

## Where to start...

When examining data in relation to a student or group of students, it is important to first determine the lens in which to look at the data. A specific intent is necessary in order to effectively interpret and use the data for decision-making. Therefore, the first step in collecting data and interpreting assessment results is to determine the objective. The objective may be to examine a class or school as a whole, to examine a particular student's performance or to use data to make instructional programmatic decisions. Once the intent is clear, there are some guiding questions to begin looking at the data.



## Start Digging

It is important to see global trends *before* digging into individual student data.

A place to begin is at the Florida Department of Education's EdStats interactive website, located at: <https://edstats.fldoe.org/>. On this site, searches at the state, district, or individual school site is available. When creating a search, be sure to include three or more years of data. The purpose of this initial search is to find yearly trends.

One way to find trends is to look diagonally. On Example 1, it may be thought that there was no change in the number of students scoring a three

# How to Collect and Showcase Your Mathematics Data

### Whole Group

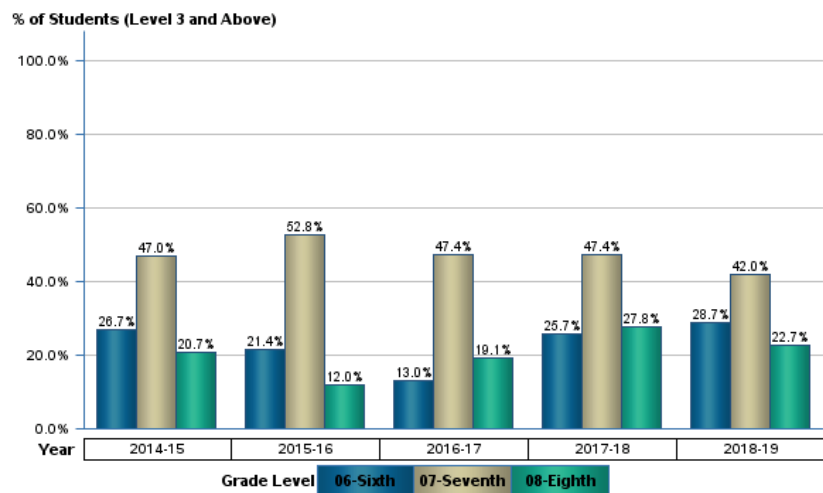
What trends do you see across the group of students?  
 What further assessments are needed to make decisions?  
 Where are the discrepancies in data between sources of information?  
 What is the hypothesis for changes in scores? What evidence is there of this?

### Individual Student Questions

Is the data a true reflection of the student's ability?  
 What do you know about the student that may have influenced performance?  
 Where are there discrepancies in data between sources?  
 What assessments most accurately affect the true ability of the student?  
 What is the hypothesis for changes in scores? What evidence is there of this?  
 What additional data is needed to make instructional decisions?

### Program Decisions related to Data

Does the program show evidence of increasing student scores?  
 Is the program in the students' best interests?  
 Does the program correlate to needs of the students?  
 What other programs are similar and how is the one being considered different from those?



*Example 1*

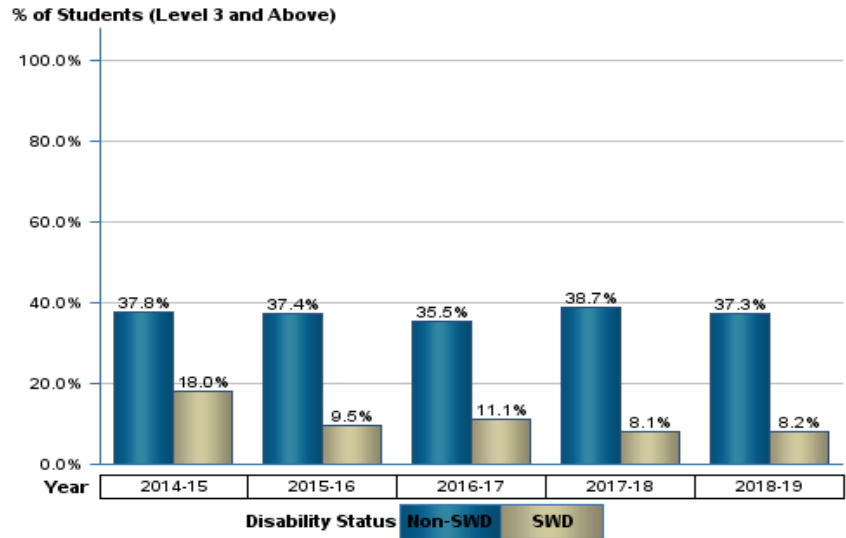
and above on the 7th Grade FSA Mathematics assessment from 2016 to 2017. Looking diagonally shows a different picture. The 7th graders in 2016 were 8th graders in 2017. The data shows a dip of nearly 20% of students scoring at a 3 or above.

## Digging Deeper

On the same interactive report that has been created in EdStats (<https://edstats.fldoe.org/>), there will be a summary for students without disabilities (Non-SWD) and students with disabilities (SWD). This will include the percent of students achieving Level 3 or Above across a five-year time span.

Example 2 shows actual data from a Florida middle school. What stands out?

Notice that the percent of Non-SWD has almost flat-lined. Also, SWD have dipped and not recovered. Additionally, there is quite a large gap between the percentage of Non-SWD and SWD scoring a Level 3 and Above.



Example 2



## Domain Data

After finding some trends, it is time to dig a little deeper. Lets look at how students in a particular grade fair at the FSA. During pre-planning time, it's beneficial for schools to closely review FSA results for areas of need.

Grade	District Number	District Name	School Number	School Name	Number of Students	Mean Points Earned By Content Area				
						Ratio and Proportional Relationships	Expressions and Equations	Geometry	Statistics and Probability	The Number System
07	Number of Points Possible					14	14	13	9	8
07	00	STATE	0000	STATE	181,700	7	4	5	4	3
07					274	6	3	4	3	3

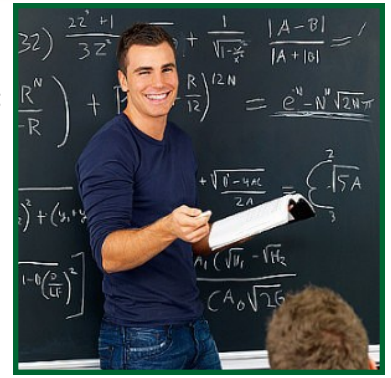
This type of dig into data shows the number of points possible for each domain of the assessment and how the students did (from the State overall) vs. the school. This view of the school that we have been following shows that the students have been scoring below the State average in all areas but one.

Schools receive their own data, but it is also available to the public at:

<http://www.fldoe.org/core/fileparse.php/5663/urlt/SPR19-FSA-Math-RCR-SCH.xls>

## Informal Classroom Measures—Leading Data

Assessment goes beyond standardized tests. Instruction is responsive to students and must meet their learning needs on a daily basis. Therefore, students must be assessed regularly. These assessments are generally informal in nature and are designed to directly impact and drive instruction. The objective is to obtain information regarding the match between each student and the material to be learned. This includes experiences or background knowledge, the student's ability to process new information, and the level of mastery after instruction.



### Pre-Assessment Strategies

STRATEGY	INSTRUCTIONAL PROCESS	PURPOSE AND COMMENTS
<b>Pre-tests of facts and skills</b>	Students complete an assignment to reflect what they already know and can do.	Students must be clear on the expectation and purpose of the pre-test. These should not count as grades. Data should be collected to compare with post instruction.
<b>Surveys</b>	Students complete a survey for information about knowledge, working styles, or other areas where there is flexibility to differentiate instruction.	A survey should only ask questions that are in areas that can be later used to differentiate instruction.
<b>Prediction Question</b>	Students are presented with a condition and asked to predict the outcome.	This is designed to identify conceptual understandings in place before instruction.

### Assessment Strategies During Instruction

STRATEGY	INSTRUCTIONAL PROCESS	PURPOSE AND COMMENTS
<b>Response Cards</b>	Each student in the class has a card, white board or paper. A question is asked and all students are expected to respond by holding up the response card to indicate the answer.	This strategy fosters on-task behavior. It provides a snapshot of the class as a whole but does not lend itself well to individual student data.
<b>Partner/ Cooperative Learning and Observation</b>	In pairs or small groups, students work together on a skill or task. As this is happening, observational data is collected by the teacher.	This strategy works well after there has been clear instruction and students are nearing mastery of a skill or concept. All students should have clear roles.
<b>Timed drills</b>	Students complete a drill in a set amount of time.	This strategy measures fluency of facts or skills. It provides quantitative data. It can foster stress in some students.

### Post-Instructional Assessment

STRATEGY	INSTRUCTIONAL PROCESS	PURPOSE AND COMMENTS
<b>Exit Cards</b>	Students are asked a short answer response question. Each student answers the question on a card and turns it in on the way out the door.	This is a way to determine instructional groupings for the following day and collect measurable data.
<b>Post tests</b>	Students complete an assignment the same or similar to a Pre-test to reflect what they have learned.	This strategy lends itself to the measurement of growth in learning. It reflects the growth from before instruction to after instruction.
<b>Products in conjunction with Rubrics</b>	Students are provided with a rubric stating clear expectations for the design of a product. Students create a product of choice based on the rubric.	This strategy allows for student choice and fosters student responsibility and empowerment. It allows highest achieving students to go as far as they want in an area of study.

## Formal Classroom Measures—Leading Data

Educators can use local resources to obtain formal leading mathematics data. District created Benchmark Assessments, classroom assessments such as tests and quizzes, and assessments from purchased mathematics programs can measure a student’s progress towards the current grade level’s benchmarks. To be able to obtain reliable data, be sure that the items measure the Sunshine State Standard benchmark. Items that are not on grade level can skew the results.

Once the data is collected, go beyond the percent correct, and identify common misunderstandings. On multiple choice items, look for items where many students choose the same distracter. Understanding the error the students made in answering the item aides the teacher in the remediation of a student. For gridded response items, look for both common incorrect answers and grids that are incorrectly filled in.

### Resources

The Florida Department of Education provides many free resources.

Below is a only a few that can be obtained from the FSA website ([www.fldoe.org/accountability/assessments/k-12-student-assessment/fsa.stml](http://www.fldoe.org/accountability/assessments/k-12-student-assessment/fsa.stml)).

NAME	DESCRIPTION	SITE
FSA and EOC Practice Tests	Practice tests are provided for students to become familiar with the paper-based item types and the computer-based system, functionality, and item types; the tests are not intended to guide classroom instruction.	<a href="https://fsassessments.org/students-and-families/practice-tests/">https://fsassessments.org/students-and-families/practice-tests/</a>
Test Item Specifications	This site defines the content and format of the assessment and test items for each grade level and subject.	<a href="https://fsassessments.org/about-the-fsas.stml#interpretive-information">https://fsassessments.org/about-the-fsas.stml#interpretive-information</a>
Test Design Summary and Blueprint for Mathematics	This PDF provides more detailed information about the assessments, including the percentage of items in each content category, cognitive complexity, and approximate number of test items.	<a href="https://fsassessments.org/assets/documents/Mathematics-Test-Design-Summary-Updated-October-2018_APPROVED.pdf">https://fsassessments.org/assets/documents/Mathematics-Test-Design-Summary-Updated-October-2018_APPROVED.pdf</a>
2020-2021 Florida Statewide Grade-Level Assessments Fact Sheet	This fact sheet provides information regarding the grades 3-8 mathematics assessments that measure student achievement.	<a href="http://www.fldoe.org/core/fileparse.php/5663/urlt/Grade-LevelFS2021.pdf">http://www.fldoe.org/core/fileparse.php/5663/urlt/Grade-LevelFS2021.pdf</a>
2020-2021 Florida Statewide End-of-Course Assessments Fact Sheet	This fact sheet provides information about the Algebra 1 and Geometry EOC assessments that measure student achievement.	<a href="http://www.fldoe.org/core/fileparse.php/5663/urlt/EOCF2021.pdf">http://www.fldoe.org/core/fileparse.php/5663/urlt/EOCF2021.pdf</a>
FSA Calculator and Reference Sheet Policies	This document describes policies and materials specific to the mathematics assessments. In addition, the <a href="#">scientific calculator</a> provided in the AIR Test Delivery System is available for student practice.	<a href="http://www.fldoe.org/core/fileparse.php/5663/urlt/FSACalcRefSheetPolicy.pdf">http://www.fldoe.org/core/fileparse.php/5663/urlt/FSACalcRefSheetPolicy.pdf</a>

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