.24	-0.46	0.28	-0.65	0.38	-0.49	0.27
Rural	0.24	0.24	0.04	0.20	-0.09	0.22	-0.08	0.30	0.02	0.22
Percent in Poverty	0.00	0.01	-0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00
Mean March '06 OGT Scaled Score	0.00	0.02	0.01	0.03	0.01	0.03	0.04	0.05	0.01	0.03
District Variables										
PARS Effect	0.43**	0.15	0.41**	0.13	0.62***	0.13	1.38***	0.14	0.74***	0.12
Random Effects										
District	0.28	0.11	0.16	0.07	0.29	0.10	0.75	0.20	0.29	0.10
School	0.22	0.09	0.15	0.07	0.10	0.05	0.11	0.04	0.09	0.04

Note. * p<.05, ** p<.01, *** p<.001

Table C.4
OGT Retake Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	386.24***	1.74	399.06***	2.18	389.44***	1.23	390.38***	1.33	391.81***	1.44
Student Variables										
March '06 OGT Scaled Score	0.03	0.01	0.10***	0.01	0.09***	0.01	0.04***	0.01	0.00	0.01
Grade 10	-1.96	2.03	-3.48	2.20	1.80	1.15	-2.37*	1.10	-5.48***	1.41
Grade 12	-0.36	0.94	-2.76**	0.96	1.16*	0.48	2.72***	0.43	3.72***	0.54
Ungraded	-8.11	10.09	5.03	15.45	4.50	3.37	-2.93	4.18	10.45	9.44
Male	-0.49	0.78	-2.64**	0.84	0.08	0.43	0.14	0.40	-0.70	0.49
Asian	-0.05	2.95	-4.25	3.36	-1.10	2.15	-0.13	1.70	4.31*	2.09
African American	0.98	0.95	-1.81	1.03	-1.46**	0.55	-2.37***	0.51	-1.31*	0.63
Hispanic	1.37	2.00	-3.53	2.21	-0.46	1.28	0.29	1.22	1.39	1.46
Other	-1.32	2.56	-3.29	2.51	1.64	1.38	-1.06	1.31	-0.68	1.62
LEP	1.26	1.29	-5.34***	1.49	-2.36**	0.83	-6.34***	0.83	-3.85***	1.04
School Variables										
Urban	0.08	2.14	-1.02	2.79	-2.56	1.67	0.19	1.83	-1.62	1.92
Rural	-0.19	1.85	-2.52	2.24	-0.39	1.33	0.78	1.43	-0.68	1.53
Percent in Poverty	-0.04	0.04	-0.10	0.05	0.00	0.03	-0.11**	0.04	-0.11**	0.04
Mean March '06 OGT Scaled Score	0.07	0.10	-0.08	0.14	0.12	0.08	-0.03	0.12	-0.08	0.11
District Variables										
PARS Effect	1.33	1.18	2.48	1.36	2.04**	0.74	3.27***	0.73	2.89***	0.86
Random Effects										
District	11.09	5.00	24.93	8.35	9.38	2.98	12.40	3.52	13.49	4.04
School	3.38	3.02	10.70	5.45	3.90	1.72	10.43	3.20	4.99	2.26
Residual	397.94	10.87	448.93	12.10	234.43	4.63	344.18	5.13	352.39	6.46

Note. * p<.05, ** p<.01, *** p<.001

Appendix C: Detailed Results from Statistical Analyses

Table C.5
OGT Retake Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.21***	0.21	0.08	0.20	-0.79***	0.14	-0.62***	0.12	-0.49***	0.13
Student Variables										
March '06 OGT Scaled Score	0.00**	0.00	0.01***	0.00	0.01***	0.00	0.00***	0.00	0.00	0.00
Grade 10	-0.23	0.25	-0.19	0.22	0.15	0.17	0.00	0.14	-0.19	0.18
Grade 12	-0.03	0.11	-0.39***	0.10	-0.03	0.08	0.13*	0.05	0.38***	0.06
Ungraded	-21.49	2x10 ⁴	0.79	1.48	0.11	0.49	0.02	0.50	-0.19	1.17
Male	-0.05	0.09	-0.21*	0.08	-0.04	0.07	0.08	0.05	-0.02	0.06
Asian	0.03	0.35	-0.35	0.35	-0.16	0.35	-0.01	0.21	0.59*	0.23
African American	0.24*	0.11	-0.17	0.10	-0.15	0.08	-0.28***	0.06	-0.12	0.07
Hispanic	0.09	0.24	-0.29	0.23	-0.24	0.21	-0.11	0.15	0.17	0.17
Other	0.10	0.30	-0.07	0.25	0.14	0.20	-0.19	0.16	-0.09	0.19
LEP	0.00	0.15	-0.43**	0.16	-0.28	0.14	-0.54***	0.12	-0.33*	0.13
School Variables										
Urban	0.00	0.27	0.09	0.24	-0.34	0.19	-0.07	0.16	-0.19	0.16
Rural	-0.04	0.23	-0.29	0.20	-0.12	0.15	0.03	0.13	-0.21	0.13
Percent in Poverty	0.00	0.01	-0.01	0.00	0.00	0.00	-0.01*	0.00	-0.01*	0.00
Mean March '06 OGT Scaled Score	0.00	0.01	-0.02	0.01	0.01	0.01	-0.01	0.01	-0.01	0.01
District Variables										
PARS Effect	0.11	0.14	0.17	0.13	0.13	0.10	0.24**	0.08	0.20*	0.09
Random Effects										
District	0.19	0.09	0.16	0.07	0.08	0.04	0.06	0.03	0.07	0.04
School	0.01	0.03	0.08	0.05	0.04	0.03	0.12	0.04	0.05	0.03

Note. * p<.05, ** p<.01, *** p<.001

Table C.6
Female Students' OGT Retake Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	387.57***	1.76	400.92***	3.18	388.82***	1.44	391.50***	1.32	392.23***	1.59
Student Variables										
March '06 OGT Scaled Score	0.05*	0.02	0.15***	0.03	0.09***	0.01	0.03**	0.01	0.00	0.01
Grade 10	-3.52	3.25	-1.03	3.64	2.10	1.59	-0.91	1.50	-4.83*	2.01
Grade 12	-1.05	1.38	-5.30***	1.51	0.98	0.63	2.80***	0.55	3.67***	0.70
Ungraded	-14.30	14.45	1.23	15.65	1.46	4.35	-2.77	4.87	22.26	13.00
Asian	5.50	4.93	0.23	5.87	-2.06	2.99	1.44	2.23	4.87	2.92
African American	1.49	1.37	-1.74	1.59	-0.93	0.72	-1.64*	0.67	-1.78*	0.82
Hispanic	3.30	3.29	0.92	3.41	1.40	1.79	1.61	1.75	3.11	2.11
Other	-6.11	4.04	-6.04	4.11	1.79	1.96	0.73	1.75	-0.29	2.23
LEP	-1.85	1.92	-8.40***	2.26	-5.42***	1.12	-9.31***	1.13	-6.00***	1.39
School Variables										
Urban	-0.68	2.00	0.98	4.07	-2.20	1.97	-0.44	1.77	-1.61	2.09
Rural	-0.52	2.14	1.38	3.45	1.74	1.61	-0.46	1.43	-0.73	1.73
Percent in Poverty	-0.01	0.04	-0.18*	0.08	-0.01	0.03	-0.10**	0.04	-0.10**	0.04
Mean March '06 OGT Scaled Score	0.18	0.11	-0.03	0.15	0.11	0.09	0.05	0.11	-0.10	0.12
District Variables										
PARS Effect	-0.63	1.45	2.52	2.10	2.64**	0.94	2.06*	0.86	2.74*	1.07
Random Effects										
District	0.00	0.00	44.75	17.96	11.94	4.21	8.54	3.30	14.46	5.04
School	1.99	4.60	24.51	12.71	1.75	1.63	11.88	3.98	0.84	1.72
Residual	410.63	16.90	422.05	18.94	221.40	6.03	325.48	6.52	333.02	8.41

Note. * p<.05, ** p<.01, *** p<.001

Table C.7
Female Students' OGT Retake Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.16***	0.27	0.09	0.27	-0.77***	0.17	-0.52***	0.12	-0.44**	0.14
Student Variables										
March '06 OGT Scaled Score	0.01***	0.00	0.01***	0.00	0.01***	0.00	0.00**	0.00	0.00	0.00
Grade 10	-0.45	0.40	-0.03	0.37	0.07	0.25	0.32	0.19	-0.25	0.27
Grade 12	-0.09	0.16	-0.56***	0.16	-0.05	0.10	0.19**	0.07	0.36***	0.08
Ungraded	-21.15	3x10 ⁴	1.04	1.52	-0.11	0.68	0.28	0.57	1.11	1.45
Asian	0.81	0.52	0.34	0.60	-0.04	0.48	-0.05	0.28	0.58	0.33
African American	0.12	0.16	-0.18	0.16	-0.19	0.11	-0.24**	0.08	-0.22*	0.10
Hispanic	0.19	0.39	-0.13	0.37	0.15	0.28	-0.18	0.23	0.26	0.25
Other	-0.28	0.52	-0.24	0.45	0.14	0.29	0.09	0.20	-0.09	0.26
LEP	-0.25	0.23	-0.85***	0.25	-0.52*	0.21	-0.61***	0.17	-0.37*	0.18
School Variables										
Urban	0.03	0.33	0.20	0.33	-0.24	0.22	-0.03	0.15	-0.11	0.17
Rural	-0.15	0.32	-0.05	0.29	0.09	0.19	0.00	0.13	-0.24	0.15
Percent in Poverty	0.00	0.01	-0.01	0.01	-0.01	0.00	-0.01**	0.00	-0.01**	0.00
Mean March '06 OGT Scaled Score	0.00	0.01	-0.01	0.01	0.01	0.01	-0.01	0.01	-0.02	0.01
District Variables										
PARS Effect	0.02	0.19	0.12	0.20	0.12	0.13	0.12	0.09	0.20	0.11
Random Effects										
District	0.22	0.13	0.22	0.13	0.09	0.05	0.03	0.02	0.05	0.04
School	0.00	0.00	0.06	0.08	0.00	0.00	0.10	0.05	0.01	0.03

Note. * p<.05, ** p<.01, *** p<.001

Table C.8
Male Students' OGT Retake Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	385.02***	2.17	395.24***	2.07	390.17***	1.27	389.38***	1.75	390.78***	1.46
Student Variables										
March '06 OGT Scaled Score	0.00	0.02	0.08***	0.02	0.08***	0.01	0.06***	0.01	-0.02	0.01
Grade 10	-0.77	2.59	-4.28	2.75	1.69	1.67	-4.02*	1.63	-5.31**	1.98
Grade 12	0.01	1.27	-1.08	1.23	1.43	0.75	2.83***	0.68	3.80***	0.85
Ungraded	1.53	14.15	0.00***	0.00	8.78	5.32	-3.44	7.87	-2.16	13.80
Asian	-4.01	3.66	-6.51	4.09	-1.27	3.11	-2.20	2.62	3.91	3.00
African American	0.61	1.27	-1.87	1.32	-1.81*	0.82	-2.97***	0.78	-0.15	0.93
Hispanic	0.43	2.50	-6.21*	2.89	-2.11	1.85	-0.83	1.73	0.61	2.03
Other	2.02	3.29	-0.71	3.14	1.25	1.89	-3.02	1.94	-1.25	2.31
LEP	3.92*	1.71	-2.60	1.97	0.63	1.25	-3.53**	1.21	-1.31	1.56
School Variables										
Urban	1.41	2.80	-2.38	2.68	-1.82	1.63	0.68	2.33	-1.72	1.77
Rural	0.58	2.36	-5.00*	2.19	-2.79*	1.39	1.92	1.88	-1.11	1.51
Percent in Poverty	-0.06	0.05	-0.05	0.05	-0.01	0.03	-0.09*	0.04	-0.07*	0.04
Mean March '06 OGT Scaled Score	0.00	0.10	0.06	0.11	0.08	0.07	-0.05	0.14	0.06	0.09
District Variables										
PARS Effect	1.83	1.60	2.39	1.56	0.85	0.96	3.65***	1.09	1.71	1.07
Random Effects										
District	19.79	8.44	15.42	7.35	4.42	2.68	18.70	5.97	4.07	3.04
School	0.00	0.00	7.05	6.06	5.87	3.11	6.21	3.01	10.35	4.78
Residual	385.70	14.11	454.30	15.60	247.75	7.21	365.06	8.24	374.26	10.09

Note. * p<.05, ** p<.01, *** p<.001

Appendix C: Detailed Results from Statistical Analyses

Table C.9

Male Students' OGT Retake Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.35***	0.26	-0.11	0.21	-0.85***	0.18	-0.57***	0.15	-0.52***	0.14
Student Variables										
March '06 OGT Scaled Score	0.00	0.00	0.00*	0.00	0.01***	0.00	0.01***	0.00	0.00	0.00
Grade 10	-0.06	0.32	-0.27	0.28	0.25	0.24	-0.38	0.21	-0.12	0.25
Grade 12	-0.03	0.16	-0.27*	0.13	0.00	0.12	0.08	0.08	0.40***	0.09
Ungraded	-21.40	3x10 ⁴	0.00***	0.00	0.38	0.73	-0.59	1.11	-26.07	3x10 ⁵
Asian	-0.59	0.51	-0.70	0.44	-0.37	0.51	0.06	0.31	0.65*	0.32
African American	0.38*	0.16	-0.16	0.13	-0.11	0.12	-0.30***	0.09	0.03	0.10
Hispanic	0.06	0.30	-0.33	0.30	-0.63	0.32	-0.04	0.21	0.16	0.23
Other	0.37	0.38	0.06	0.31	0.13	0.27	-0.54*	0.24	-0.15	0.26
LEP	0.22	0.20	-0.16	0.20	-0.04	0.20	-0.51**	0.16	-0.28	0.18
School Variables										
Urban	0.00	0.33	0.01	0.27	-0.36	0.23	-0.06	0.20	-0.27	0.17
Rural	0.01	0.28	-0.46*	0.22	-0.35	0.20	0.08	0.16	-0.19	0.15
Percent in Poverty	-0.01	0.01	-0.01	0.01	0.00	0.00	-0.01	0.00	-0.01	0.00
Mean March '06 OGT Scaled Score	-0.01	0.01	-0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01
District Variables										
PARS Effect	0.22	0.19	0.18	0.16	0.10	0.14	0.24*	0.11	0.03	0.11
Random Effects										
District	0.25	0.13	0.17	0.10	0.09	0.07	0.08	0.04	0.02	0.04
School	0.00	0.00	0.10	0.07	0.07	0.06	0.07	0.05	0.08	0.05

Note. * p<.05, ** p<.01, *** p<.001

Table C.10
African American Students' OGT Retake Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	388.26***	1.89	394.35***	3.25	388.30***	1.16	385.31***	1.60	388.96***	1.37
Student Variables										
March '06 OGT Scaled Score	0.04	0.02	0.13***	0.02	0.09***	0.01	0.02	0.01	-0.02	0.01
Grade 10	-2.67	2.73	-3.89	2.72	0.56	1.35	-4.35**	1.38	-7.34***	1.76
Grade 12	1.52	1.44	0.59	1.45	2.17**	0.67	4.34***	0.59	5.49***	0.77
Ungraded	-1.80	14.81	0.00***	0.00	0.78	4.99	-5.66	6.08	0.31	12.80
Male	-0.45	1.18	-1.37	1.22	0.36	0.59	0.35	0.55	0.48	0.71
LEP	1.26	1.54	-5.11**	1.73	-3.50***	0.94	-7.65***	0.97	-2.37	1.22
School Variables										
Urban	2.39	2.48	-0.80	4.20	0.50	1.48	2.97	2.13	0.88	1.71
Rural	1.59	3.20	-4.92	4.36	4.61*	1.82	4.25	2.17	0.23	2.01
Percent in Poverty	-0.08	0.04	-0.05	0.08	-0.10***	0.02	-0.09*	0.04	-0.09**	0.03
Mean March '06 OGT Scaled Score	0.13	0.10	0.07	0.19	0.30***	0.06	0.00	0.12	-0.02	0.07
District Variables										
PARS Effect	0.67	1.67	3.42	2.24	2.60**	0.95	3.86***	1.11	2.34*	1.12
Random Effects										
District	0.00	0.00	29.35	16.26	0.00	0.00	6.50	4.01	0.00	0.00
School	0.24	3.10	24.82	10.88	5.08	2.24	13.38	4.33	5.63	2.77
Residual	432.00	17.34	402.22	16.94	219.51	6.17	327.56	7.01	322.43	8.90

Note. * p<.05, ** p<.01, *** p<.001

Appendix C: Detailed Results from Statistical Analyses

Table C.11
African American Students' OGT Retake Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-0.79**	0.28	-0.13	0.29	-0.94***	0.19	-1.13***	0.20	-0.69**	0.20
Student Variables										
March '06 OGT Scaled Score	0.01*	0.00	0.01***	0.00	0.01***	0.00	0.00	0.00	0.00	0.00
Grade 10	-0.43	0.33	-0.19	0.29	-0.07	0.23	-0.16	0.20	-0.58*	0.29
Grade 12	-0.07	0.16	-0.20	0.16	0.12	0.11	0.30***	0.08	0.53***	0.10
Ungraded	-20.80	2x10 ⁴	0.00***	0.00	-0.28	0.82	-0.15	0.82	-25.90	3x10 ⁵
Male	0.07	0.13	-0.14	0.13	0.08	0.10	0.13	0.07	0.14	0.09
LEP	0.03	0.18	-0.28	0.19	-0.41*	0.17	-0.73***	0.16	-0.13	0.16
School Variables										
Urban	0.19	0.35	0.16	0.37	0.08	0.24	0.30	0.26	-0.05	0.24
Rural	0.12	0.41	-0.67	0.43	0.48	0.28	0.38	0.26	-0.39	0.27
Percent in Poverty	-0.01	0.01	-0.01	0.01	-0.01**	0.00	-0.01*	0.01	-0.01*	0.00
Mean March '06 OGT Scaled Score	0.01	0.01	0.01	0.02	0.03*	0.01	0.01	0.01	-0.01	0.01
District Variables										
PARS Effect	0.13	0.21	0.20	0.22	0.05	0.15	0.37**	0.13	0.34*	0.15
Random Effects										
District	0.15	0.16	0.17	0.16	0.03	0.07	0.09	0.06	0.05	0.07
School	0.00	0.04	0.11	0.08	0.03	0.04	0.16	0.06	0.08	0.07

Note. * p<.05, ** p<.01, *** p<.001

Table C.12
White Students' OGT Retake Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	386.42***	2.02	401.47***	2.48	389.77***	1.44	392.00***	1.44	393.32***	1.70
Student Variables										
March '06 OGT Scaled Score	0.03	0.02	0.05*	0.02	0.08***	0.01	0.08***	0.01	0.01	0.01
Grade 10	-1.46	3.70	0.67	4.25	5.09*	2.48	3.37	2.07	0.30	2.53
Grade 12	-2.46	1.38	-5.17***	1.43	-0.31	0.77	1.32	0.67	2.46**	0.82
Ungraded	-19.62	19.48	0.00***	0.00	2.14	5.09	-0.38	6.03	31.07	19.48
Male	-0.75	1.14	-3.63**	1.27	-0.30	0.68	0.13	0.61	-1.69*	0.73
LEP	2.69	5.27	-4.87	6.23	2.12	3.45	2.95	3.00	-1.59	3.93
School Variables										
Urban	-1.60	2.34	-2.24	2.92	-3.16	1.86	-1.23	1.92	-2.88	2.19
Rural	-1.57	1.93	-3.30	2.31	-0.60	1.46	0.02	1.49	-0.99	1.71
Percent in Poverty	0.03	0.05	-0.11	0.06	0.02	0.04	-0.07	0.04	-0.09*	0.04
Mean March '06 OGT Scaled Score	0.03	0.09	-0.04	0.12	0.09	0.08	-0.01	0.11	-0.01	0.11
District Variables										
PARS Effect	0.08	1.48	1.40	1.74	0.94	1.02	0.36	1.00	1.64	1.17
Random Effects										
District	9.18	5.56	19.50	8.68	9.78	3.58	12.79	3.90	15.07	4.97
School	3.15	6.99	13.67	11.92	3.10	3.39	2.36	2.67	7.19	5.17
Residual	374.43	15.52	482.13	18.74	252.42	7.64	357.99	8.10	375.26	9.97

Note. * p<.05, ** p<.01, *** p<.001

Table C.13
White Students' OGT Retake Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.29***	0.27	0.10	0.22	-0.83***	0.17	-0.51***	0.13	-0.43**	0.16
Student Variables										
March '06 OGT Scaled Score	0.00	0.00	0.00	0.00	0.01**	0.00	0.01***	0.00	0.00	0.00
Grade 10	0.03	0.46	0.17	0.40	0.66*	0.32	0.39	0.22	0.44	0.27
Grade 12	-0.03	0.18	-0.46**	0.14	-0.30**	0.11	-0.01	0.08	0.31***	0.09
Ungraded	-20.89	4x10 ⁴	0.00***	0.00	0.03	0.71	0.34	0.65	26.25	2x10 ⁵
Male	-0.15	0.14	-0.27*	0.12	-0.11	0.10	0.07	0.07	-0.14	0.08
LEP	0.01	0.67	-1.00	0.68	0.35	0.47	0.02	0.34	0.27	0.42
School Variables										
Urban	-0.32	0.32	-0.06	0.26	-0.48*	0.22	-0.28	0.16	-0.25	0.20
Rural	-0.16	0.26	-0.28	0.21	-0.14	0.17	-0.05	0.13	-0.18	0.16
Percent in Poverty	0.01	0.01	-0.01	0.01	0.00	0.00	0.00	0.00	-0.01	0.00
Mean March '06 OGT Scaled Score	0.00	0.01	-0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.01
District Variables										
PARS Effect	-0.01	0.19	0.19	0.16	0.15	0.13	0.04	0.10	0.05	0.12
Random Effects										
District	0.22	0.11	0.13	0.08	0.10	0.05	0.06	0.03	0.10	0.05
School	0.00	0.00	0.18	0.12	0.03	0.05	0.00	0.03	0.04	0.04

Note. * p<.05, ** p<.01, *** p<.001

Table C.14
Limited English Proficiency Students' OGT Retake Scaled Scores Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	387.79***	5.44	386.94***	5.71	388.59***	4.06	388.99***	3.78	385.40***	4.80
Student Variables										
March '06 OGT Scaled Score	0.03	0.03	0.18***	0.03	0.12***	0.02	0.05	0.03	0.00	0.03
Grade 10	-11.41**	3.69	-15.08***	3.99	-4.44	3.08	-9.54**	3.35	-10.38**	3.78
Grade 12	1.46	2.12	0.44	2.23	3.09*	1.56	4.26**	1.61	4.56*	1.96
Ungraded	-11.39	17.98	16.02	12.72	18.50	10.62	-11.16	19.29	10.74	19.43
Male	2.57	1.88	2.41	2.02	5.03***	1.44	4.87**	1.51	3.62*	1.80
Asian	-1.03	5.92	-3.12	6.15	-2.13	4.74	-9.94*	4.05	2.95	4.93
African American	5.04	5.10	-1.89	5.44	-3.23	3.43	-9.38**	3.32	1.92	4.11
Hispanic	6.12	5.22	-3.34	5.53	-0.21	3.58	-5.01	3.47	-0.13	4.21
Other	-4.38	7.23	-5.44	7.58	8.55	5.59	-8.81	5.47	5.49	6.18
School Variables										
Urban	9.03*	3.76	2.70	4.40	5.72	3.54	14.45***	3.64	9.46*	4.07
Rural	-3.78	4.62	-5.56	4.46	1.35	3.69	1.52	4.17	4.15	4.65
Percent in Poverty	-0.27***	0.08	-0.06	0.09	-0.12	0.06	-0.29***	0.07	-0.23**	0.07
Mean March '06 OGT Scaled Score	-0.20	0.14	0.11	0.13	-0.23	0.13	-0.21	0.14	0.04	0.14
District Variables										
PARS Effect	2.78	3.04	3.75	3.27	0.33	2.84	4.12	2.79	2.57	3.31
Random Effects										
District	0.00	0.00	0.00	0.00	0.00	0.00	3.47	6.13	0.00	0.00
School	0.00	0.00	7.32	9.28	21.18	10.49	12.70	9.16	19.12	12.27
Residual	311.89	22.66	292.28	23.64	201.26	13.78	355.90	19.69	320.17	22.11

Note. * p<.05, ** p<.01, *** p<.001

Table C.15

Limited English Proficiency Students' OGT Retake Proficiency Rates Model Parameter Estimates and Standard Errors

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.53	0.77	-1.86	0.91	-1.06	0.74	-1.06*	0.50	-0.29	0.56
Student Variables										
March '06 OGT Scaled Score	0.00	0.00	0.02**	0.00	0.01**	0.00	0.01*	0.00	0.00	0.00
Grade 10	-1.45	0.77	-2.15**	0.80	-0.44	0.68	-0.61	0.65	-1.68	1.05
Grade 12	0.28	0.28	-0.34	0.32	0.37	0.29	0.42	0.23	0.46	0.25
Ungraded	-20.69	2x10 ⁴	1.77	1.70	1.14	1.75	-21.00	7x10 ⁴	-21.07	4x10 ⁴
Male	0.20	0.26	0.53	0.29	0.24	0.28	0.27	0.23	0.17	0.24
Asian	-0.08	0.86	0.36	0.93	-0.67	0.84	-0.40	0.51	0.36	0.59
African American	0.69	0.73	0.93	0.81	-0.69	0.56	-0.87*	0.41	-0.10	0.49
Hispanic	0.69	0.74	0.58	0.83	-0.51	0.59	-0.47	0.42	-0.72	0.52
Other	-0.61	1.27	-0.04	1.18	0.02	0.96	-0.77	0.77	-0.23	0.77
School Variables										
Urban	1.06*	0.50	0.17	0.80	-0.06	0.69	1.08*	0.51	0.95*	0.48
Rural	-0.51	0.70	-2.43*	1.18	0.02	0.70	-0.22	0.61	0.03	0.57
Percent in Poverty	-0.03**	0.01	-0.03	0.01	0.00	0.01	-0.03**	0.01	-0.03***	0.01
Mean March '06 OGT Scaled Score	-0.05	0.03	-0.06	0.03	-0.01	0.02	-0.02	0.02	-0.01	0.02
District Variables										
PARS Effect	0.48	0.42	1.32*	0.60	0.19	0.53	0.90*	0.39	0.16	0.40
Random Effects										
District	0.00	0.00	0.55	0.69	0.35	0.50	0.24	0.24	0.00	0.00
School	0.00	0.00	0.00	0.00	0.29	0.25	0.01	0.13	0.16	0.20

Note. * p<.05, ** p<.01, *** p<.001

Table C.16
Parameter Estimates and Standard Errors for OGT Retake Scaled Scores Model with Student Achievement Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	384.82***	1.78	395.20***	2.26	389.31***	1.29	386.45***	1.42	387.85***	1.51
Student Variables										
March '06 OGT Scaled Score	0.04	0.02	0.08**	0.03	0.07***	0.01	0.04**	0.01	0.00	0.02
Grade 10	-1.88	2.04	-3.62	2.20	1.71	1.15	-2.39*	1.11	-5.46***	1.41
Grade 12	-0.35	0.94	-2.78**	0.96	1.15*	0.48	2.72***	0.43	3.73***	0.54
Ungraded	-8.18	10.09	4.77	15.45	4.47	3.37	-2.95	4.18	10.51	9.44
Male	-0.47	0.78	-2.65**	0.84	0.07	0.43	0.14	0.40	-0.69	0.49
Asian	-0.12	2.95	-4.26	3.35	-1.06	2.15	-0.13	1.70	4.31*	2.09
African American	0.97	0.95	-1.79	1.03	-1.45**	0.55	-2.37***	0.51	-1.31*	0.63
Hispanic	1.38	2.00	-3.55	2.20	-0.45	1.28	0.29	1.22	1.40	1.46
Other	-1.31	2.56	-3.27	2.51	1.65	1.38	-1.06	1.31	-0.68	1.62
LEP	1.28	1.29	-5.33***	1.49	-2.37**	0.83	-6.34***	0.83	-3.84***	1.04
School Variables										
Urban	0.06	2.13	-0.97	2.79	-2.54	1.67	0.19	1.83	-1.63	1.92
Rural	-0.20	1.85	-2.49	2.24	-0.39	1.33	0.78	1.43	-0.68	1.53
Percent in Poverty	-0.04	0.04	-0.10	0.05	0.00	0.03	-0.11**	0.04	-0.11**	0.04
Mean March '06 OGT Scaled Score	0.07	0.10	-0.08	0.14	0.12	0.08	-0.03	0.12	-0.08	0.11
Treatment Variables										
PARS Effect	1.38	1.18	2.39	1.36	2.00**	0.74	3.27***	0.73	2.91***	0.86
PARS Interaction	-0.02	0.03	0.03	0.03	0.02	0.02	0.00	0.02	-0.01	0.02
Mar '06 OGT Score										
Random Effects										
District	10.94	4.96	25.12	8.39	9.41	2.99	12.41	3.52	13.47	4.04
School	3.40	3.03	10.65	5.44	3.93	1.73	10.42	3.19	5.00	2.26
Residual	397.92	10.87	448.76	12.10	234.35	4.63	344.18	5.13	352.38	6.46

Note. * p<.05, ** p<.01, *** p<.001

Table C.17

Parameter Estimates and Standard Errors for OGT Retake Proficiency Rates Model with Student Achievement Interaction.

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.37***	0.22	-0.27	0.20	-0.88***	0.15	-0.87***	0.13	-0.81***	0.14
Student Variables										
March '06 OGT Scaled Score	0.01**	0.00	0.00	0.00	0.00*	0.00	0.00**	0.00	0.00	0.00
Grade 10	-0.21	0.25	-0.21	0.22	0.13	0.18	0.00	0.14	-0.20	0.18
Grade 12	-0.02	0.11	-0.39***	0.10	-0.03	0.08	0.13*	0.05	0.38***	0.06
Ungraded	-20.52	1x10 ⁴	0.76	1.47	0.10	0.49	0.01	0.50	-0.20	1.17
Male	-0.05	0.09	-0.21*	0.08	-0.04	0.07	0.08	0.05	-0.03	0.06
Asian	0.01	0.35	-0.35	0.35	-0.15	0.35	-0.01	0.21	0.59*	0.23
African American	0.24*	0.11	-0.17	0.10	-0.15	0.08	-0.28***	0.06	-0.12	0.07
Hispanic	0.09	0.24	-0.29	0.23	-0.24	0.21	-0.11	0.15	0.17	0.17
Other	0.11	0.30	-0.06	0.25	0.15	0.20	-0.19	0.16	-0.09	0.19
LEP	0.01	0.15	-0.43**	0.16	-0.28	0.14	-0.54***	0.12	-0.33*	0.13
School Variables										
Urban	0.00	0.26	0.10	0.24	-0.34	0.19	-0.07	0.16	-0.19	0.16
Rural	-0.05	0.23	-0.29	0.20	-0.12	0.15	0.03	0.13	-0.21	0.13
Percent in Poverty	0.00	0.01	-0.01	0.00	0.00	0.00	-0.01*	0.00	-0.01*	0.00
Mean March '06 OGT Scaled Score	0.00	0.01	-0.02	0.01	0.01	0.01	-0.01	0.01	-0.01	0.01
Treatment Variables										
PARS Effect	0.13	0.14	0.16	0.13	0.11	0.10	0.23**	0.08	0.20*	0.09
PARS Interaction	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar '06 OGT Score										
Random Effects										
District	0.19	0.09	0.17	0.07	0.08	0.04	0.06	0.03	0.07	0.04
School	0.00	0.03	0.08	0.05	0.04	0.03	0.12	0.04	0.05	0.03

Note. * p<.05, ** p<.01, *** p<.001

Table C.18
Parameter Estimates and Standard Errors for OGT Retake Scaled Scores Model with Locale Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	384.64***	2.03	395.49***	2.51	389.12***	1.46	386.38***	1.58	388.43***	1.71
Student Variables										
March '06 OGT Scaled Score	0.02	0.01	0.10***	0.01	0.09***	0.01	0.04***	0.01	0.00	0.01
Grade 10	-2.00	2.04	-3.55	2.20	1.81	1.15	-2.36*	1.10	-5.42***	1.41
Grade 12	-0.36	0.94	-2.82**	0.96	1.16*	0.48	2.72***	0.43	3.73***	0.54
Ungraded	-7.90	10.10	4.71	15.44	4.53	3.38	-2.85	4.18	10.72	9.43
Male	-0.49	0.78	-2.63**	0.84	0.08	0.43	0.14	0.40	-0.69	0.49
Asian	-0.06	2.95	-4.26	3.36	-1.09	2.15	-0.09	1.70	4.37*	2.09
African American	0.92	0.96	-1.98	1.04	-1.42*	0.55	-2.27***	0.52	-1.10	0.63
Hispanic	1.32	2.01	-3.60	2.21	-0.44	1.28	0.32	1.22	1.51	1.46
Other	-1.28	2.56	-3.11	2.51	1.56	1.38	-1.19	1.32	-0.84	1.63
LEP	1.32	1.29	-5.26***	1.49	-2.37**	0.84	-6.37***	0.83	-3.97***	1.04
School Variables										
Urban	0.96	2.65	0.05	3.34	-2.68	1.96	-0.35	2.09	-3.82	2.26
Rural	-0.40	2.52	-4.44	2.97	0.28	1.77	1.72	1.85	0.17	2.03
Percent in Poverty	-0.03	0.04	-0.09	0.05	-0.01	0.03	-0.11**	0.04	-0.11**	0.04
Mean March '06 OGT Scaled Score	0.06	0.10	-0.06	0.14	0.11	0.08	-0.04	0.13	-0.08	0.11
Treatment Variables										
PARS Effect	1.98	2.26	2.42	2.71	2.19	1.50	3.09	1.58	1.26	1.81
PARS Interaction w/ Urban Locale	-1.58	2.82	-2.03	3.42	0.30	1.83	1.11	1.88	3.99	2.19
PARS Interaction w/ Rural Locale	0.19	3.19	3.04	3.69	-1.13	2.13	-1.48	2.16	-1.06	2.46
Random Effects										
District	9.96	4.71	23.02	7.94	9.46	3.00	12.32	3.50	13.38	4.02
School	3.42	3.03	10.80	5.47	3.86	1.71	10.51	3.21	4.88	2.23
Residual	398.18	10.88	448.89	12.10	234.40	4.63	344.09	5.13	352.00	6.45

Note. * p<.05, ** p<.01, *** p<.001

Table C.19 Parameter Estimates and Standard Errors for OGT Retake Proficiency Rates Model with Locale Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.40***	0.25	-0.30	0.23	-0.88***	0.18	-0.95***	0.15	-0.78***	0.16
Student Variables										
March '06 OGT Scaled Score	0.00*	0.00	0.01***	0.00	0.01***	0.00	0.00***	0.00	0.00	0.00
Grade 10	-0.25	0.25	-0.20	0.22	0.15	0.17	0.01	0.14	-0.18	0.18
Grade 12	-0.02	0.11	-0.40***	0.10	-0.03	0.08	0.13*	0.05	0.38***	0.06
Ungraded	-21.44	2x10 ⁴	0.75	1.49	0.10	0.49	0.03	0.50	-0.17	1.17
Male	-0.05	0.09	-0.21*	0.08	-0.04	0.07	0.08	0.05	-0.02	0.06
Asian	0.03	0.35	-0.36	0.35	-0.16	0.35	0.00	0.21	0.59**	0.23
African American	0.22	0.11	-0.20	0.10	-0.15	0.08	-0.27***	0.06	-0.10	0.07
Hispanic	0.07	0.24	-0.31	0.23	-0.24	0.21	-0.11	0.15	0.19	0.17
Other	0.11	0.30	-0.05	0.25	0.14	0.20	-0.21	0.16	-0.11	0.19
LEP	0.02	0.15	-0.41**	0.16	-0.28	0.14	-0.54***	0.12	-0.35**	0.13
School Variables										
Urban	0.23	0.32	0.32	0.31	-0.38	0.24	-0.05	0.19	-0.40	0.21
Rural	-0.19	0.32	-0.45	0.28	-0.14	0.22	0.24	0.18	-0.11	0.19
Percent in Poverty	0.00	0.00	-0.01	0.01	0.00	0.00	-0.01*	0.00	-0.01**	0.00
Mean March '06 OGT Scaled Score	0.00	0.01	-0.02	0.01	0.01	0.01	-0.01	0.01	-0.01	0.01
Treatment Variables										
PARS Effect	0.26	0.27	0.28	0.25	0.09	0.19	0.36*	0.16	0.09	0.18
PARS Interaction w/ Urban Locale	-0.40	0.33	-0.41	0.32	0.06	0.24	-0.02	0.19	0.36	0.22
PARS Interaction w/ Rural Locale	0.19	0.39	0.23	0.35	0.03	0.28	-0.37	0.22	-0.14	0.25
Random Effects										
District	0.17	0.08	0.17	0.07	0.09	0.04	0.07	0.03	0.08	0.04
School	0.01	0.03	0.08	0.05	0.04	0.03	0.12	0.04	0.04	0.03

Note. * p<.05, ** p<.01, *** p<.001

Table C.20
Parameter Estimates and Standard Errors for OGT Retake Scaled Scores Model with School Achievement Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	385.17***	1.79	395.33***	2.25	389.23***	1.31	386.84***	1.43	387.61***	1.56
Student Variables										
March '06 OGT Scaled Score	0.03	0.01	0.10***	0.01	0.09***	0.01	0.04***	0.01	0.00	0.01
Grade 10	-1.99	2.03	-3.53	2.20	1.80	1.15	-2.38*	1.10	-5.48***	1.41
Grade 12	-0.35	0.94	-2.77**	0.96	1.16*	0.48	2.71***	0.43	3.72***	0.54
Ungraded	-8.18	10.09	4.47	15.46	4.51	3.37	-2.96	4.18	10.49	9.44
Male	-0.49	0.78	-2.65**	0.84	0.08	0.43	0.14	0.40	-0.69	0.49
Asian	-0.09	2.95	-4.32	3.36	-1.10	2.15	-0.16	1.70	4.32*	2.09
African American	0.92	0.95	-1.89	1.04	-1.46**	0.55	-2.41***	0.51	-1.29*	0.63
Hispanic	1.25	2.01	-3.59	2.21	-0.45	1.28	0.29	1.22	1.38	1.46
Other	-1.32	2.56	-3.41	2.52	1.62	1.38	-1.00	1.31	-0.71	1.62
LEP	1.27	1.29	-5.28***	1.49	-2.37**	0.83	-6.33***	0.83	-3.84***	1.04
School Variables										
Urban	-0.02	2.12	-1.76	2.87	-2.51	1.68	-0.16	1.83	-1.40	1.96
Rural	-0.36	1.85	-3.23	2.34	-0.31	1.37	0.11	1.48	-0.36	1.61
Percent in Poverty	-0.04	0.04	-0.10	0.05	0.00	0.03	-0.11**	0.04	-0.10**	0.04
Mean March '06 OGT Scaled Score	0.23	0.17	0.12	0.25	0.11	0.11	0.16	0.17	-0.18	0.18
Treatment Variables										
PARS Effect	1.24	1.18	3.06*	1.49	2.01**	0.75	3.34***	0.73	2.88***	0.86
PARS Interaction w/ School Mean Mar '06 OGT Score	-0.23	0.20	-0.26	0.28	0.03	0.14	-0.35	0.22	0.14	0.21
Random Effects										
District	10.73	4.91	24.15	8.18	9.46	3.00	12.13	3.46	13.73	4.09
School	3.40	3.03	10.79	5.47	3.90	1.72	10.43	3.19	4.98	2.25
Residual	397.83	10.87	448.92	12.10	234.42	4.63	344.11	5.13	352.33	6.46

Note. * p<.05, ** p<.01, *** p<.001

Table C.21

Parameter Estimates and Standard Errors for OGT Retake Proficiency Rates Model with School Achievement Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.31***	0.22	-0.26	0.20	-0.90***	0.15	-0.82***	0.13	-0.85***	0.14
Student Variables										
March '06 OGT Scaled Score	0.00**	0.00	0.01***	0.00	0.01***	0.00	0.00***	0.00	0.00	0.00
Grade 10	-0.24	0.25	-0.20	0.22	0.15	0.17	0.00	0.14	-0.19	0.18
Grade 12	-0.03	0.11	-0.39***	0.10	-0.03	0.08	0.13*	0.05	0.38***	0.06
Ungraded	-21.50	2x10 ⁴	0.71	1.48	0.11	0.49	0.01	0.50	-0.18	1.17
Male	-0.05	0.09	-0.21*	0.08	-0.04	0.07	0.08	0.05	-0.02	0.06
Asian	0.03	0.35	-0.36	0.35	-0.16	0.35	-0.01	0.21	0.59*	0.23
African American	0.24*	0.11	-0.19	0.10	-0.15	0.08	-0.29***	0.06	-0.12	0.07
Hispanic	0.07	0.24	-0.30	0.23	-0.24	0.21	-0.11	0.15	0.17	0.17
Other	0.10	0.30	-0.08	0.25	0.14	0.20	-0.18	0.16	-0.10	0.19
LEP	0.00	0.15	-0.43**	0.16	-0.28	0.14	-0.54***	0.12	-0.33*	0.13
School Variables										
Urban	-0.01	0.26	0.02	0.25	-0.35	0.19	-0.11	0.16	-0.16	0.17
Rural	-0.07	0.23	-0.36	0.21	-0.12	0.16	-0.04	0.13	-0.17	0.14
Percent in Poverty	0.00	0.01	-0.01	0.00	0.00	0.00	-0.01*	0.00	-0.01*	0.00
Mean March '06 OGT Scaled Score	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.02	-0.02	0.02
Treatment Variables										
PARS Effect	0.10	0.14	0.23	0.14	0.13	0.10	0.24**	0.08	0.20*	0.09
PARS Interaction w/ School Mean Mar '06 OGT Score	-0.03	0.03	-0.03	0.03	0.00	0.02	-0.04	0.02	0.02	0.02
Random Effects										
District	0.19	0.09	0.17	0.07	0.08	0.04	0.06	0.03	0.07	0.04
School	0.01	0.03	0.08	0.05	0.04	0.03	0.12	0.04	0.05	0.03

Note. * p<.05, ** p<.01, *** p<.001

Table C.22
Parameter Estimates and Standard Errors for OGT Retake Scaled Scores Model with School Poverty Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	385.33***	1.78	395.84***	2.29	389.07***	1.32	386.17***	1.42	387.13***	1.51
Student Variables										
March '06 OGT Scaled Score	0.02	0.01	0.10***	0.01	0.09***	0.01	0.04***	0.01	0.00	0.01
Grade 10	-2.00	2.03	-3.52	2.20	1.85	1.15	-2.34*	1.10	-5.36***	1.41
Grade 12	-0.38	0.94	-2.79**	0.96	1.16*	0.48	2.71***	0.43	3.72***	0.54
Ungraded	-7.81	10.09	4.95	15.44	4.47	3.37	-2.93	4.18	10.81	9.43
Male	-0.50	0.78	-2.65**	0.84	0.08	0.43	0.14	0.40	-0.68	0.49
Asian	-0.03	2.95	-4.22	3.35	-1.11	2.15	-0.12	1.70	4.33*	2.09
African American	0.95	0.95	-1.91	1.03	-1.44**	0.55	-2.30***	0.51	-1.17	0.63
Hispanic	1.32	2.01	-3.63	2.21	-0.42	1.28	0.35	1.22	1.56	1.46
Other	-1.17	2.56	-3.09	2.52	1.52	1.38	-1.21	1.31	-1.02	1.62
LEP	1.36	1.29	-5.20***	1.49	-2.41**	0.84	-6.42***	0.83	-4.00***	1.04
School Variables										
Urban	-0.16	2.09	-1.39	2.77	-2.46	1.69	0.36	1.82	-1.16	1.88
Rural	-0.53	1.84	-3.03	2.24	-0.24	1.34	1.02	1.43	-0.14	1.51
Percent in Poverty	0.01	0.06	-0.03	0.07	-0.03	0.04	-0.14***	0.04	-0.20***	0.05
Mean March '06 OGT Scaled Score	0.05	0.10	-0.09	0.14	0.13	0.08	-0.01	0.12	-0.05	0.11
Treatment Variables										
PARS Effect	1.15	1.18	2.17	1.37	2.12**	0.75	3.33***	0.73	3.14***	0.86
PARS Interaction w/ School % Poverty	-0.07	0.06	-0.10	0.07	0.04	0.04	0.06	0.04	0.13**	0.04
Random Effects										
District	10.01	4.72	24.21	8.19	9.66	3.04	12.06	3.45	12.62	3.87
School	3.20	2.97	10.64	5.43	4.02	1.75	10.95	3.32	5.25	2.33
Residual	398.14	10.87	448.74	12.10	234.31	4.63	344.05	5.13	351.90	6.45

Note. * p<.05, ** p<.01, *** p<.001

Table C.23

Parameter Estimates and Standard Errors for OGT Retake Proficiency Rates Model with School Poverty Interaction

Model Parameter	Reading		Writing		Mathematics		Science		Social Studies	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Intercept	-1.25***	0.21	-0.16	0.21	-0.90***	0.15	-0.89***	0.13	-0.90***	0.14
Student Variables										
March '06 OGT Scaled Score	0.00*	0.00	0.01***	0.00	0.01***	0.00	0.00***	0.00	0.00	0.00
Grade 10	-0.24	0.25	-0.20	0.22	0.15	0.17	0.01	0.14	-0.18	0.18
Grade 12	-0.03	0.11	-0.39***	0.10	-0.03	0.08	0.13*	0.05	0.38***	0.06
Ungraded	-21.41	2x10 ⁴	0.77	1.49	0.11	0.49	0.02	0.50	-0.17	1.17
Male	-0.06	0.09	-0.21*	0.08	-0.04	0.07	0.08	0.05	-0.02	0.06
Asian	0.04	0.35	-0.35	0.35	-0.16	0.35	-0.01	0.21	0.59*	0.23
African American	0.23*	0.11	-0.19	0.10	-0.15	0.08	-0.28***	0.06	-0.11	0.07
Hispanic	0.07	0.24	-0.31	0.23	-0.24	0.21	-0.11	0.15	0.19	0.17
Other	0.13	0.30	-0.04	0.25	0.14	0.20	-0.20	0.16	-0.12	0.19
LEP	0.03	0.15	-0.41**	0.16	-0.28	0.14	-0.55***	0.12	-0.35**	0.13
School Variables										
Urban	-0.06	0.26	0.03	0.24	-0.34	0.19	-0.06	0.16	-0.15	0.17
Rural	-0.13	0.23	-0.37	0.20	-0.12	0.15	0.05	0.13	-0.16	0.14
Percent in Poverty	0.01	0.01	0.00	0.01	0.00	0.01	-0.01*	0.00	-0.02***	0.00
Mean March '06 OGT Scaled Score	0.00	0.01	-0.02	0.01	0.01	0.01	-0.01	0.01	-0.01	0.01
Treatment Variables										
PARS Effect	0.09	0.14	0.11	0.13	0.13	0.10	0.25**	0.08	0.25**	0.09
PARS Interaction w/ School % Poverty	-0.01*	0.01	-0.02*	0.01	0.00	0.00	0.00	0.00	0.01**	0.00
Random Effects										
District	0.16	0.08	0.16	0.07	0.08	0.04	0.07	0.03	0.08	0.04
School	0.01	0.03	0.07	0.04	0.04	0.03	0.12	0.05	0.05	0.03

Note. * p<.05, ** p<.01, *** p<.001

