Data Analysis Protocol

Introduction

District Reports help district staff answer important questions about their students. The purpose of this protocol is to provide a tool educators can use to examine their NJ SMART data in a variety of ways to support continuous improvement.

The Data Analysis Protocol should be used with your District Reports to help guide the data analysis process. It is meant to be written on, discussed with colleagues, and analyzed to support collaborative data-driven decision making. This protocol consists of a set of guiding questions that will help you understand and analyze the data in your District Reports through a process of noting key observations in the data.

General Guidelines

Below are some high-level concepts that should be kept in mind when examining reports:

- Make objective observations about what the data say—be careful not to make inferences or draw conclusions too quickly; that will come after your objective analysis of the data.
- Not all data in the report will be significant—inspect the data and highlight the cells in the report that seem to represent something of interest; the significance of the highlighted data will be determined later in the process.
- Look for outliers to find data elements of interest – data that appear to be outside the expected range may require deeper analysis.
- Look for patterns and trends—look at the percentage of students within a column or across the rows for relationships or anomalies (e.g. decreasing numbers of LEP students from elementary to secondary school).
- Examine the distribution of subpopulations—look at the percentage of students in a subpopulation within a particular variable in the context of their representation in the total population (e.g. 80% of SPED students are male while males represent 48% of the total population).

Data Analysis Protocol

In Phase I you will spend time orientating yourself to the type of report you are examining and some of the key aspects of the report.

Phase 1: Orientation	Questions 	Observations 
	Profile Type *What kind of profile are you examining?*	☐ Sum Up: The %s in the "Total Students" row sum across to 100%. All %s in the columns within each Row Variable section sum up to 100%. *Interpretation: For the population of students within a given column, what is the distribution across rows?* ☑ Sum Across: The %s in all rows sum across to 100%. The %s in the "Total Students" column sum up to 100%. *Interpretation: For the population of students within a given row, what is the distribution across columns?*
	Profile Population *Who are the students included in this report (district, school, year, etc.)?*	
	Column Variables *How is the data disaggregated (by school, grade level, at-risk, etc.)?*	

Data Analysis Protocol

In Phase 2 you will dig deeper into the data and highlight key elements that should be examined in greater detail.

Phase 2: Analysis	Questions 	Observations 
	Total Students Row • *What do the data indicate about the distribution of the students across the column?* • *Does the size of the population change across the columns?* • *What column has the highest percentage of the district's students?*	
	Total Students Column • *What do the data indicate about the distribution of the students across each row variable?* • *Is the distribution different than what you would expect?*	
	Rows (SU Only) • *For each row category (e.g. Gender: Male), are there noteworthy differences in the number and percent of students within each column as compared to the Total Students column?* • *Are there significant differences in the distribution of students (across rows) within one column as compared to another column?*	
	Columns (SA Only) • *For each row category (e.g. Gender: Male), are there significant differences in the number and percent of students as compared to the Total Students row?* • *Are there significant differences in the distribution of students (across columns) within one row category as compared to another row category?*	

Data Analysis Protocol

In Phase 3 you will analyze your findings and take action based on your observations

Phase 3: Next Steps

Questions 	Observations 
Step 1 *What inferences can be made from the data (focus first on the observations you highlighted)?*	
Step 2 *What questions are raised by the data and the inferences you have made?* If no questions were raised go to step 5…	
Step 3 *What additional analysis needs to be performed to answer these questions?*	
Step 4 *Can this analysis be performed with available District Reports? If not, what other reports/data sources can be used? Once the data have been collected, return to Step 1 to complete the analysis.*	
Step 5 *What action should be taken based on this analysis of the data?*	

Data Analysis Protocol

Example of a Completed Protocol

The following is an example of how the Data Analysis Protocol could be used to analyze the Cohort Performance Report data for students in the Pleasant Town School District.

Sample Cohort Performance Profile for Pleasant Town District

Modify Report Selection

NJ ASK COHORT PERFORMANCE PROFILE (SA*)

Pleasant Town
All Schools
Math

Test Year: 2009-2010
Test Year Grade Level: 07
Comparison Year: 2008-2009

Student Characteristics	Total Students		Stayed AP or Stayed P		Increased 1 or More Levels		Decreased 1 or More Levels		Stayed PP	
	# of Students	% of Total	# of Students	% of Total	# of Students	% of Total	# of Students	% of Total	# of Students	% of Total
Total Students	722	100%	268	37.1%	153	21.2%	179	24.8%	122	16.9%
School										
Grant E.S.	115	15.9%	35	30.4%	48	41.7%	18	15.7%	14	12.2%
Johnson E.S.	150	20.8%	93	62.0%	18	12.0%	25	16.7%	14	9.3%
Kennedy E.S.	84	11.6%	23	27.4%	5	6.0%	25	29.8%	31	36.9%
Lincoln M.S.	143	19.8%	59	41.3%	24	16.8%	36	25.2%	24	16.8%
Taft E.S.	105	14.5%	22	21.0%	33	31.4%	41	39.0%	9	8.6%
Washington E.S.	125	17.3%	36	28.8%	25	20.0%	44	35.2%	20	16.0%
Gender										
Female	390	54.0%	144	36.9%	109	27.9%	80	20.5%	57	14.6%
Male	332	46.0%	124	37.3%	44	13.3%	99	29.8%	65	19.6%
Race/Ethnicity										
Asian	83	11.5%	39	47.0%	25	30.1%	16	19.3%	3	3.6%
Black	273	37.8%	94	34.4%	42	15.4%	78	28.6%	59	21.6%
Hispanic	176	24.4%	49	27.8%	44	25.0%	47	26.7%	36	20.5%
Native Hawaiian or Pacific Islander	21	2.9%	7	33.3%	4	19.0%	6	28.6%	4	19.0%
White	169	23.4%	79	46.7%	38	22.5%	32	18.9%	20	11.8%
Lunch Status										
Free Lunch	277	38.4%	90	32.5%	35	12.6%	99	35.7%	53	19.1%
Reduced Rate Lunch	76	10.5%	33	43.4%	14	18.4%	25	32.9%	4	5.3%
Not Enrolled	369	51.1%	145	39.3%	104	28.2%	55	14.9%	65	17.6%
Special Education										
Special Education	192	26.6%	28	14.6%	14	7.3%	64	33.3%	86	44.8%
Not Special Education	530	73.4%	240	45.3%	139	26.2%	115	21.7%	36	6.8%
Limited English Proficient										
Not LEP	681	94.3%	264	38.8%	153	22.5%	176	25.8%	88	12.9%
LEP	41	5.7%	4	9.8%			3	7.3%	34	82.9%
Time in District										
In District Less than One Year	74	10.2%	7	9.5%	8	10.8%	25	33.8%	34	45.9%
In District 1-2 Years	127	17.6%	11	8.7%	27	21.3%	52	40.9%	37	29.1%
In District 3 or More Years	521	72.2%	250	48.0%	118	22.6%	102	19.6%	51	9.8%
Students Retained Last Year										
Not Retained Last Year	722	100.0%	268	37.1%	153	21.2%	179	24.8%	122	16.9%
LAL: NJ ASK 2007-2008										
Advanced Proficient	103	14.3%	35	34.0%			68	66.0%		
Proficient	452	62.6%	233	51.5%	108	23.9%	111	24.6%		
Partially Proficient	167	23.1%			45	26.9%			122	73.1%

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	Profile Population *Who are the students included in this report (district, school, year, etc.)?*	Pleasant Town District All Schools 08-09 to 09-10 7thth grade cohort
	Column Variables *How is the data disaggregated (by school, grade level, at-risk, etc.)?*	By Change in Performance Level: • Stayed AP or P • Increased 1 or More Levels • Decreased 1 or More Levels • Stayed the Same

Data Analysis Protocol

In Phase 2 you will dig deeper into the data and highlight key elements that should be examined in greater detail.

Phase 2: Analysis	Questions 	Observations 
	Total Students Row • *What do the data indicate about the distribution of the students across the column?* • *Does the size of the population change across the columns?* • *What column has the highest percentage of the district's students?* •	• Highest % (37.1%) of students stayed AP or P maintained their prior year performance. • Approximately 20% of students increased 1 or more levels, but about 25% decreased 1 or more (large flux).
	Total Students Column • *What do the data indicate about the distribution of the students across each row variable?* • *Is the distribution different than what you would expect?*	• Almost half (48.9%) of our students are receiving lunch assistance • High (26.6%) Special Education population • Larger population of female students that would be expected
	Rows (SU Only) • *For each row category (e.g. Gender: Male), are there significant differences in the number and percent of students within each column as compared to the Total Students column?* • *Are there significant differences in the distribution of students (across rows) within one column as compared to another column?*	NA

Data Analysis Protocol

	Columns (SA Only) • *For each row category (e.g. Gender: Male), are there significant differences in the number and percent of students as compared to the Total Students row?* • *Are there significant differences in the distribution of students (across columns) within one row category as compared to another row category?*	1. Taft E.S. has a low % (21.0%) of students who stayed AP or P compared to total population (37.1%). Also worth noting: they have a high % (31.4%) of students who increased 1 or more levels, but an even higher % (39%) who decreased 1 or more levels. 2. Grant E.S. has a high % (41.7%) of students who increased 1 or more levels compared to the total population (21.2%) and is 10 percentage points higher than any other school in this category 3. Asian and White students are the only 2 race/ethnicity groups that have a higher % of students than the total population of students in the Stayed AP or P category. 4. Students in the Reduced Rate Lunch program had a higher % (43.4%) of students in the Stayed AP or P category than students receiving free lunch, or students not enrolled in the program. 5. Most LEP students (82.9%) stayed Partially Proficient in the 2nd year of testing. 6. Almost half (45.9%) of the students who have been in the district less than 1 year stayed Partially Proficient in the 2nd year of testing. 7. A high % (66%) of students who received AP in the first year decreased 1 or more levels 8. A high % (73.1%) of students who received PP in the first year stayed Partially Proficient in the second year of testing.

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Phase 3: Next Steps

Questions 	Observations 
Step 1 *What inferences can be made from the data (focus first on the observations you highlighted)?*	1. Grant's educational program is stronger than other elementary schools since a large % of their students increased 1 or more levels, and a low % decreased 1 or more levels. 2. Black, Hawaiian, and Native America/Pacific Islander students seem to be struggling more than White and Asian students. 3. Students in the FRLP seem do not have the knowledge and skills necessary to succeed. Most LEP students are not receiving adequate instruction. 4. Students who have been in our district 3 or more years seem to be better prepared for the test than students who are newer to the district. 5. We are not focusing enough on the success of students who received Advanced Proficient 2 years ago, since so many of them decreased 1 or more levels. 6. Our district is not yet successful at getting most students who were Partially Proficient 2 years ago to become Proficient on the test last year.

Data Analysis Protocol

	Step 2 *What questions are raised by the data and the inferences you have made?* If no questions were raised go to step 5…	1. What is Grant E.S. doing right that their students were so successful from one year to the next? What programs have they implemented? 2. What are the characteristics of the LEP students who are performing well? Can learning more about successful LEP students help us prepare other LEP students for success? 3. What are the characteristics of the students who were Advanced Proficient 2 years ago, then decreased 1 or more levels last year? Were they exited from an intervention or program? Did they have high absence rates? Do they have anything in common that could indicate why so many declined in performance the following year? 4. Who are the students that were Partially Proficient two years in a row? What can we do to help them? Can analyzing the characteristics of the students who went from Partially Proficient to Proficient help us move other students into the Proficient category? 5. What are the characteristics of the students who went up a level? Who went down a level? Do these students have anything in common?
	Step 3 *What additional analysis needs to be performed to answer these questions?*	1. Talk to Grant E.S. to find out what programs, etc they have in place that may be contributing to their students' success. 2. For all student populations raised in questions 2-5 above: Look at data showing the characteristics of these students. Do they have anything in common? Program enrollment, teachers, attendance, grades, behavioral issues, etc? What do these students' teachers say about them? What does their student work look like? Is there a relationship between their grades and their performance? Does their performance on benchmark tests correlate with their performance on the state test?

Data Analysis Protocol

	Step 4 *Can this analysis be performed with available District Reports? If not, what other reports/data sources can be used?*	1. No, we need to communicate with Grant E.S. directly—possibly look at the data of their students to find commonalities among successful students, programs implemented, etc. 2. Yes, look at Student List and Student Enrollment records to find out characteristics of populations of students raised in questions 2-5 in Step 2 above. For teacher, program, attendance, discipline, and benchmark test information, District Reports cannot be used as is, but we can dig into our SIS and benchmark test results for that info. Program information, attendance, discipline, and benchmark performance data should be uploaded to District Reports so we can connect that info to characteristics/ performance info of students next year.
	Step 5 *What action am I going to take based on observations and analysis?*	1. Contact Grant E.S. to find out about their programs or other things that may have had a positive impact on their students. Ask if we can view their District Reports with them to find characteristics and patterns of their successful students. 2. Present findings and inferences to the Pleasant Town District Data Team. Do others agree with analysis recommendations? How can we split up the work and assign team members to dig more into available data to find patterns or correlations? We need to set up an action plan to assign roles/responsibilities, timeline, and successful indicators of our goal to better understand what impacts our students' success on the state test.