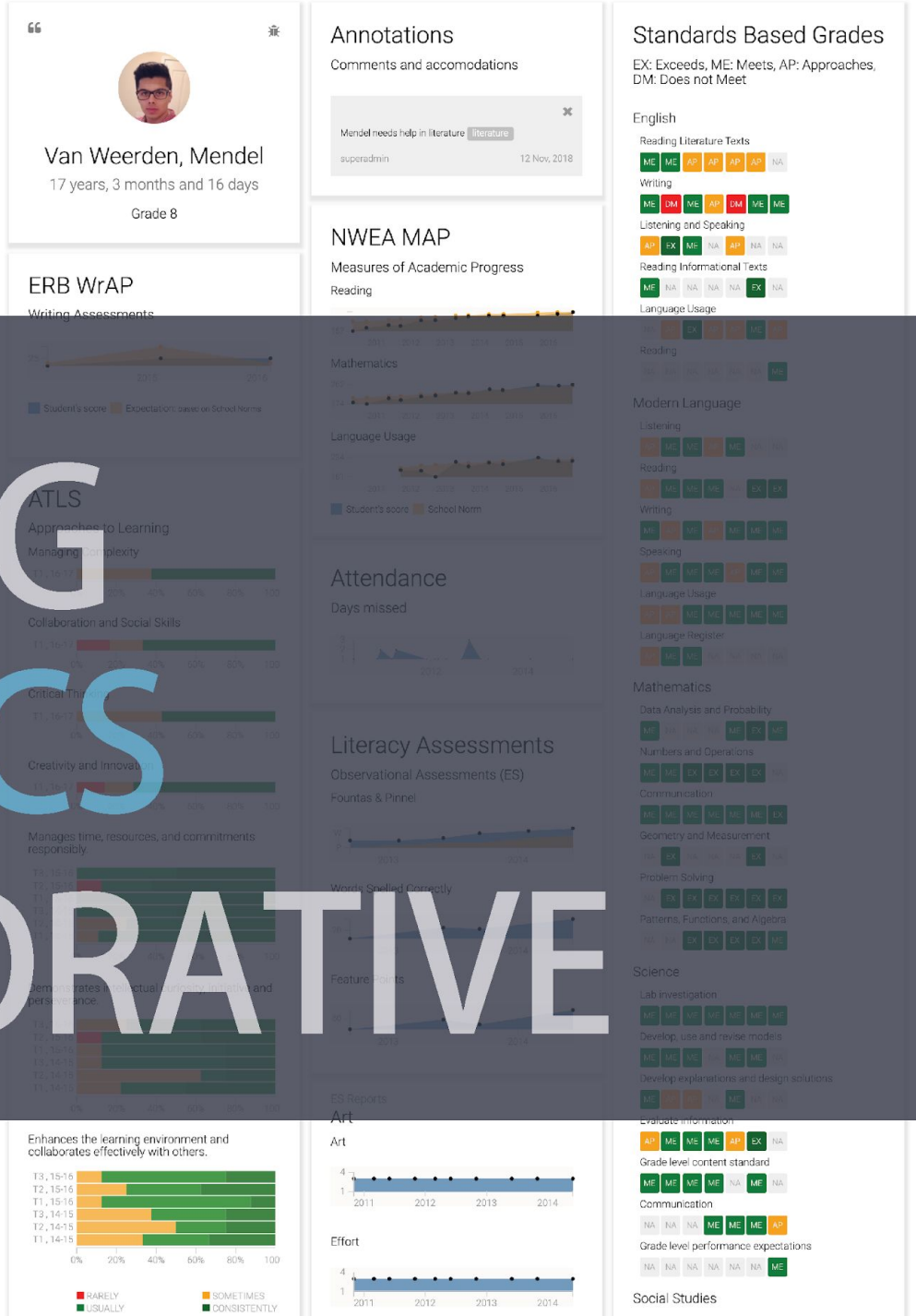
Consilience
LEARNING REIMAGINED

LEARNING ANALYTICS COLLABORATIVE

Classroom Manual

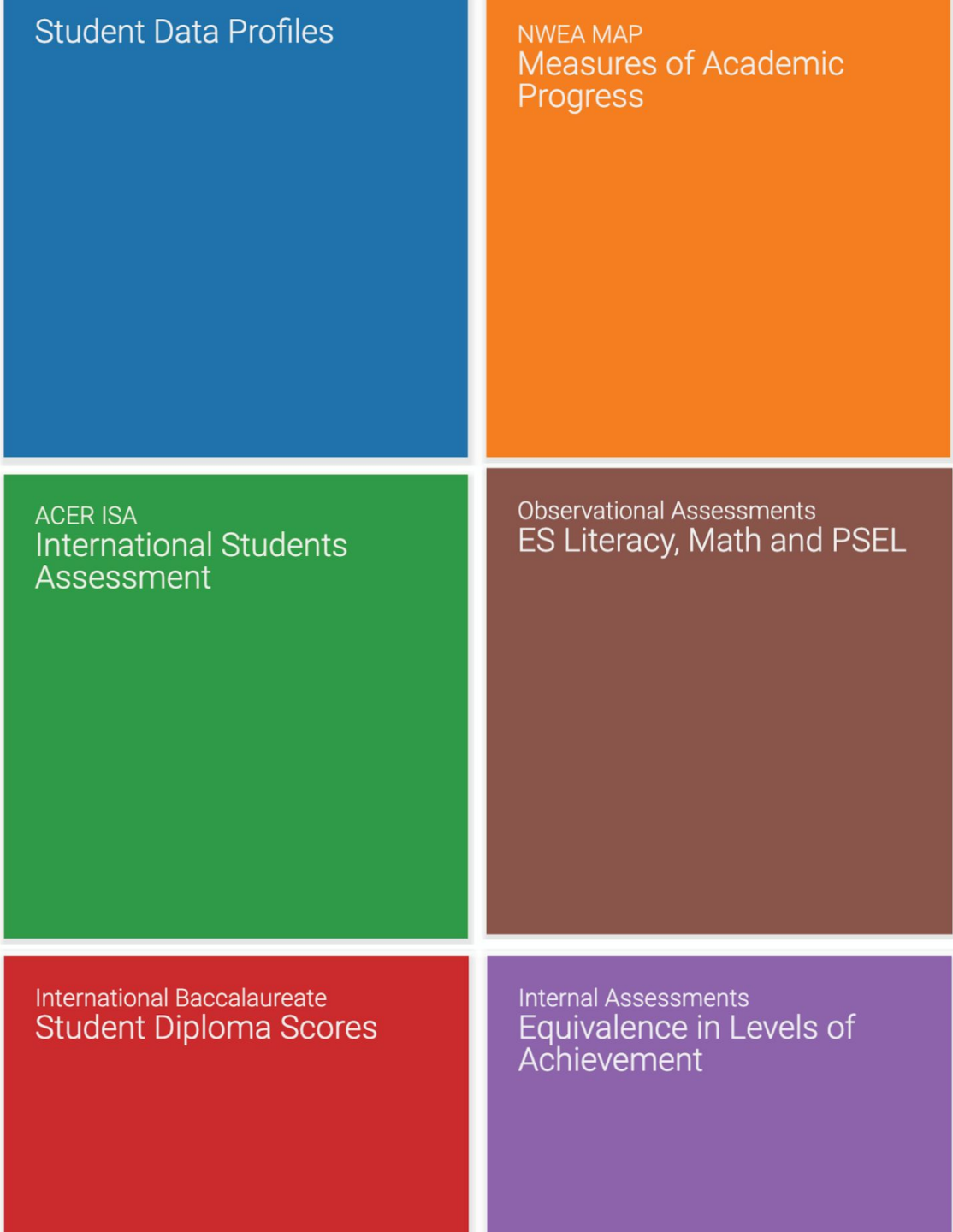


Student Data Platform

OVERVIEW

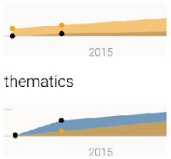
This manual describes

- Student Data Profiles for individual students
- NWEA MAP
- ACER ISA
- IB Diploma
- Literacy and Math Screeners
- Grades
- Surveys

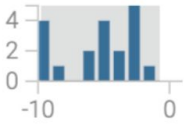


LAC ENGINE PRIMER

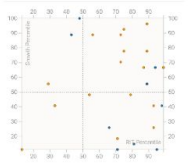
Area Line Graph Shows performance over time relative to a norm or mean. Shaded areas show +/- differences.



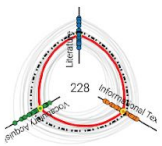
Histogram A special type of vertical bar graph that presents numeric data and its frequency distribution.



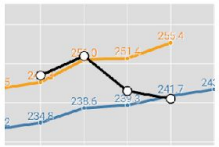
Scatter Plot Allows for the representation of each student plotted on the graph according to the X/Y variables on the axes



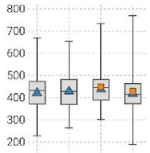
Hive Plot Compares several different factors to show the relative contribution of each to an overall score.



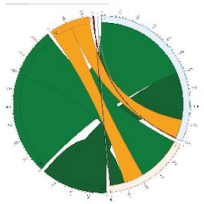
Multi Line Graph Compares two or more different trend lines plotted agains the X/Y axes.



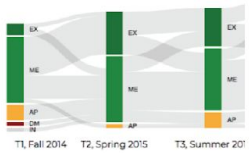
Box and Whisker Plot Shows the median, mean, 75th and 25th percentiles, and outliers of any one data set.



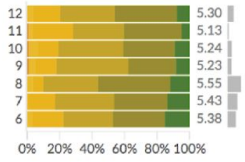
Chord Chart Shows relationships between data points that are represented by percentages. Used in the grades engines.



Flow Chart Shows distributions over time for a cohort of students. Hover to over bands for info.

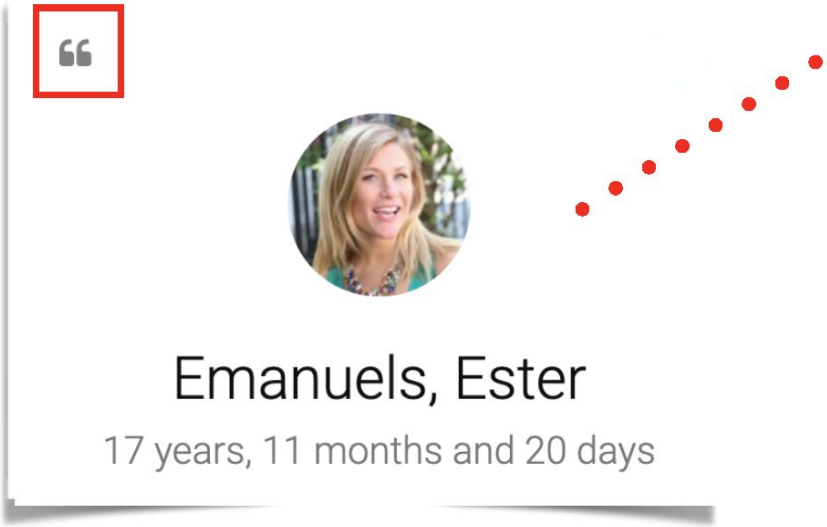


Area Bar Chart Shows relative metrics in the form of percentages of the whole. Hover over blocks for info.



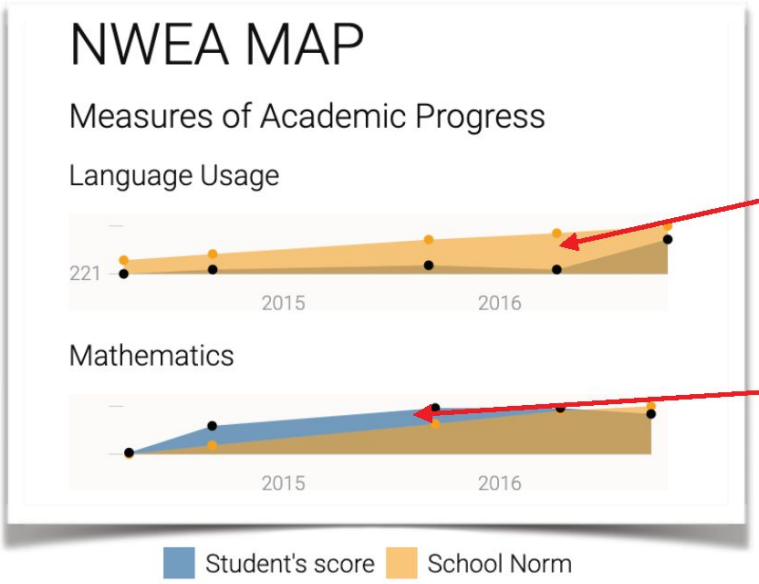
STUDENT DATA PROFILES

The Student Data Profiles allow you see student-specific data including longitudinal data about students from all our data sources. It also allows you to add annotations that will



The **Demographic Tile** Displays the student photo, name, age, and any other information your school has provided and wishes to display here.

Click the **annotations** icon to add information about this child that will appear in a separate tile.

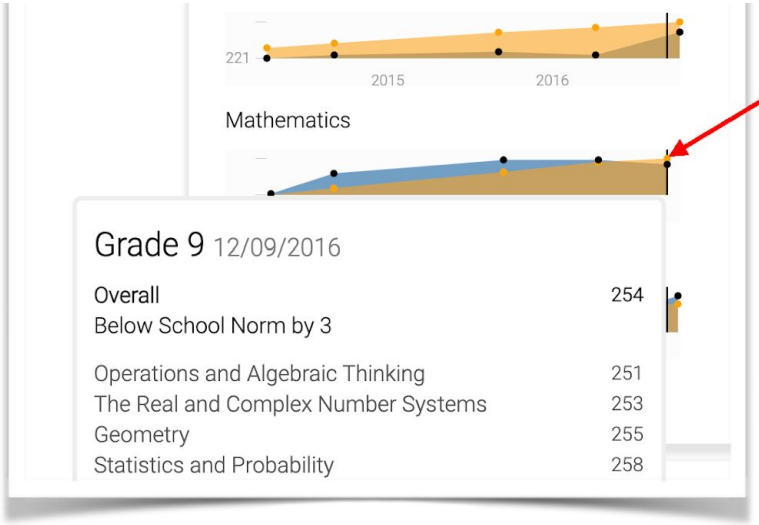


The MAP tile displays **longitudinal scores** for all tests taken since the child has been at the school.

Areas of **yellow** indicate student performance (mustard color) **below** that of the school grade-level norm.

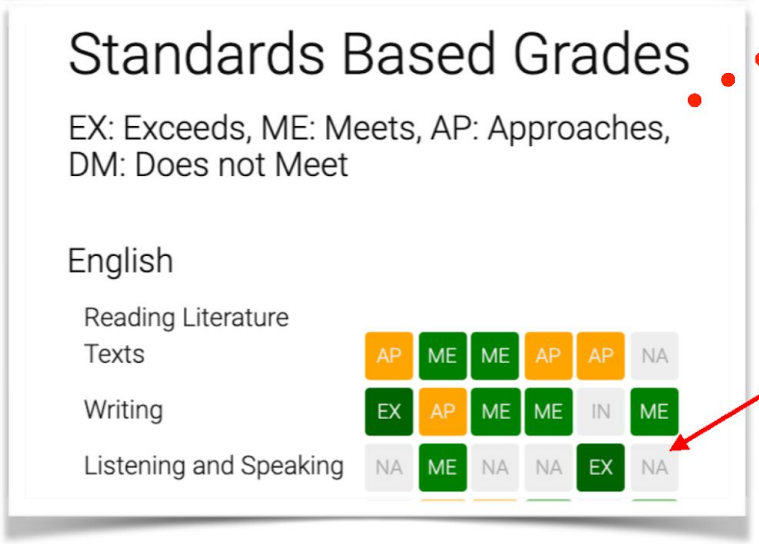
Areas of **blue** show student performance **above** the school grade-level norm.

STUDENT DATA PROFILES



Hovering over any of the individual dots representing individual tests will bring up a drill-down pane with greater detail about the results of that test.

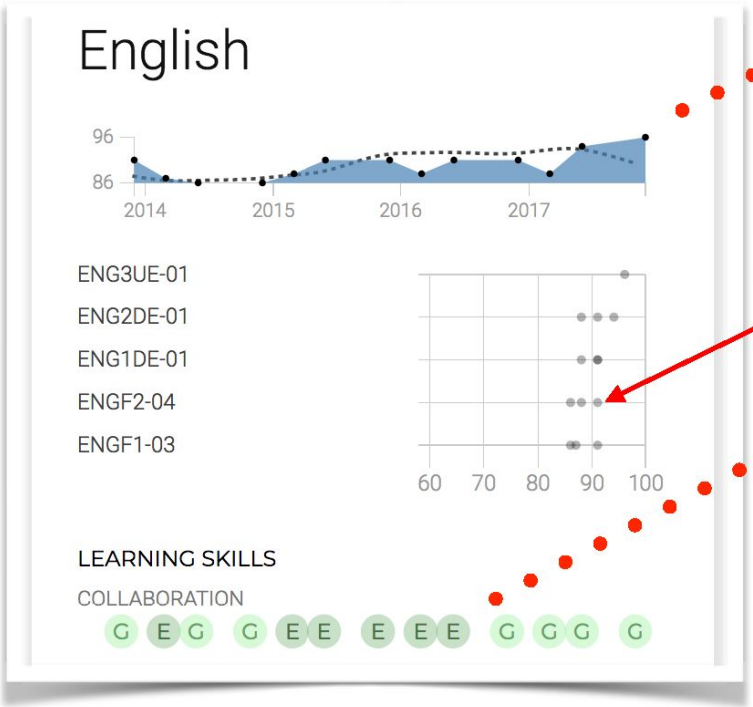
Pop-up information includes the grade level and date of the test along with performance relative to the school cohort norm.



Standards-Based grades and other criterion-referenced assessments show achievement levels for each grading period **longitudinally** from left to right. Grades achieved are color coded in a consistent scheme.

If a skill or competency is **not reported** on during that grading period it will show up as NA. **Trends** and overall achievement are easily seen as well as what skills are not consistently reported on.

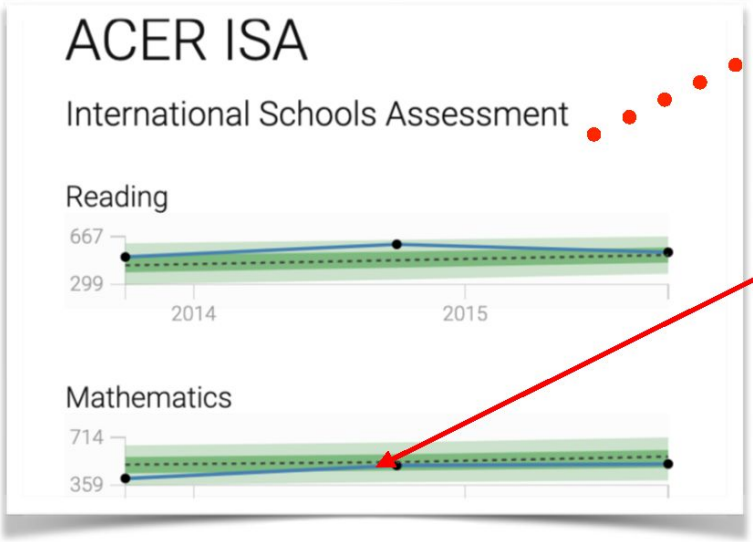
STUDENT DATA PROFILES



Traditional grades may be reported numerically or F-A and show the grade achieved in a particular subject for that grading period.

If a **grid** appears, it shows a matrix of grades earned in each of the classes on the left. There is often two or more grades reported for each class.

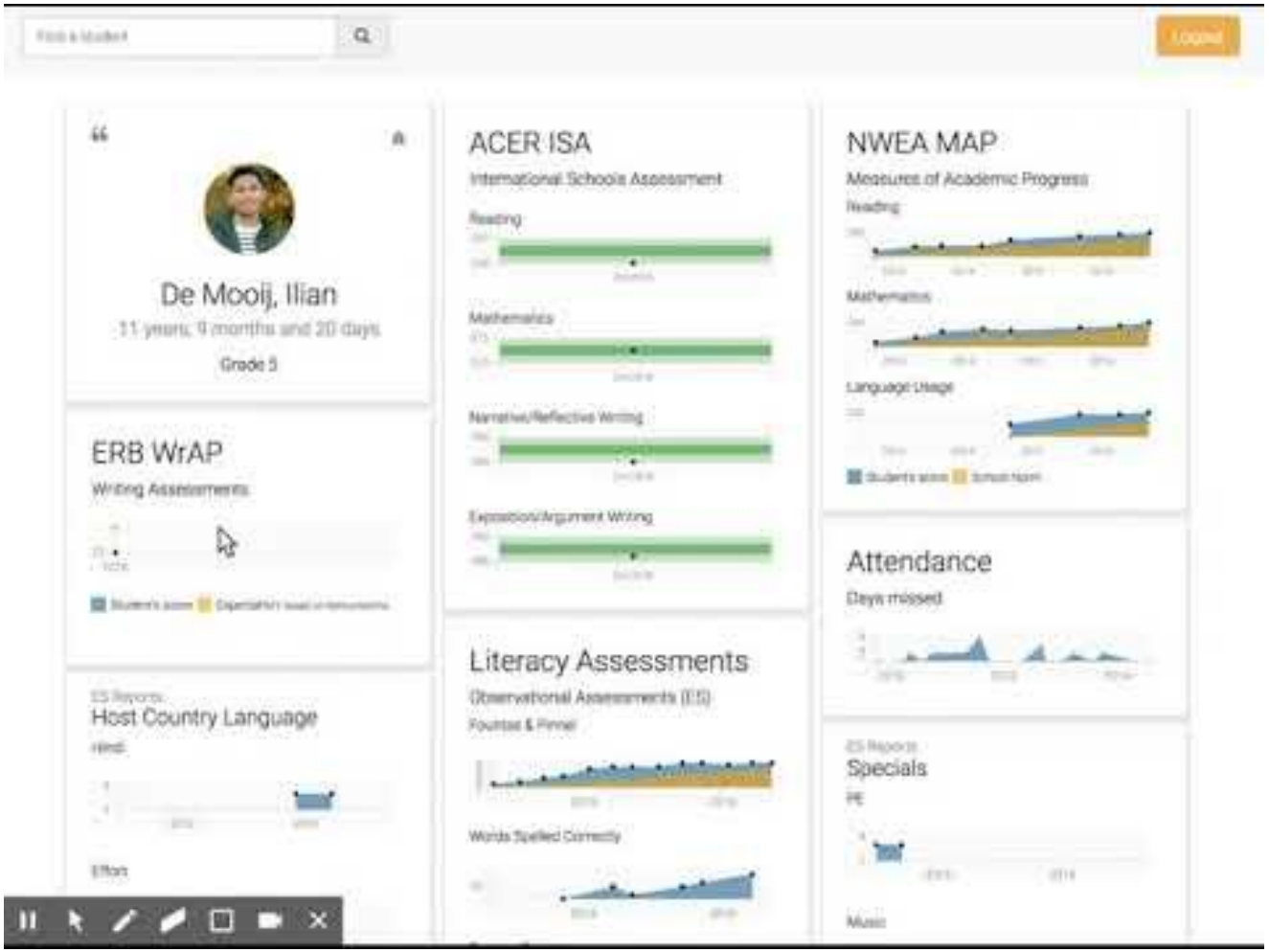
Learning skills may be reported in a variety of formats depending on the individual school customization. These match the grading periods in the longitudinal graph above.



The ACER International Schools Assessment in this example is taken once per year. The scale is shown on the left y-axis. The **dotted line** is the median.

The **colored bands** allow you to see the quartile the child achieved in for each test. The dotted line shows the international **median**.

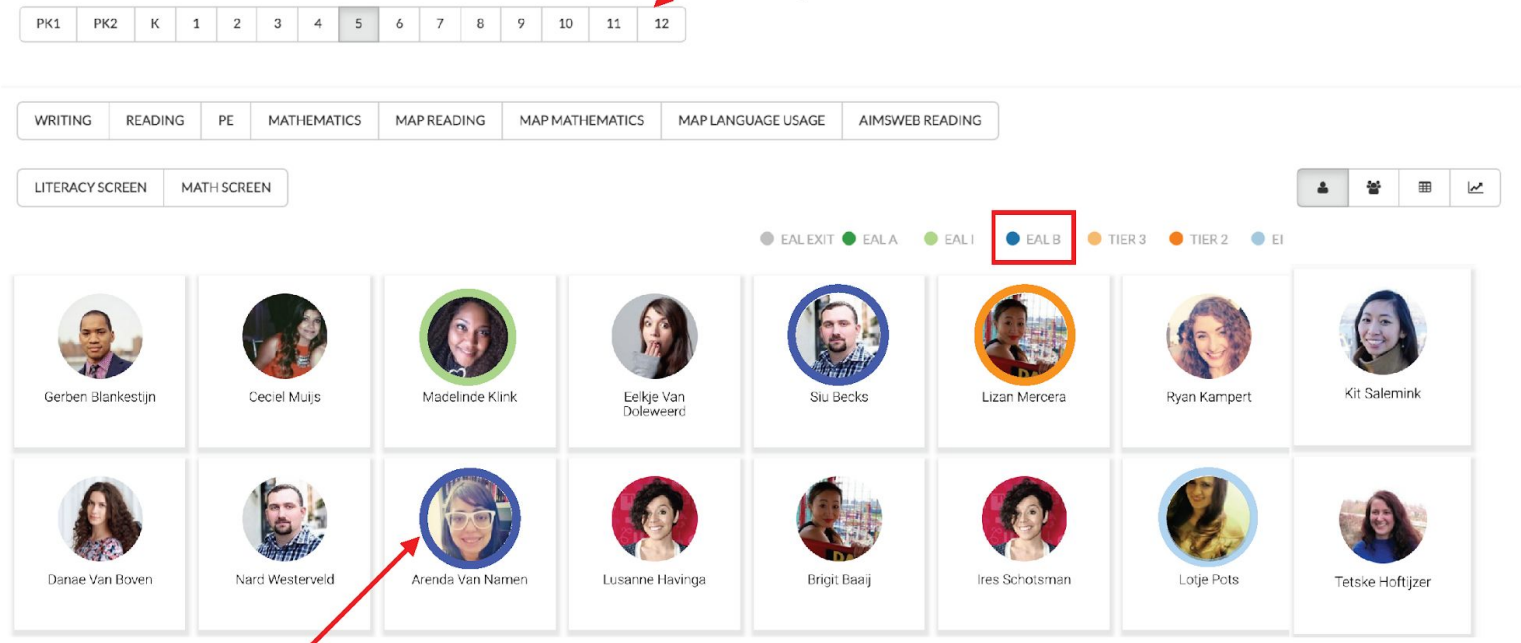
STUDENT DATA PROFILES TUTORIAL



STUDENT DATA EXPLORER (SDE)

The new **Student Data Profiles** (Data Explorer) view is released to schools with multiple assessments in the same literacy domain, such as reading and writing.

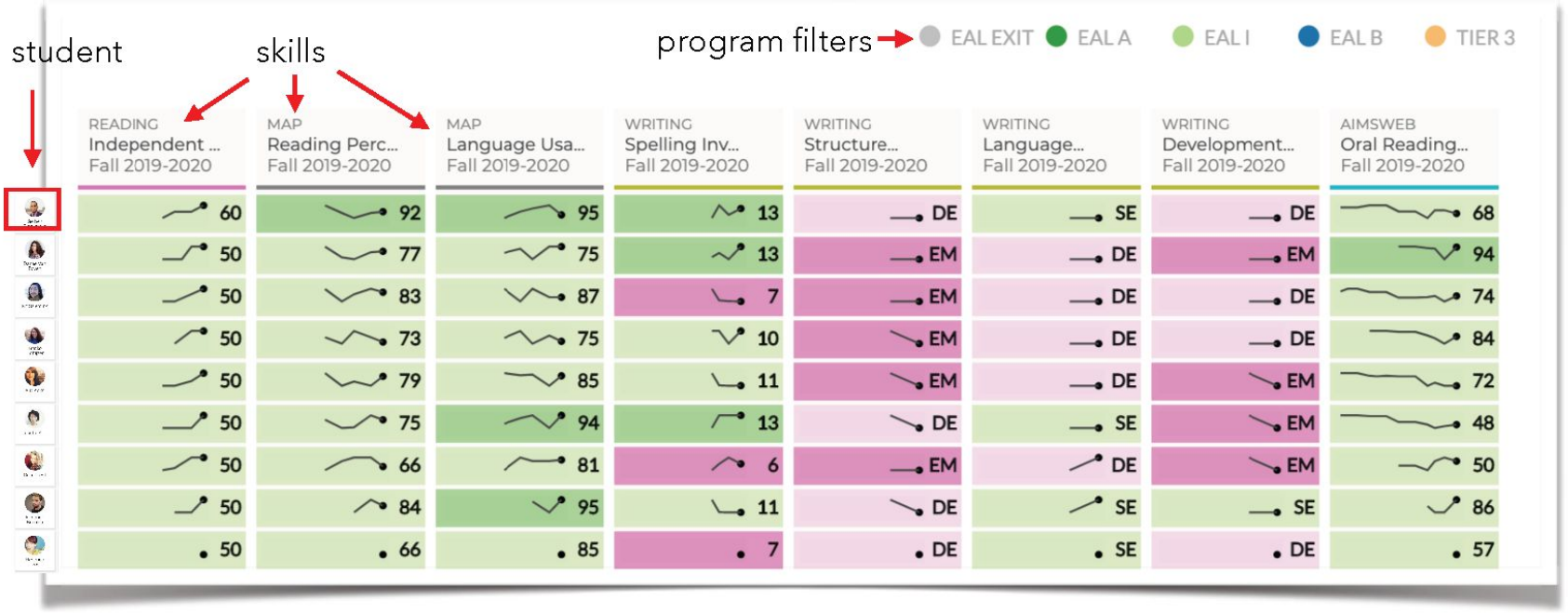
Your view depends on your role at the school. Admin will see all **grade levels** plus teachers and classes (not shown here).



The **colored rings** show students enrolled in different learning and literacy support programs such as EAL and tiered support. Click on the program label in the legend above to filter the student list by program.

SDE SCREENER VIEW

The **Screener View** shows all students in a cohort or class in a matrix with all of their related literacy test scores in a row. The score for each skill is shown along with a growth trajectory. The objective is to see how each of the different assessments align for a particular student: if they score highly on one assessment for a particular skill, do they score similarly on **related skills in different assessments**?

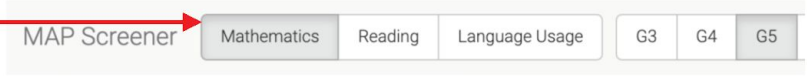


The **colored bars** indicate the mastery level a student is at for that skill, which has been aligned with the other assessed skills. For example the first student in the list is **secure** in Reading Independent Stanine, Writing Language Usage, and AIMSWEB Oral Reading, **master** in MAP Reading, MAP Language Usage, and the internal spelling inventory, and **developing** in internal writing structure and development.

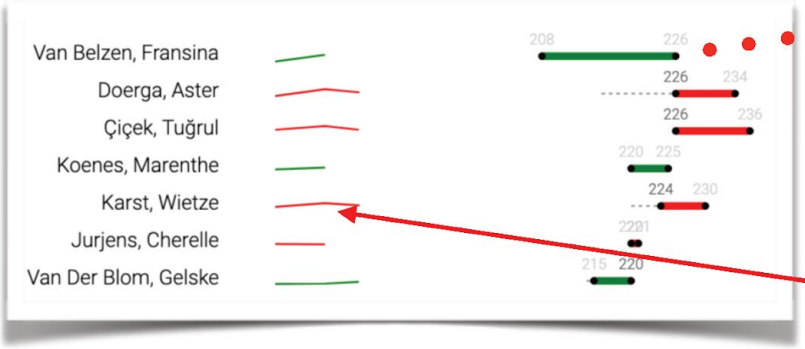
NWEA MAP ENGINES

MAP SCREENER

The **MAP Screener** is designed to provide in-depth analysis about the **growth and achievement** of students in a cohort. You will see all students in a grade level sorted by RIT score. Choose the **subject** and the **grade level** using the **toggle buttons** along the top.

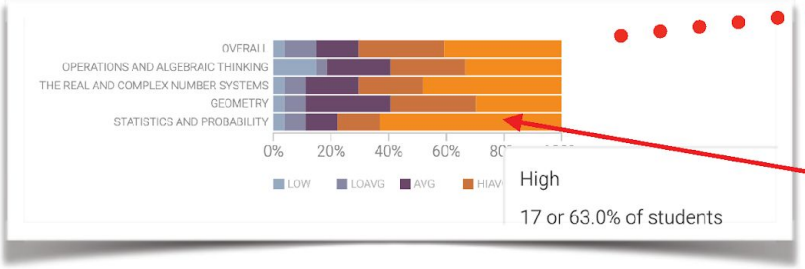


Start your analysis by looking at the amount of **positive or negative growth** and how it varies between high and low achieving students. Click the **RIT Score label** at the top to filter the scores for one skill only.



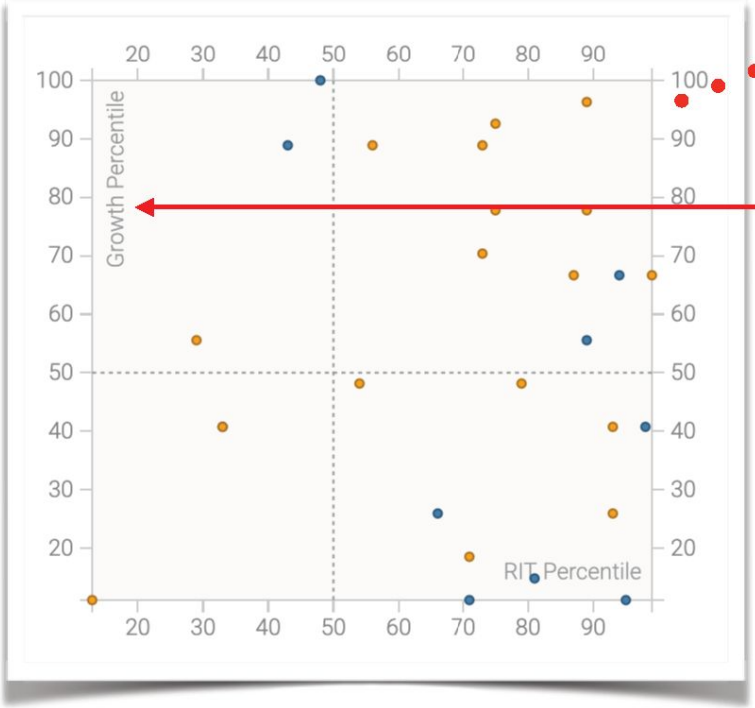
- **Green lines** represent positive growth and **red lines** show negative growth. The respective **RIT scores** appear above each test with the bold score being the most recent test.

Longitudinal trends appear next to student names.



- The **Achievement Area Bar Chart** shows the **relative performance** of the cohort in each skill area. **Click on a bar** to filter the scores for that student group only. **Hover** over a bar to see the percentage of students scoring at that level.

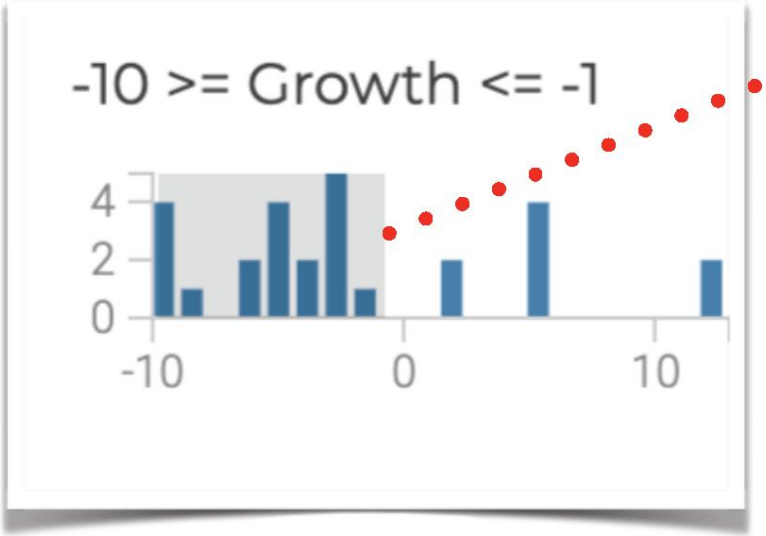
MAP SCREENER



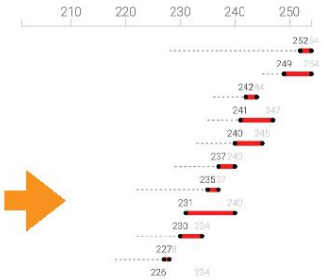
MAP scores can be **plotted** against each other to check for correlation. By default, growth percentile is plotted against RIT percentile and this can be changed by **clicking on the text labels.**

This view tells us whether students who show high or low growth also show high or low achievement. We should be **wary of seeing any correlation** between achievement and growth; i.e. we should seek to see equitable growth at all achievement levels.

Patterns among males and females can be seen with the **blue** and **orange** dots respectively.

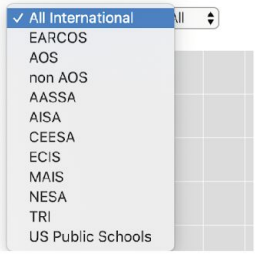


The **histogram** allows you to see absolute numbers of students at particular metrics such as growth. Click and drag the **crosshairs** and move the **double-headed arrow** to filter for a subset of students and see the **list** update to reflect only these students.

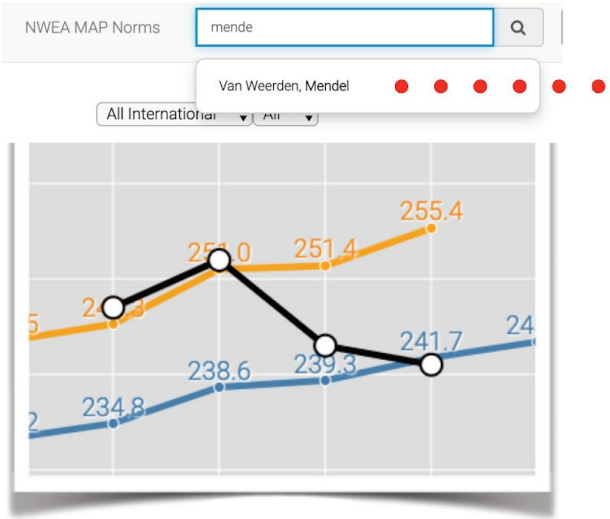


MAP NORMS

Organizational MAP performance can be viewed relative to **international norms.** Cohort **mean test RIT score** is plotted by grade level for each test window. Your school is represented by an **orange line** and the comparison group is represented by a **blue line.** The comparison group can be changed in the dropdown.

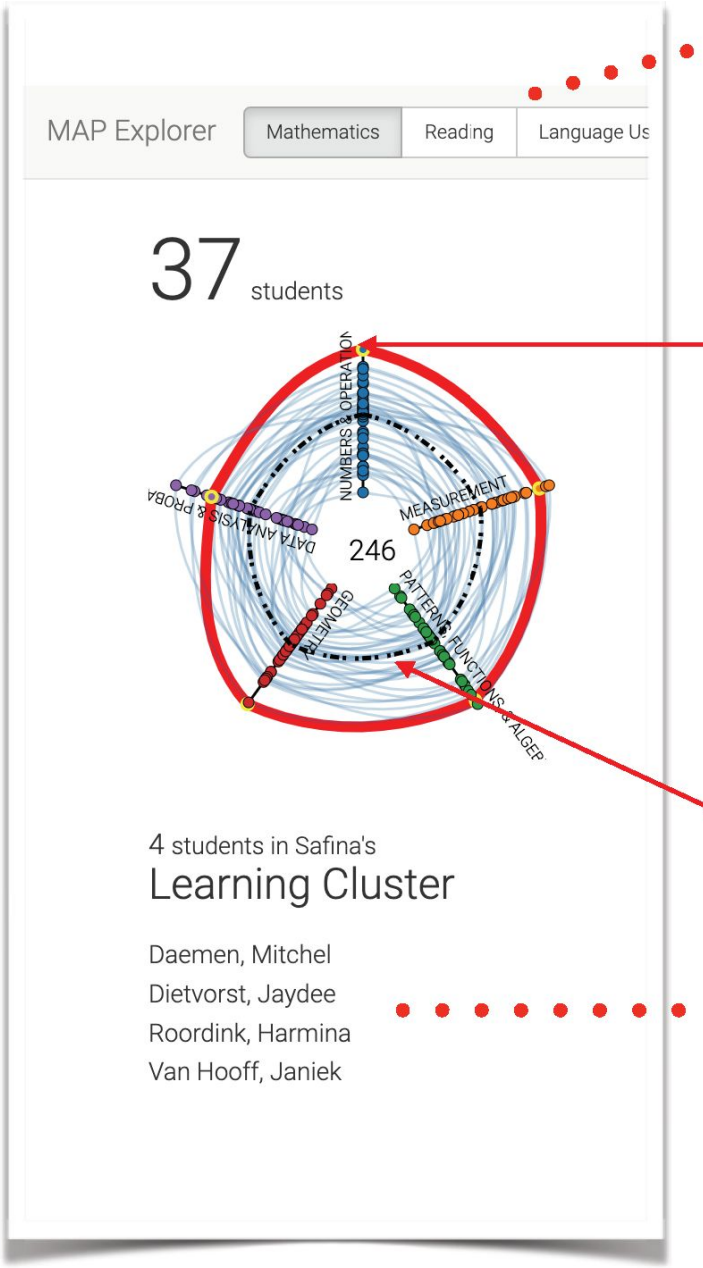


Growth patterns between Fall and Spring and over the summer break are of key interest in this engine.



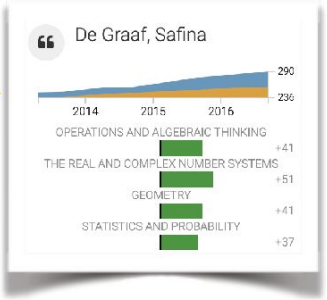
By **searching for a student** and clicking on their name in the global student search bar, any individual student's **longitudinal performance** can be superimposed over the school and comparison plots.

MAP EXPLORER



The Map Explorer provides tools for identifying **learning clusters** that can be used for differentiation at the cohort level.

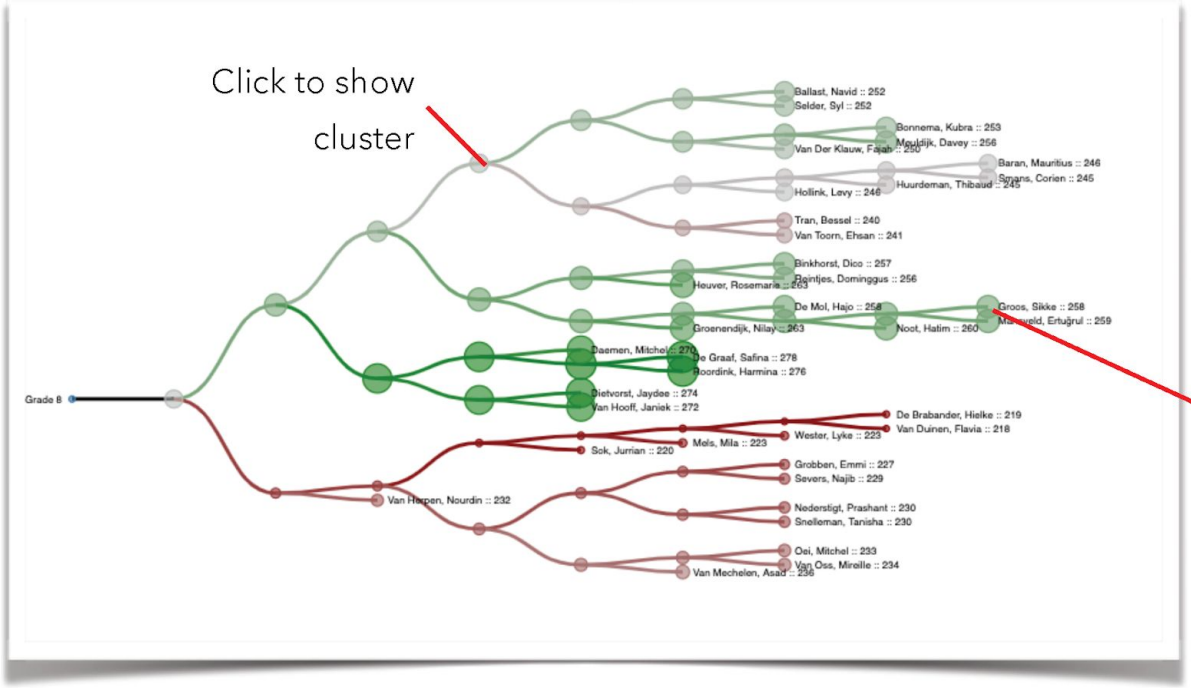
In the **hive plot**, each of the skills in a particular test is shown on an axis and every child in the cohort is represented by a node on each axis. **Hovering** over the plot or searching for the student using the global search bar reveals a **solid red line** that connects all of these nodes. This quickly reveals skill areas of strength and need for that student. **Score detail** is also displayed for the student.



The **mean cohort subject score** is shown in the middle and the **black dotted line** shows the cohort mean for each skill.

The **list of students** below shows a student's learning cluster; this is a list of other students that exhibit a **similar level of readiness** in the same skills as the selected child.

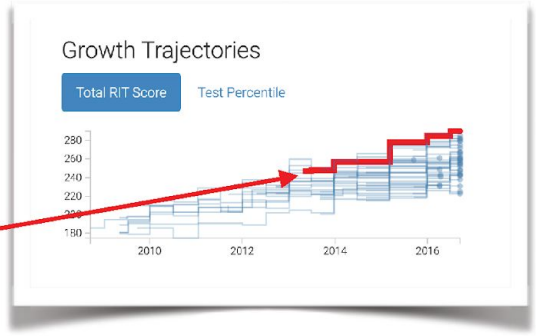
MAP EXPLORER



Additional insight into **learning clusters** can be seen in the cluster map. This view shows all students in a cohort and how their **relative performance** in the different skills may be similar to other students.

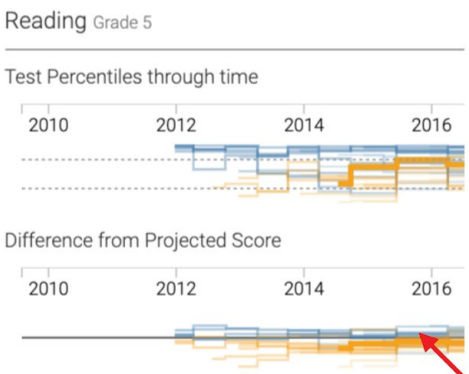
Each **node**, or bubble, in the map represents either a **student** or a **cluster**. Students are identified by name. The **size** of the bubble and **color** helps visualize the strength of performance. Large green bubbles signify stronger overall performance than small red bubbles. **Clicking** on any **student node** in the map will show that student in the hive plot along with their learning cluster. Nodes upstream from students can be **clicked** to show that cluster.

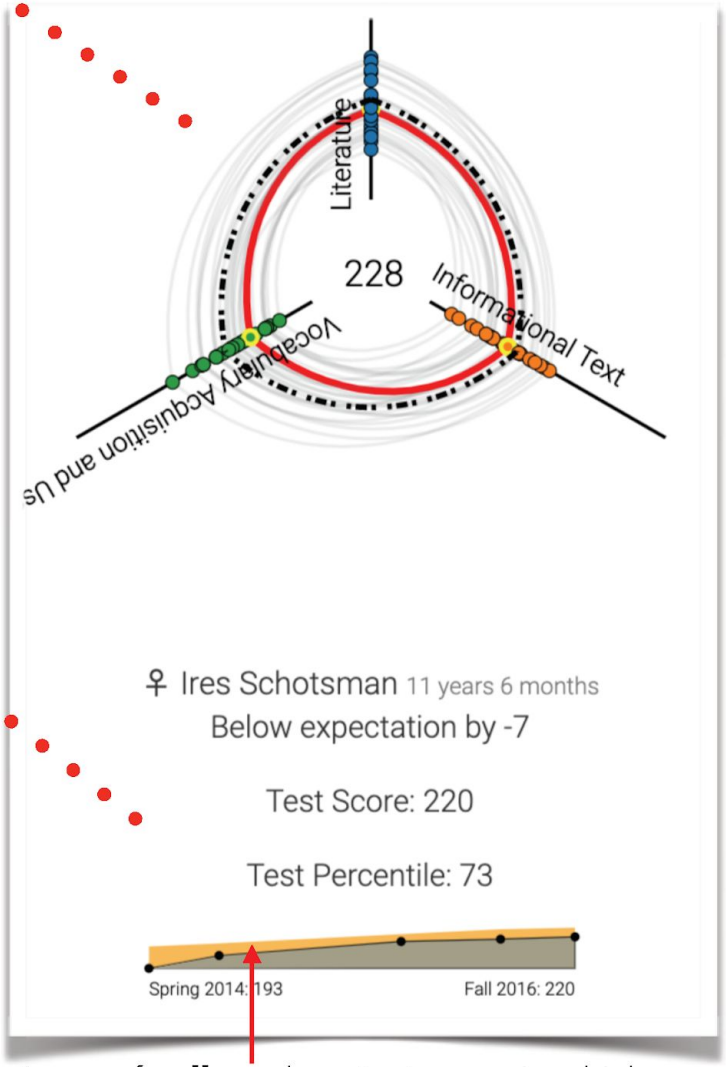
Growth trajectories can be visualized for any highlighted student in either RIT score or test percentile.



MAP SCORES BY GRADE

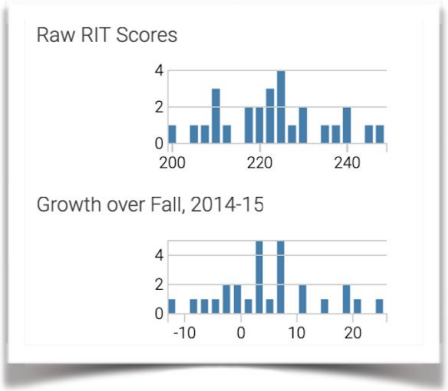
MAP Scores By Grade is designed to visualize the **range or variance in achievement/readiness** of a **grade level** while quickly being able to see how one student compares to the cohort. The grade level norm is shown as a dotted line. As with the hive plots in the MAP Explorer, it is designed to visualize how performance **varies by skill. Longitudinal scores** and details for any child can also be viewed above and below the hive plot.





Areas of **yellow** show test spans in which a student performed below expectations.

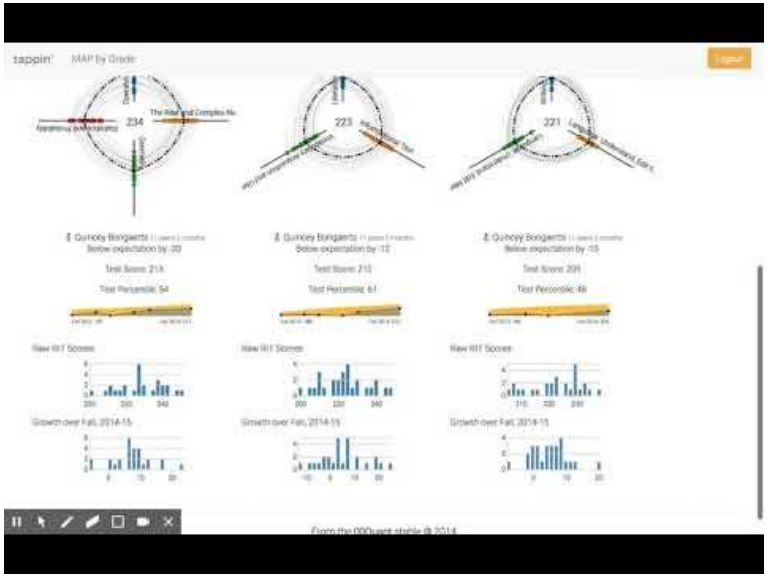
The **histogram plots** show two views. On top is a distribution of raw RIT scores for the cohort, and at the bottom is the distribution of growth **gains since the last test.** You can **select a range** of metrics by dragging the cursor over the bars and observing the resulting performance in the hive plot.



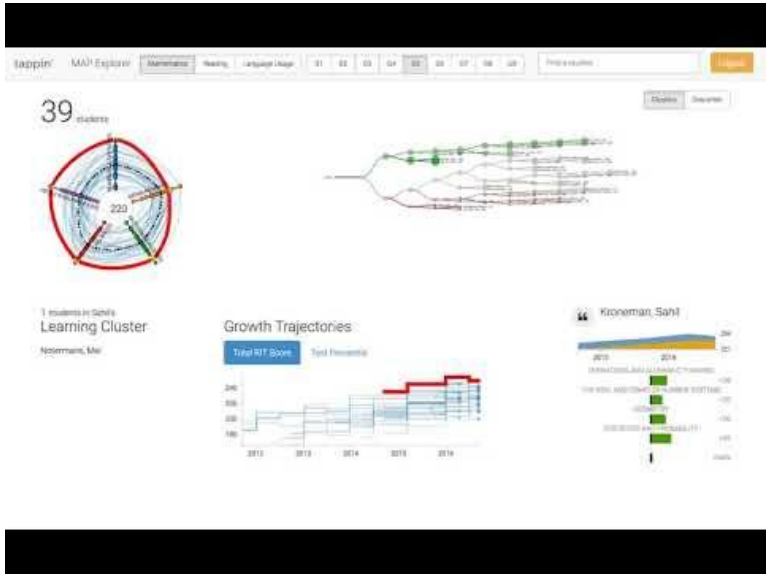
NWEA MAP
Measures of Academic Progress

MAP ENGINE TUTORIALS

MAP Scanner



MAP Explorer



MAP Scores by Grade

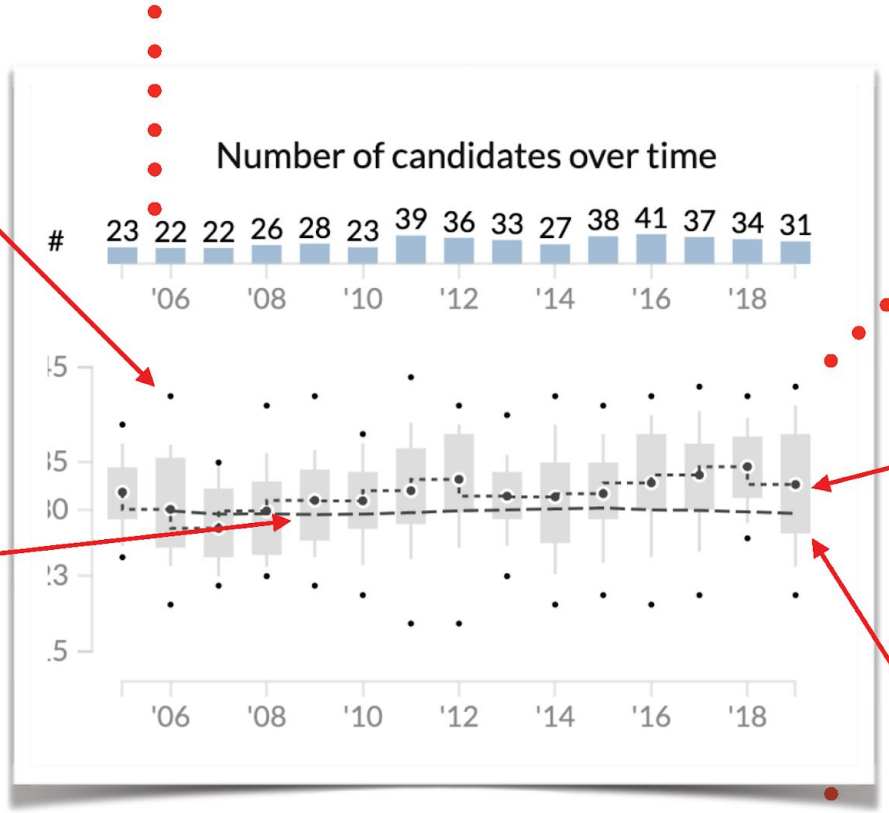
IB DIPLOMA PROGRAM

The IB Diploma Program engine group visualizes key metrics from the most recent graduating class. There is only one tile and all groups are included within that screen

The histogram shows the **total number of IB Diploma candidates** for each year the program has been in place. Ex. 22 candidates in 2006 and 2007.

Small dots at each end of the "whiskers" are the **highest and lowest** performing students in total score.

The **global mean** is shown by the **dashed line** that does not connect any dots.



The box and whisker plot shows **variance** in student performance for each year.

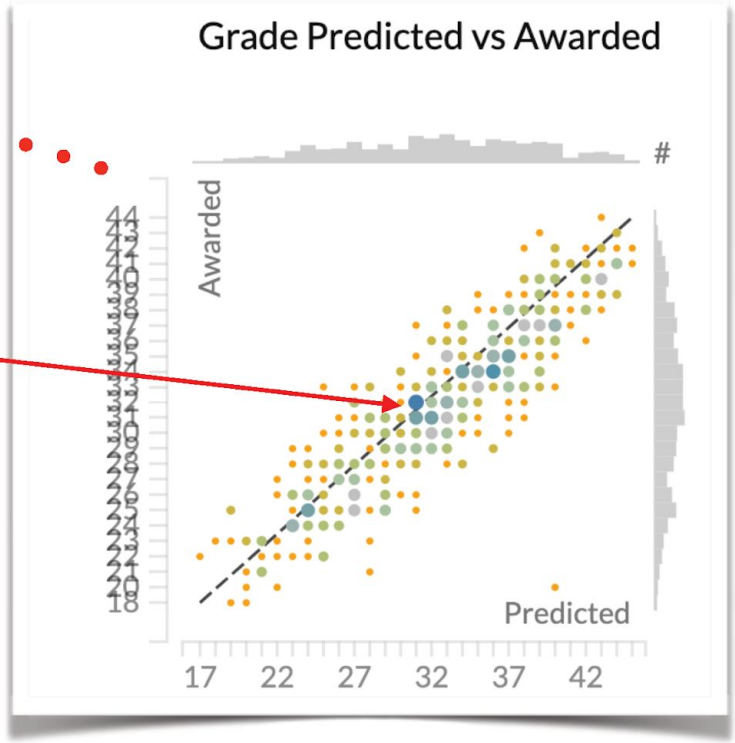
A **black dot** shows the **median** and connecting lines show +/- from previous year.

The **top and bottom edges** of the gray rectangle are the 75th and 25th percentile.

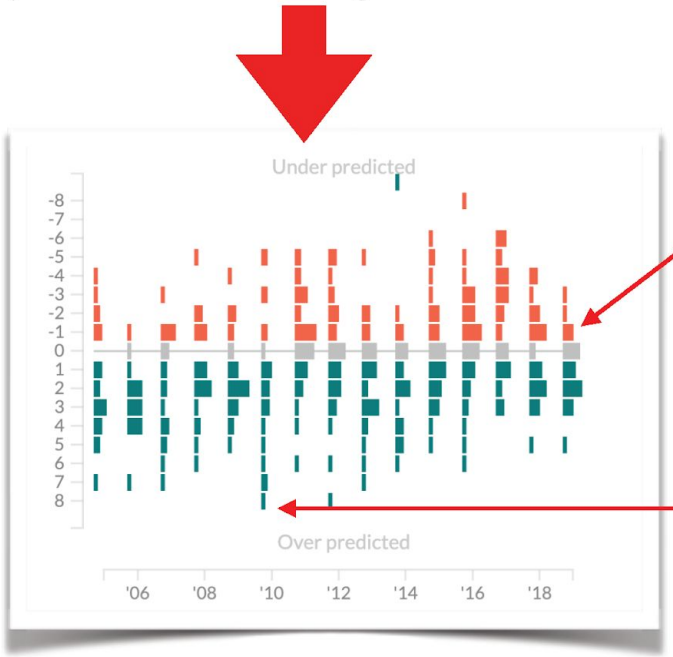
IB PREDICTIONS

The **predicted vs. awarded plot** on the main screen shows aggregate over/under predictions for all students in the program since the school adopted the IB program.

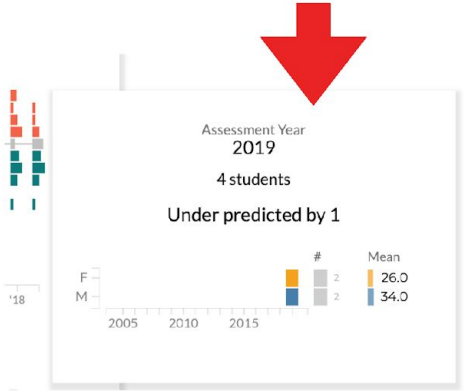
Bubbles represent the total number of students at that data point and grow larger and turn blue as the count increases.



The **longitudinal histogram** makes it easy to visualize how prediction performance has changed over time.

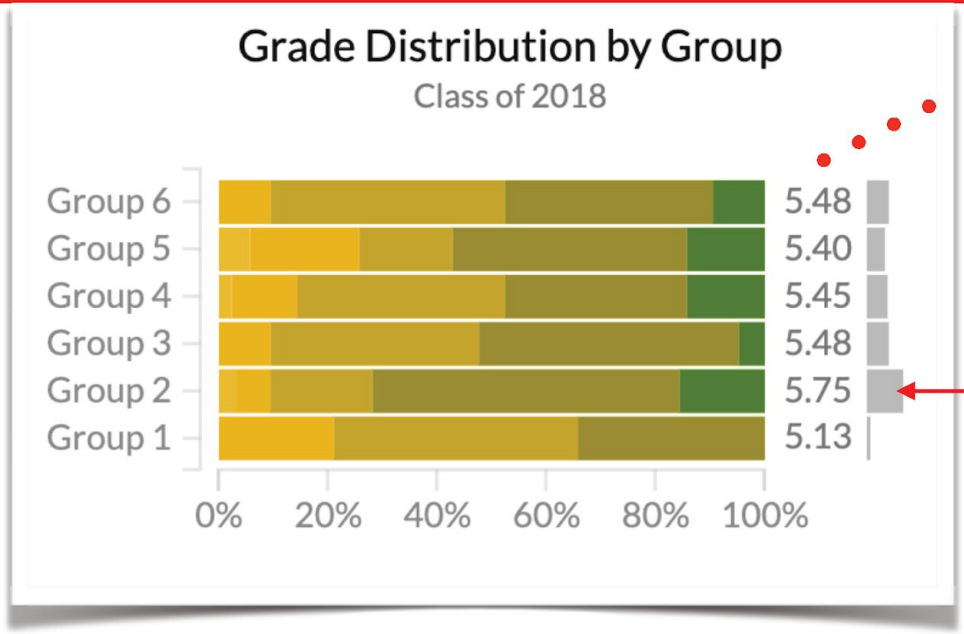


Each bar represents a count of the number of students over / under predicted that year. Hover over a bar to **drill down** and see a gender breakdown.



This data shows that students were much more likely to be over predicted between '08 and '15 and this has tightened up recently.

GRADE DISTRIBUTIONS

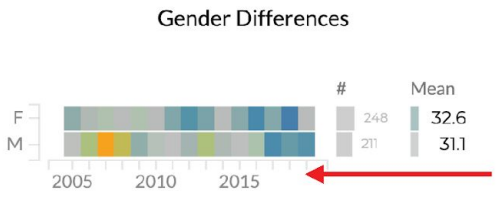


The **percentage of students** earning a particular grade in each Group can be visualized in the area bar chart. This is designed to show relative performance by Group. Around 70% of candidates earned a 6 or a 7 in Group 2.

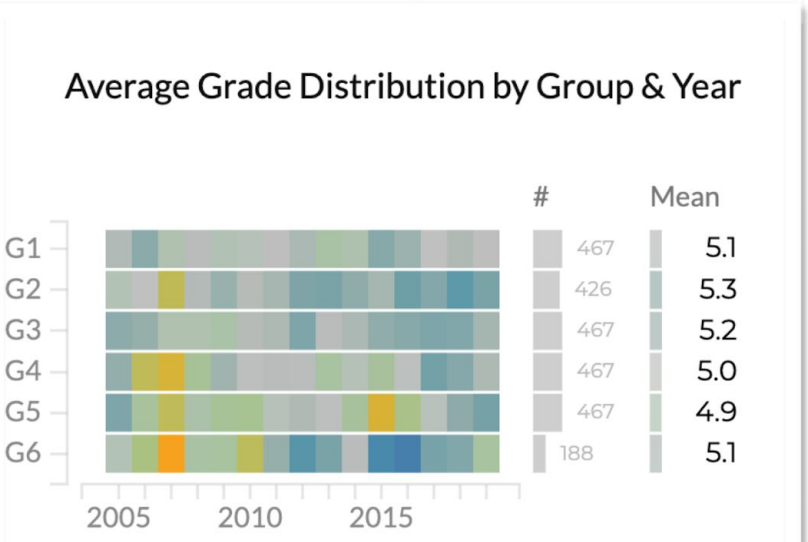
The **vertical histogram** helps by showing a reference point for the highest Group mean.

These grade distributions can be visualized over time with the longitudinal graph. **Orange** colors represent **low means** and **blue** colors represent **higher means**.

This data shows that Group 6 performance has increased profoundly since 2010 and prior.

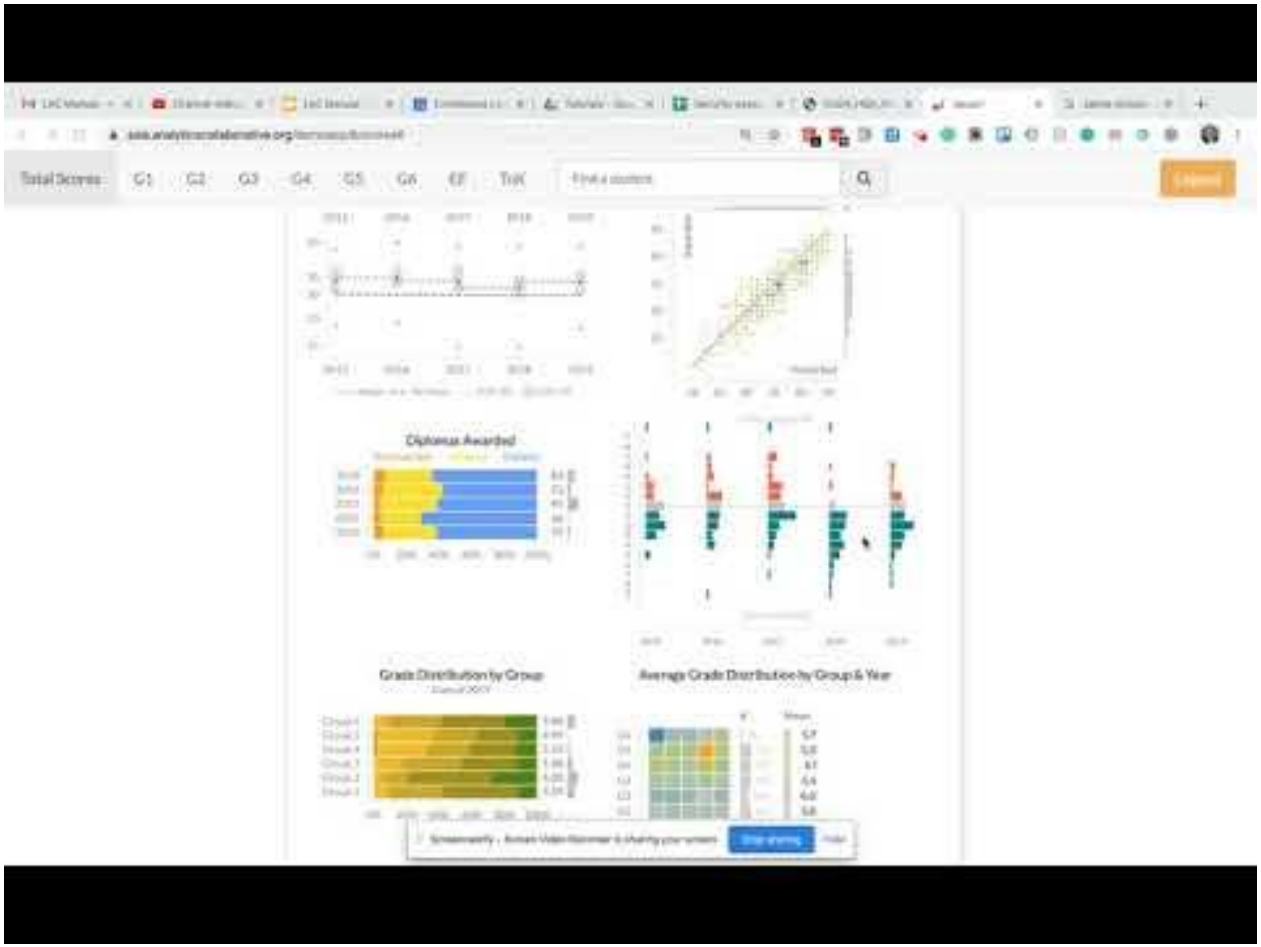


The same display is **disaggregated by gender** to check for equity.



International Baccalaureate
Student Diploma Scores

IB DP Tutorial

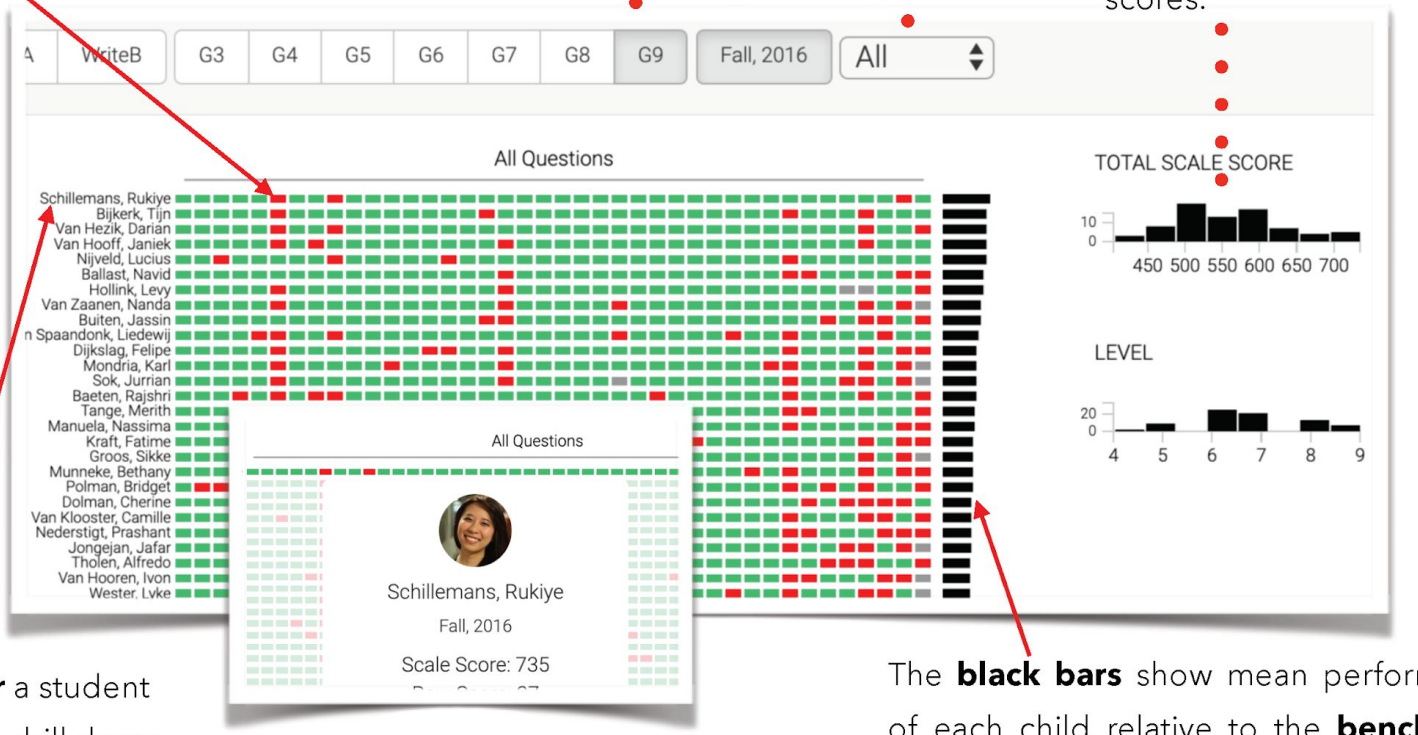


ACER INTERNATIONAL SCHOOLS ASSESSMENT

The grid on the main screen shows all questions answered right or wrong for all students in a **cohort**. **Red blocks** are questions answered **incorrectly**.

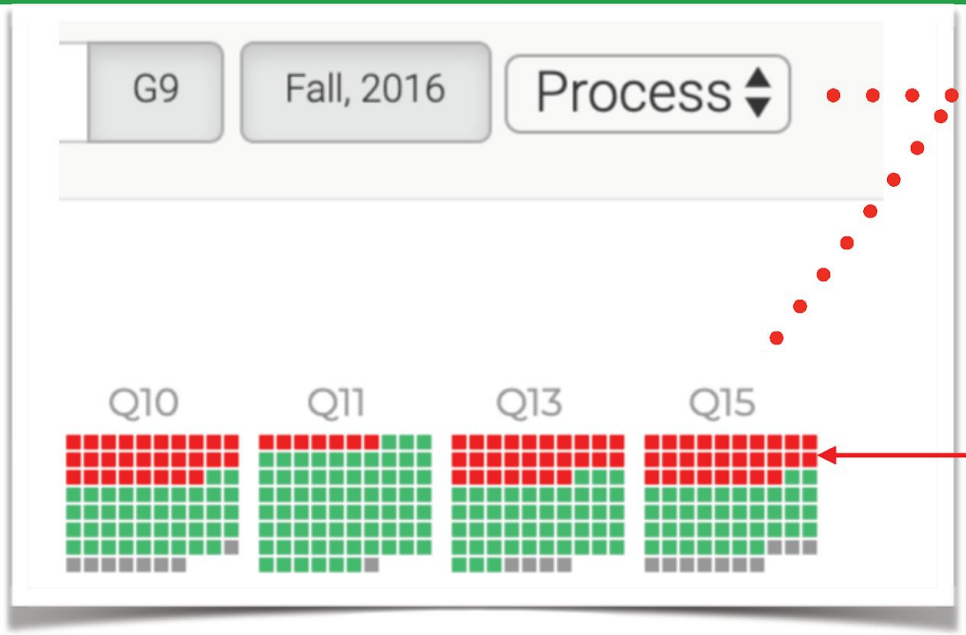
Choose the **question type** to explore in this dropdown.

Drag you curser over the histogram to **filter** for a range of student scores.



Hover a student row to drill down into test score details.

The **black bars** show mean performance of each child relative to the **benchmark** student, i.e. the student with the highest mean score at the top of the list.

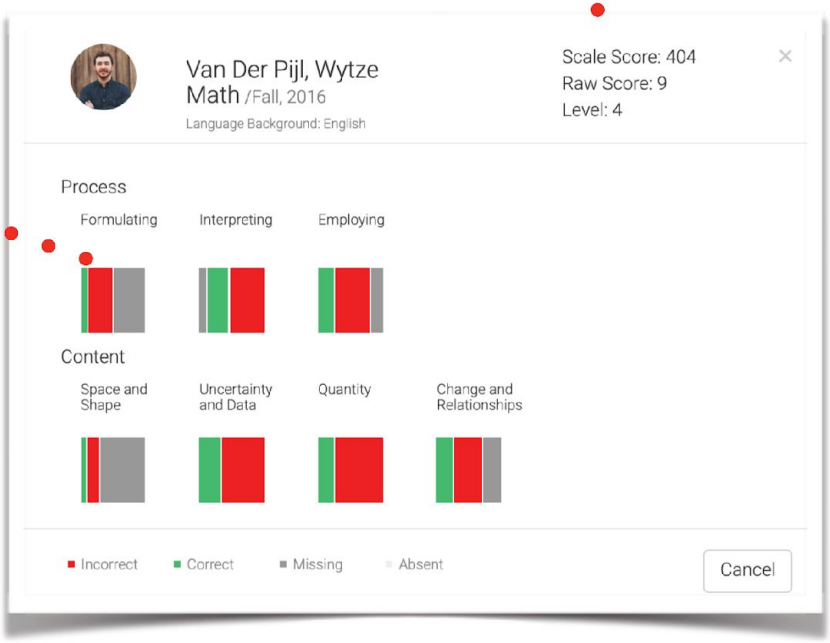


By **selecting** either process or content from the question type dropdown, the grid changes to show **performance by question.**

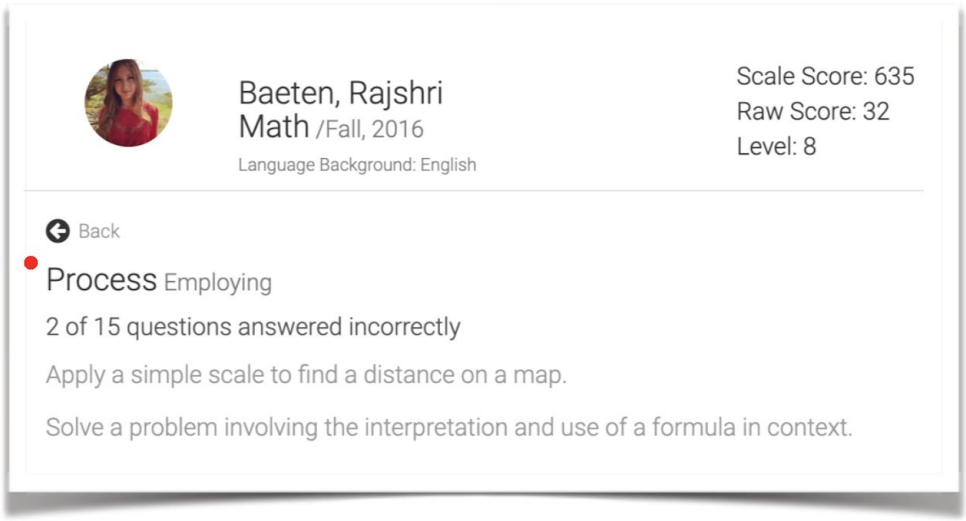
Hover over any tile to see the student score detail. **Click** on any student to **drill down** into the students performance on the question types.

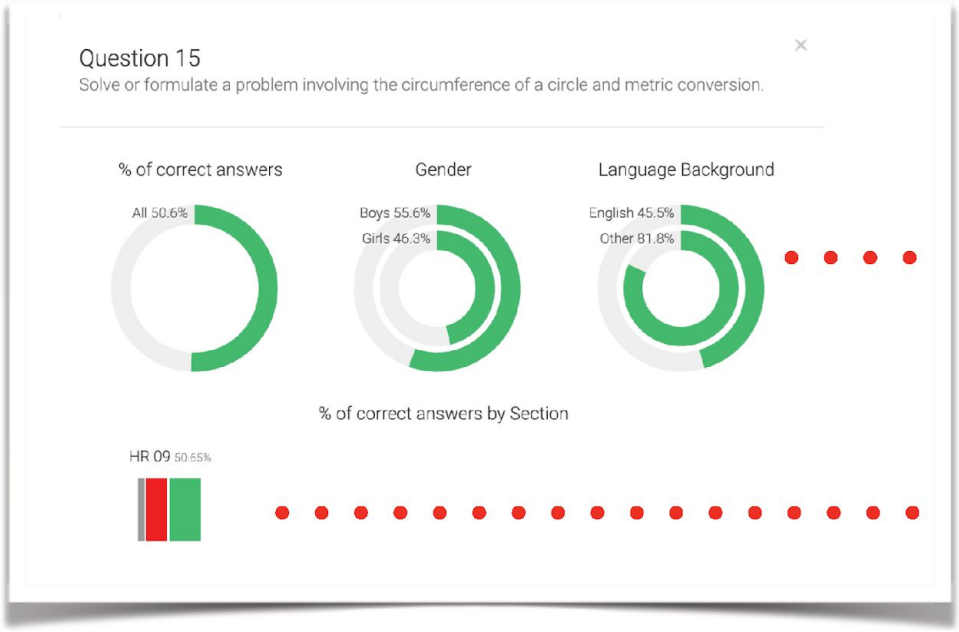
In the **boxes** beneath the sub-types, the relative number of **correct**, **incorrect**, and **unanswered** questions is shown as a percentage of the whole.

This data shows that the student left unanswered about half of the questions in the "formulating" sub-type.



With the student detail pop-up open, **Click** on any of the **question sub-type headers** (ex. Employing) to see details for that question including description of the skill or content knowledge.



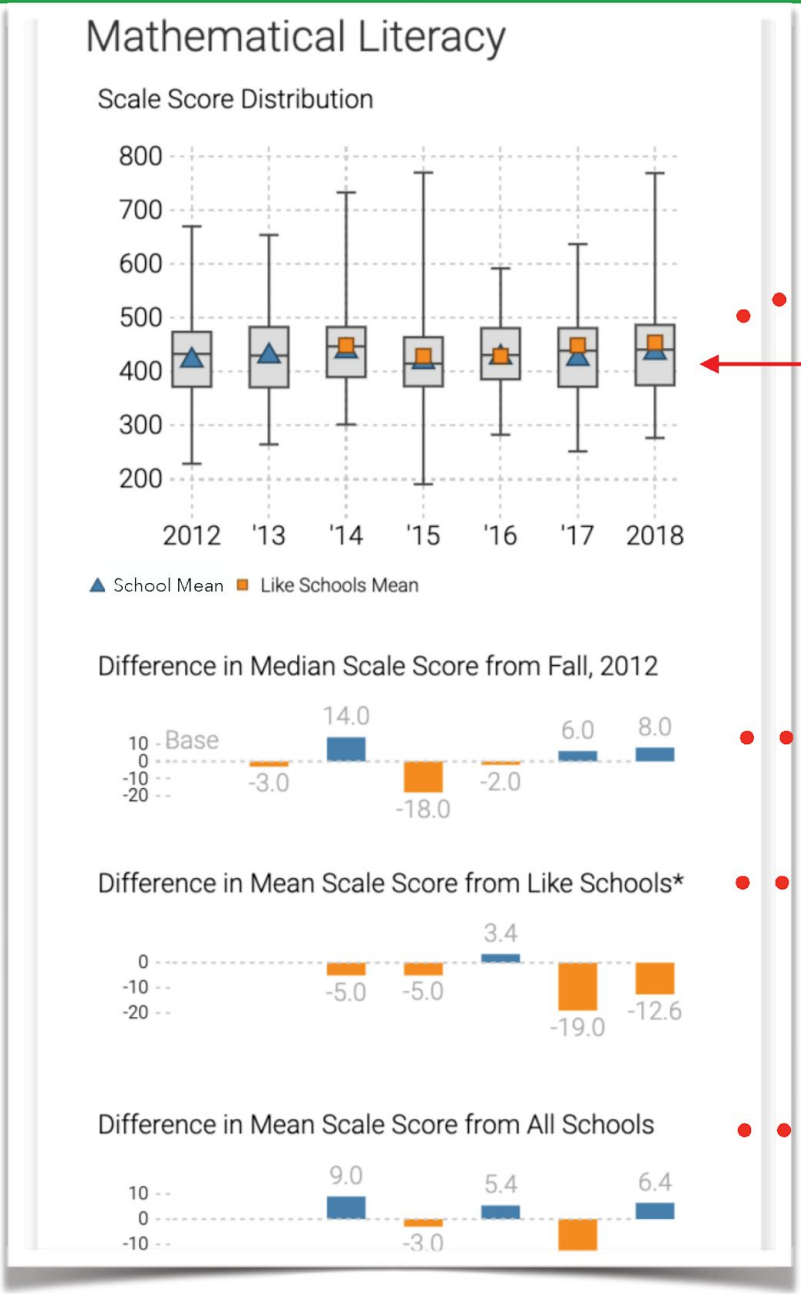


Click on a question header (i.e. Q15) to see a breakdown of demographic performance for the cohort.

The number of **correct** answers by **gender** and by **language background** are shown in the circle charts.

The percentage of correct answers **by homeroom** section is shown in the box below.

LONGITUDINAL ISA



Your school's longitudinal performance is shown using box and whisker plots that help visualize variance.

The **Median**, **School Mean**, and **Like Schools Mean** can be seen for each year the test was taken.

This data shows that the **2016 school mean** was even with like schools, while like school exceeded our school mean in 2017 and 2018.

The highest performer in 2018 was well above that of 2017 as indicated by the **terminus** of the top "whisker".

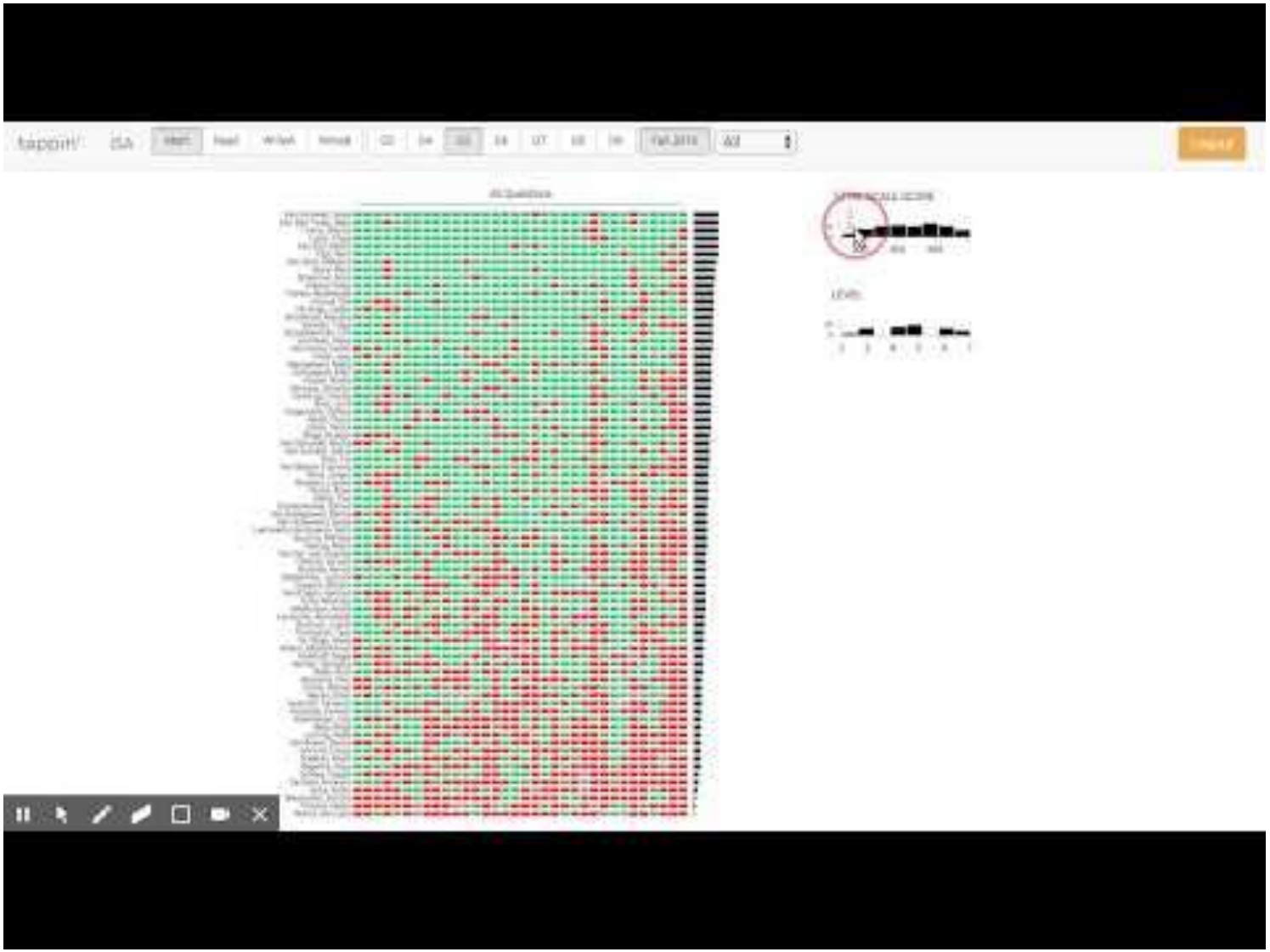
Each year's performance **relative** to the **Baseline of 0** set by the first year of the test is shown.

Comparison of year-over-year performance **relative to Like Schools** in this example shows the school exceeded this benchmark only in 2016 with a trend toward the negative in 2017 and 18.

Comparison of year-over-year performance **relative to All Schools** shows the school has exceeded this benchmark in three out of five years.

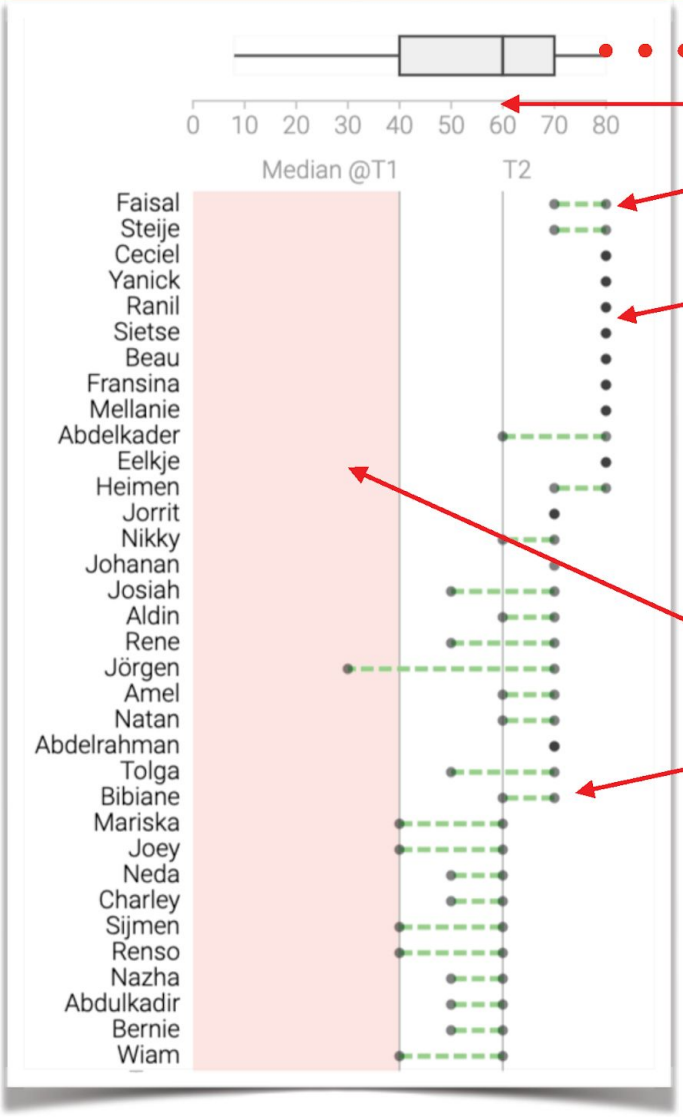
ACER ISA
International Students Assessment

ACER ISA TUTORIAL



LITERACY ASSESSMENTS

The Literacy Assessment Screener shows growth and achievement of students on their internal literacy assessments such as DRA or F&P.



The box and whisker plot allows you to filter by quartile. The **Median** in this example is 60.

Green dotted lines show growth from the beginning to the end of year.

Single dots may be either single scores or they may represent zero growth.

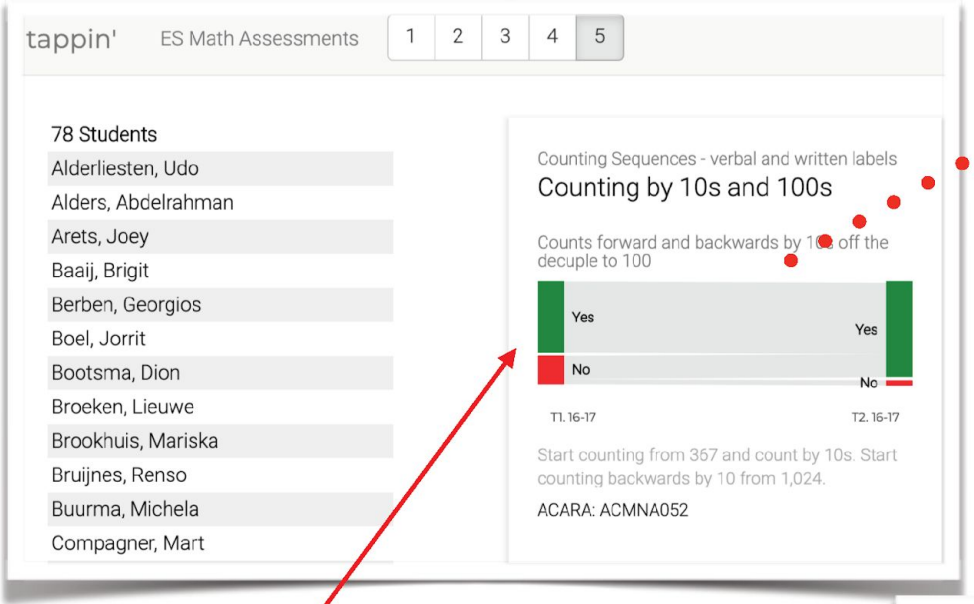
Use the **Find a Student** box to locate any student in the cohort and highlight their scores.

The **grade-level expectation** (benchmark) is filled in with red (or a custom color at your school) so you can easily see which students are reading above, at, or below this benchmark.

Drill down to student assessment details by hovering over any dot. The pop-up will show term 1 and term 2 scores with a description of the student's **reading level relative** to the grade-level expectation.

MATH SCREENERS

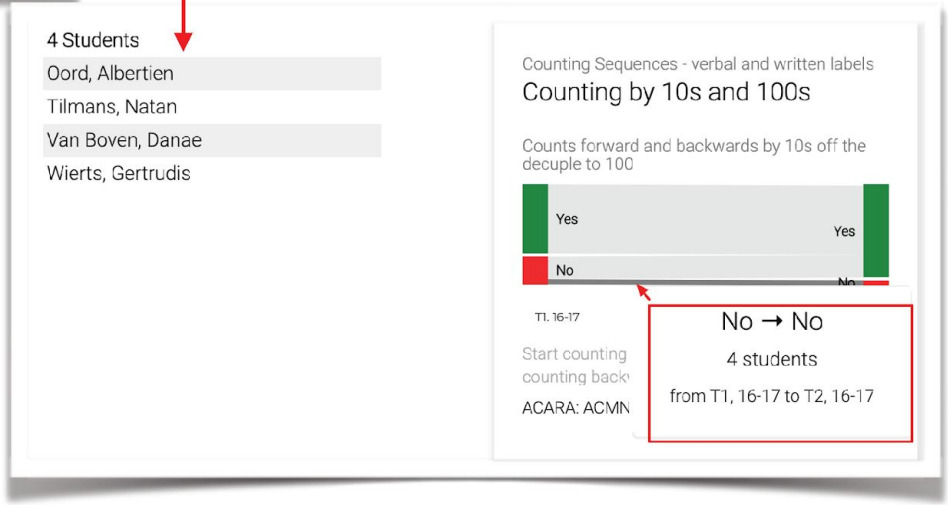
The Math Screener shows skill growth based on a yes/no assessment of ability for any skills that are being tracked.



Achievement and growth in each skill assessed internally is represented by an **achievement flow chart** that shows relative numbers of students who have grown in their ability to demonstrate that skill.

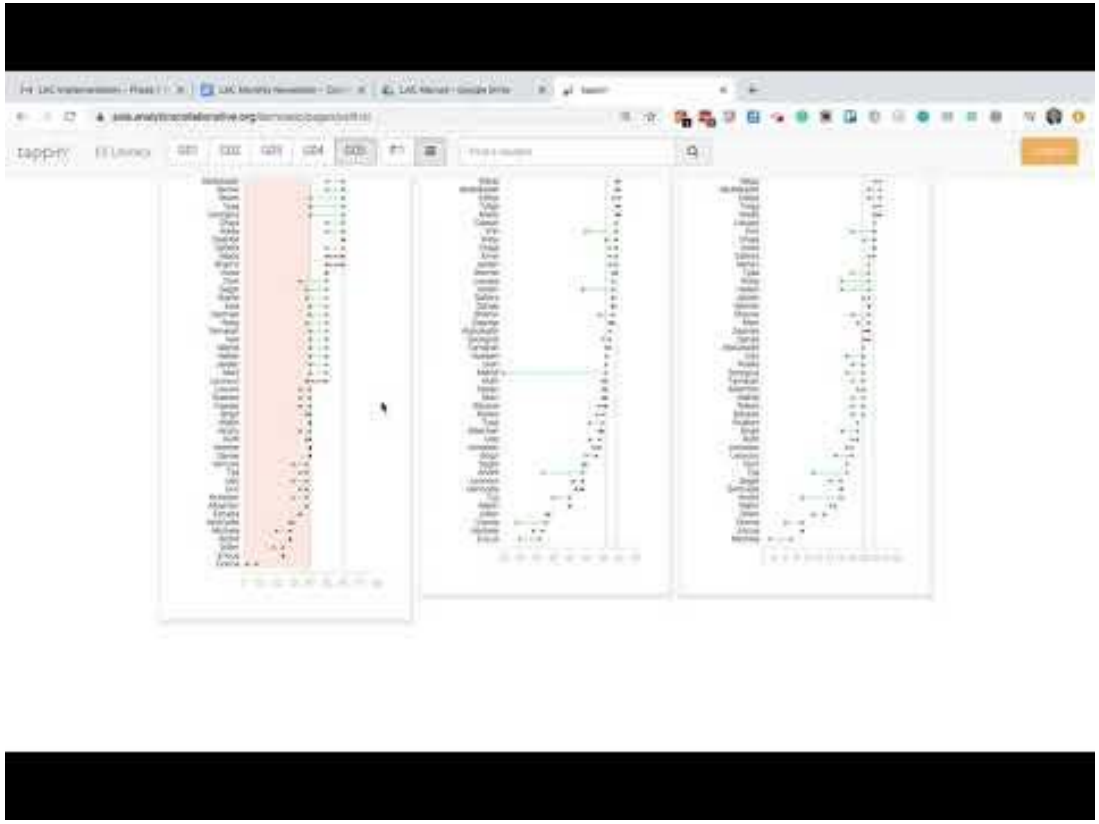
All students in the **cohort** are shown in the list by default. Hover over any box or bar to **filter the list of students** by that subset.

Beginning of the year assessment results are shown on the left with end of year results shown on the right.



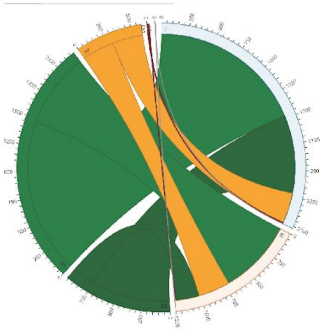
Observational Assessments
ES Literacy, Math and PSEL

Literacy Screener Tutorial



GRADES - STANDARDS-BASED OR TRADITIONAL

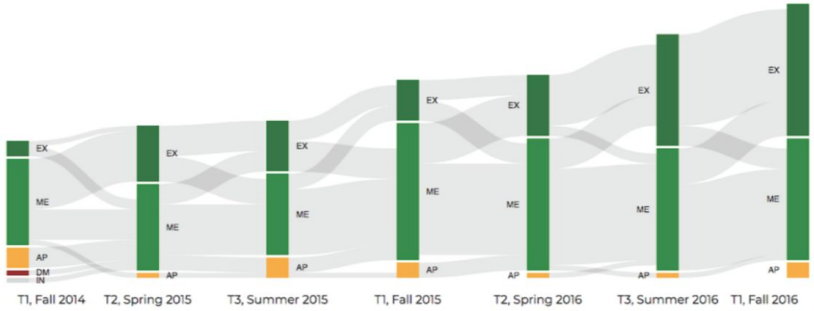
Grade Explorer (Equivalence)



Explore and reveal the equity in grading and performance by gender, subject, grade level or teacher.

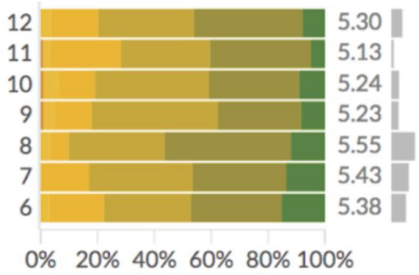
Grade Flows

See how grade distributions change over time for a cohort of students and drill down to clusters of students.



Grade Distributions by Subject

View relative distributions of grades by grade level for each subject to spot trends in by gender,



Mean Grade Distribution Grid

See how grade distributions change over time for a cohort of students and drill down to clusters of students.

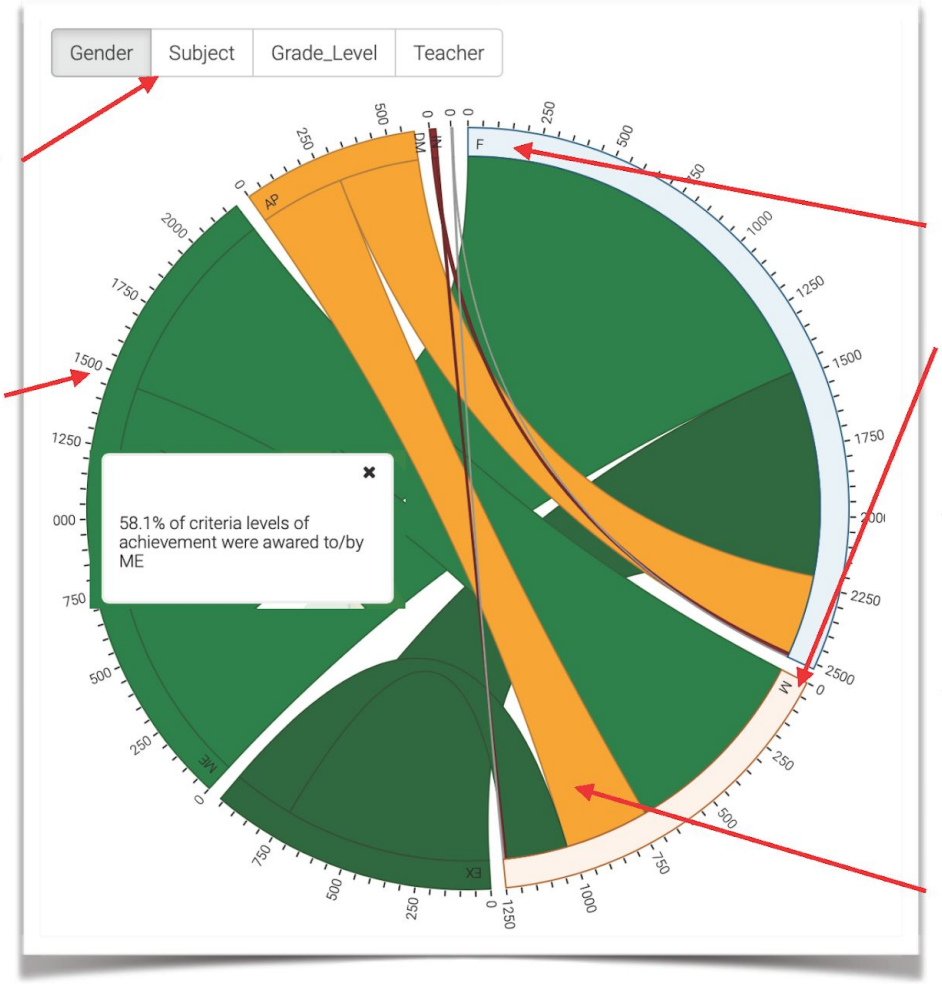
	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Languages A	5.0	5.0	5.8	6.3	5.8	5.8	5.7
Science	6.0	6.0	5.8	6.0	3.0	5.5	5.7
Humanities	5.0	5.5	5.6	5.0	3.0	5.8	5.8
Mathematics	5.0	5.5	6.4	5.0	5.0	5.0	5.8
Fine & Performing Arts	5.0	6.0	6.3	5.5	2.0	5.9	5.5
Languages B		6.0	6.0		5.0	5.6	5.5
Physical Education	5.0	5.0	5.6	6.0	3.0		
Languages		5.0	6.0				

GRADE EXPLORER

Equivalence in levels of achievement allows you to see the proportion of grade levels that are awarded to or by particular **groups** at your school. The default view shows **grades awarded by gender.**

Toggle the view to see the wheel **disaggregated** by subject, grade level or teacher groups.

The **scale** represents the **total number of grades** awarded at that achievement level or to that group. In this example nearly 2250 grades were awarded at the Meets (ME) achievement level representing 58.1% of all criteria (ex. DNM, AP, ME, and EX).

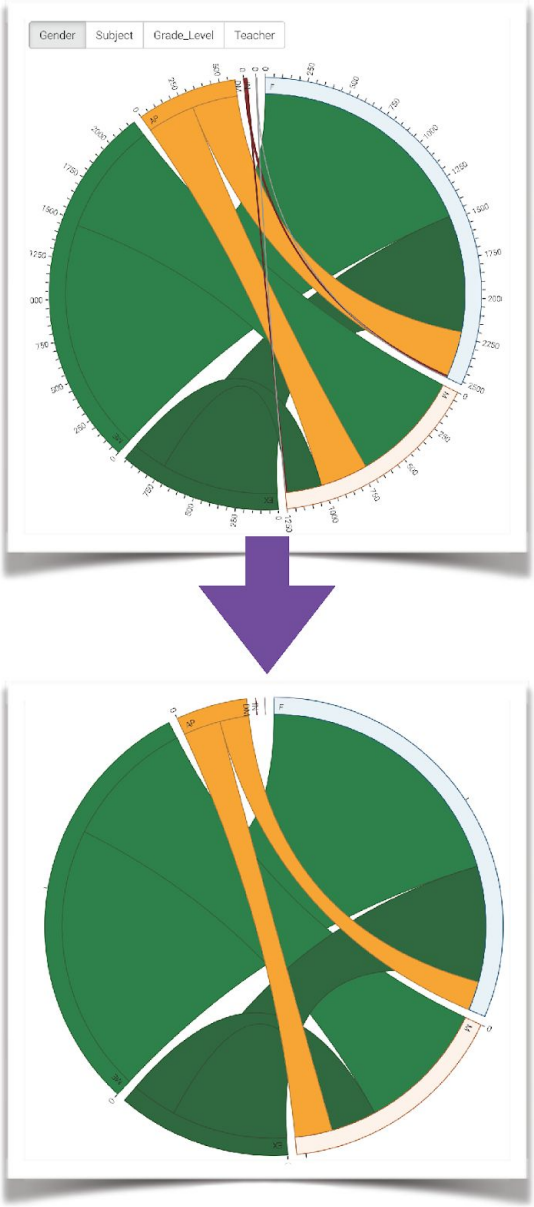


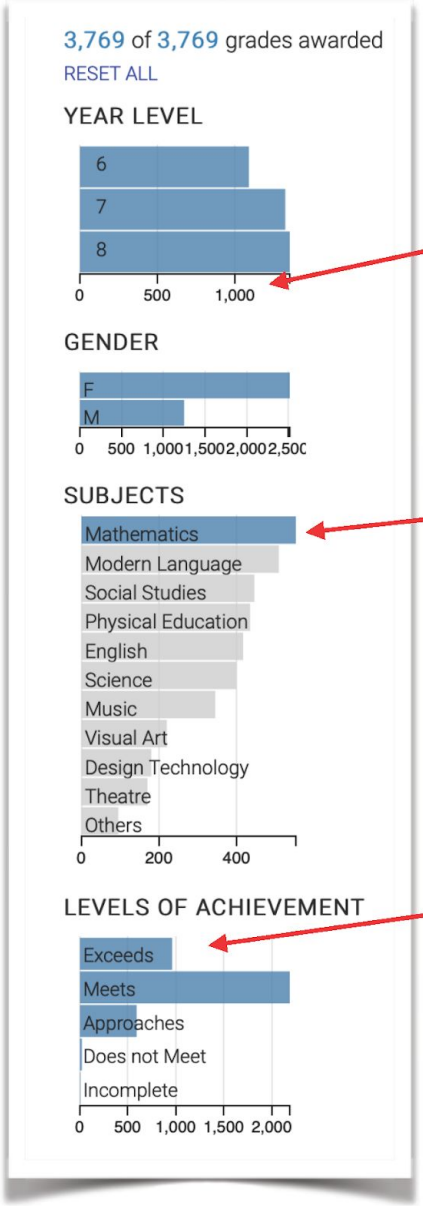
The group being viewed is distributed along the right hemisphere. In this view we **see females (F)** at the top and **males (M)** at the **bottom.** Achievement levels are on the left.

The **colored bars** link the group with the achievement levels to allow you see the **percentages** of grades awarded to each group.

Hover over a bar to see its details.

GRADE EXPLORER





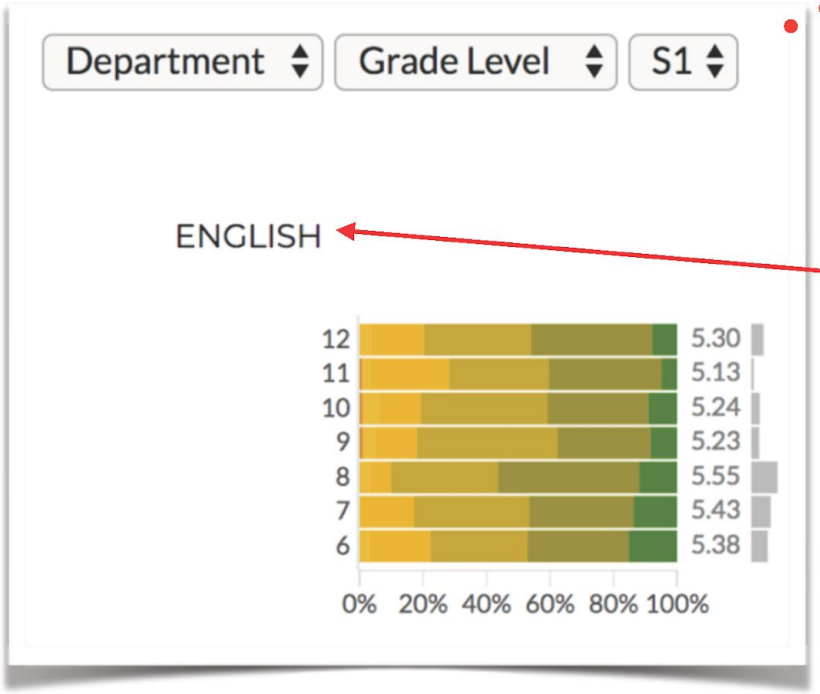
The histogram controls on the right of the screen serve two functions. They offer a **count of grades awarded** to / by each group.

Each bar is clickable which allows you to **filter the visualization** by one or more criteria.

Clicking on the Mathematics bar will show achievement levels only for math. You may **select any combination** of subjects, year levels or levels of achievement.

Then **click on Exceeds** to see only math grades at the exceeds achievement level.

GRADE DISTRIBUTION BY SUBJECT



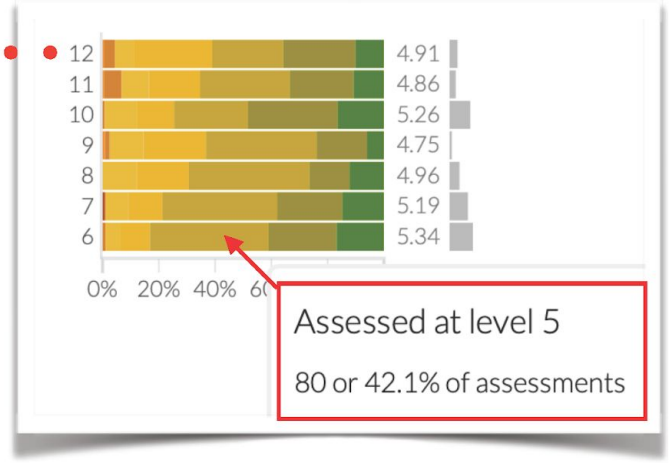
Grade distributions allows you to **disaggregate grades** by a variety of criteria such as, department, grade level, term, gender, and teacher depending on the data provided by your school.

The header shows the first criteria chosen (Department) in the drop-downs above and the **left axis** shows the second criteria chosen (Grade Level).

Each colored bar shows the **percentage of grades** at each achievement level awarded to students in that grade level.

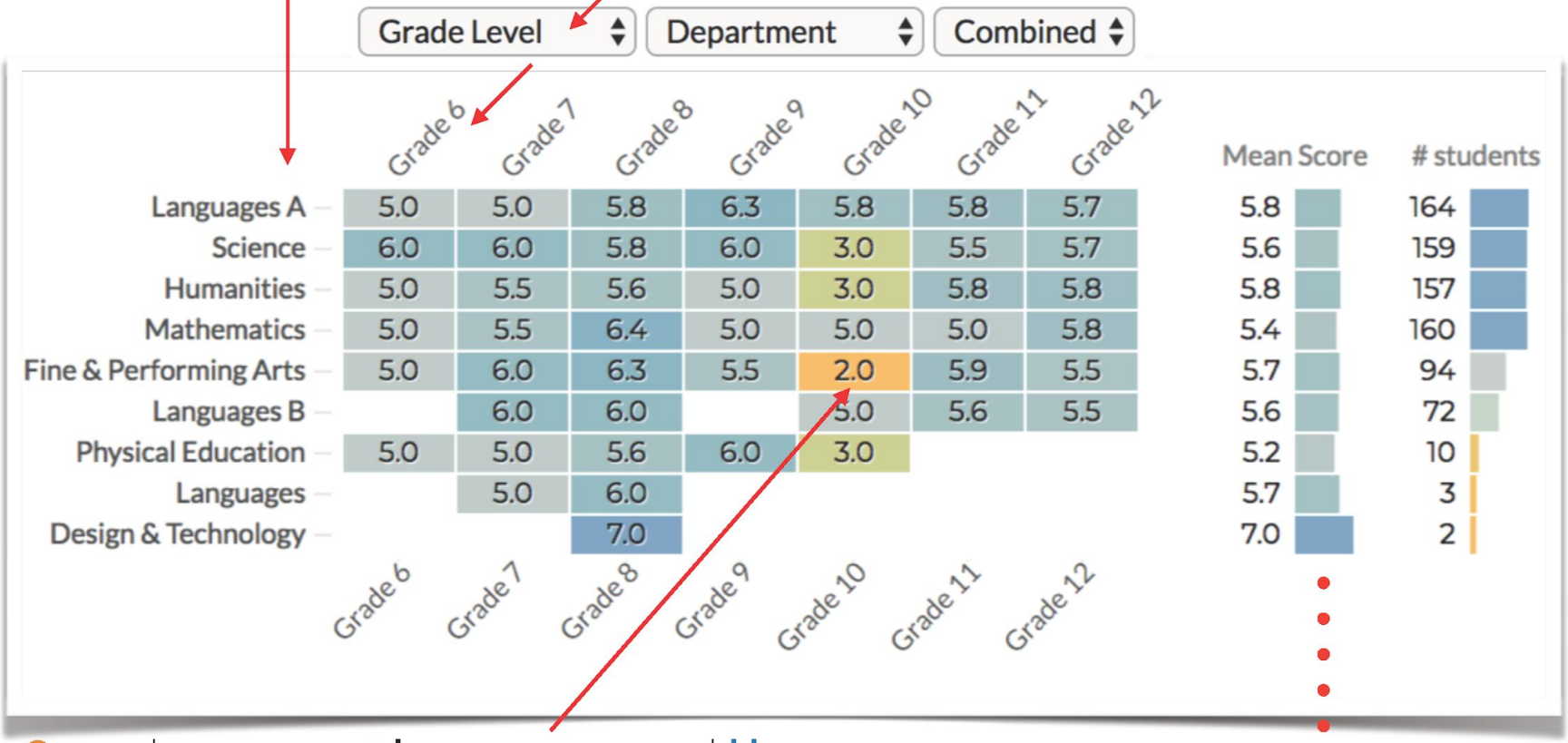
These grade distributions can be **visualized over time.** In this example **orange** bars represent **low scores** and **green** bars represent **higher scores**. Between grade 6 and 9 there was a trend toward lower scores which is reversed grade 10.

This data shows that Group 6 performance has increased profoundly since 2010 and prior.



GRADE DISTRIBUTION GRID

Grade distributions grid visualizes grades in the form of a **matrix** that allows you to **compare two criteria.** These criteria are selected in the drop-downs at the top and are similar to the choices in the example on the previous page. The first drop-down sets the **criteria** along the **X axis** (top and bottom) and the second sets the criteria on the **Y axis along the left.**



Orange boxes represent **low mean scores** and **blue** boxes represent **higher means**. In this example Grade 10 students in Science, Humanities, Arts, and PE scored well below students in other grades.

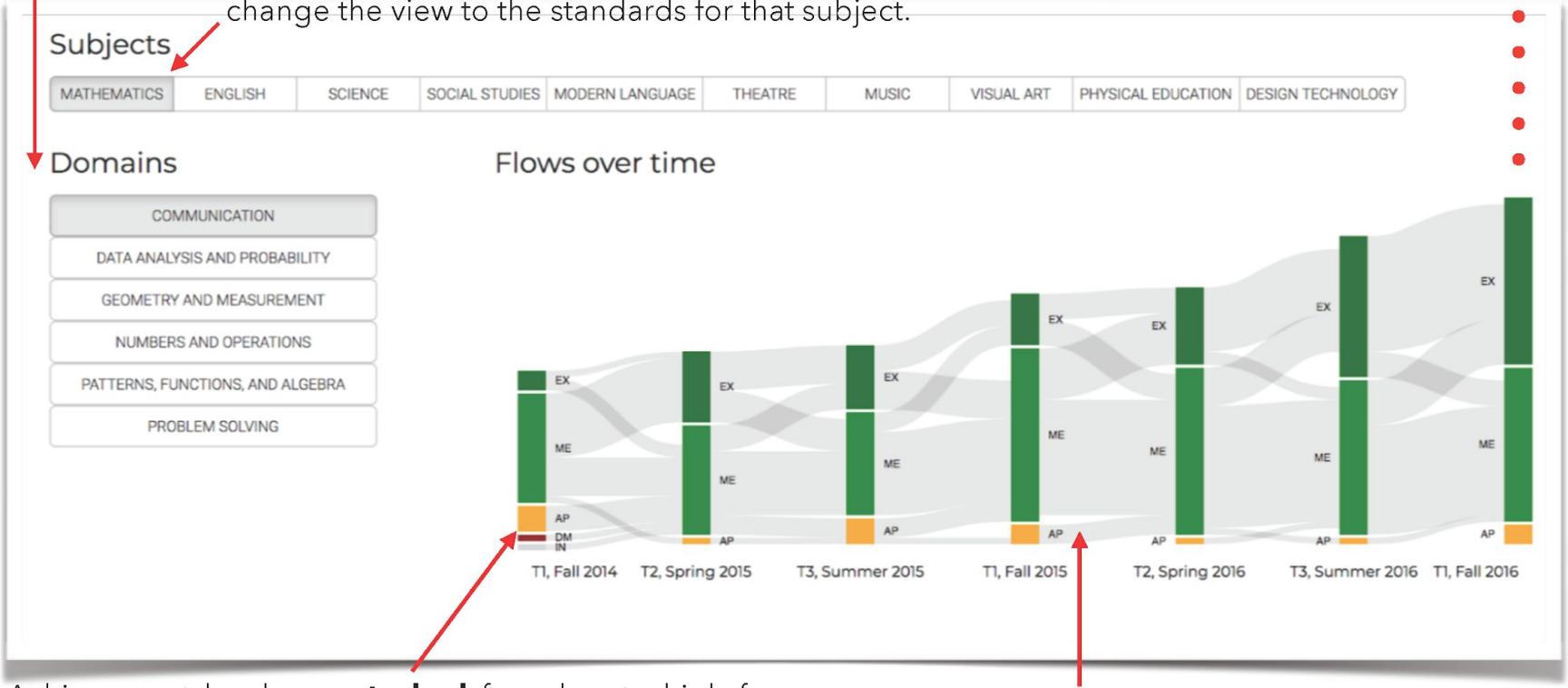
The **vertical histogram** shows a quick reference point for the highest mean in the category on the left axis.

GRADE FLOWS

Grade Flows visualizes **longitudinal grade distributions** for all subjects and high-level **standard domains** reported on at your school.

In this example, by the Fall of Grade 8 a higher percentage of students were awarded Exceeds grades in Math Communication than in grades 6 and 7.

Toggle between **subjects** in the menu along the top to change the view to the standards for that subject.



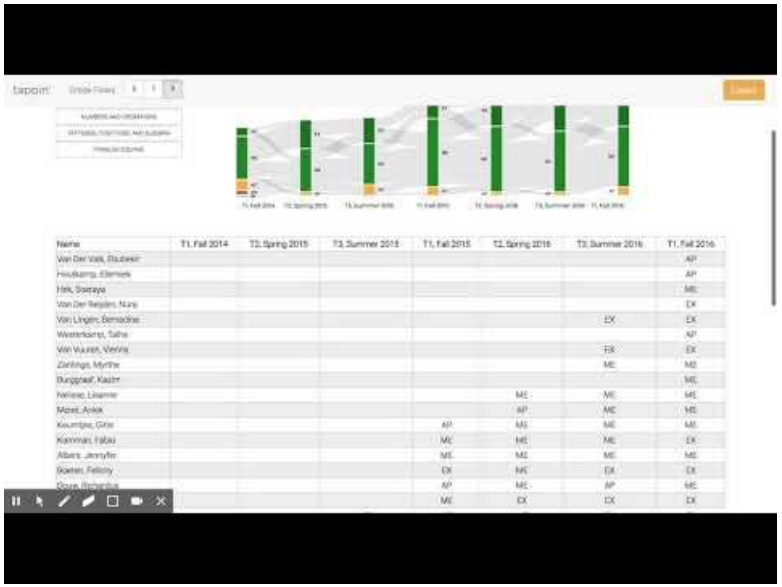
Achievement levels are **stacked** from low to high for each grading period shared in your data set. **Hover** to show the **count and percentage** of students at that level.

The **horizontal grey bands** connecting the colored bars show a count of students who have improved, remained the same, or dropped in their grades. **Hover** to show the list of students.

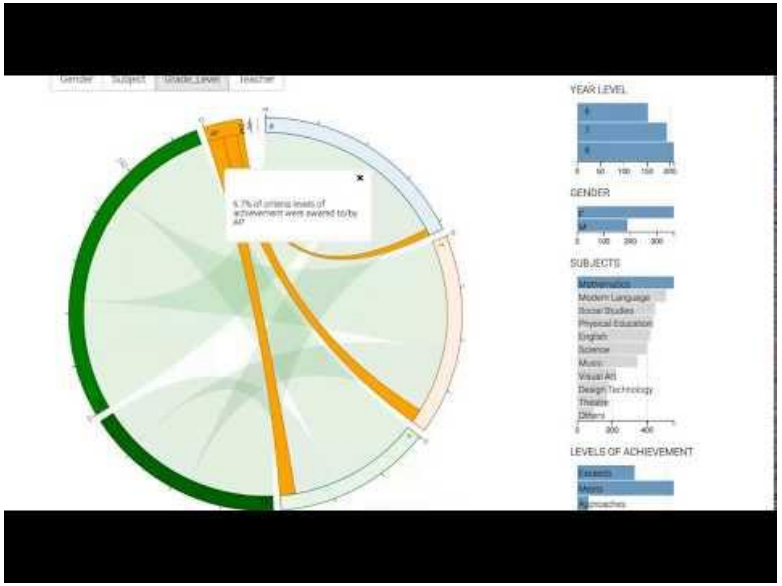
Internal Assessments
Equivalence in Levels of Achievement

GRADES TUTORIALS

Grade Flows



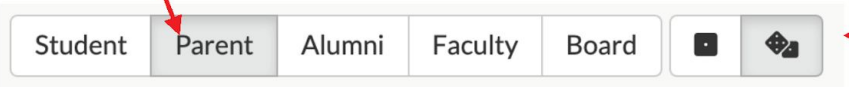
Achievement Levels



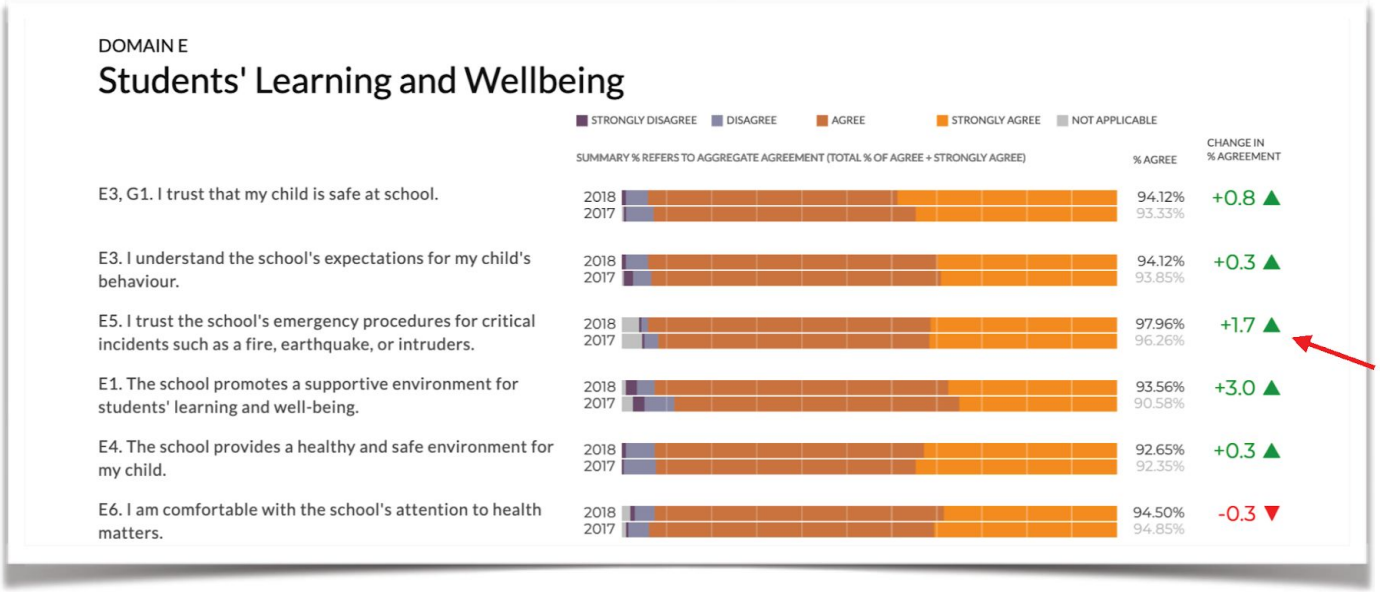
SURVEYS

CIS

The CIS Community Survey engine can be used for a variety of different surveys and will show results over time if you have more than one survey instance. Select the buttons at the top to **toggle** between stakeholder groups

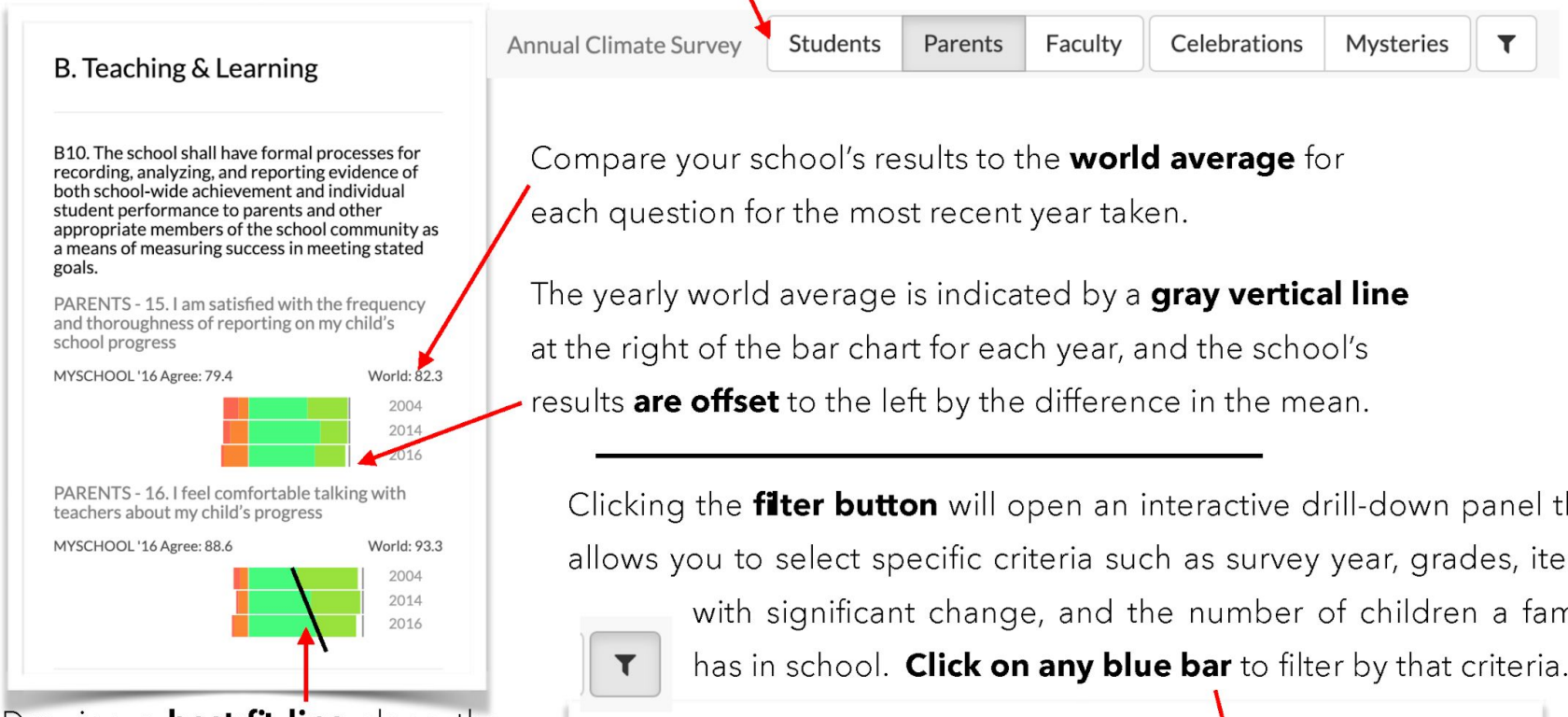


Questions can be grouped by domain or sorted from high to low agreement in one comprehensive list. This example is grouped by domain.



The trend in agreement i.e. whether approval is increasing or decreasing is shown by the green or red **indices and arrows** on the right.

The **Endicott survey** is similar to the CIS survey but the engine shows the results in a more condensed format by domain only. Toggle between **stakeholder groups** and by items to celebrate or better understand.

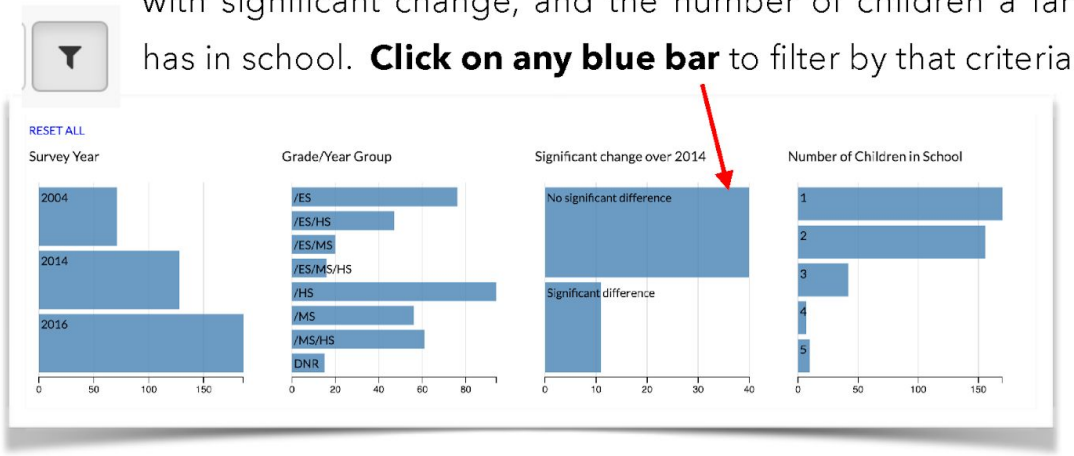


Compare your school's results to the **world average** for each question for the most recent year taken.

The yearly world average is indicated by a **gray vertical line** at the right of the bar chart for each year, and the school's results **are offset** to the left by the difference in the mean.

Drawing a **best-fit line** along the boundaries of the area bar chart blocks (shown in black) gives you a sense of how that sentiment has changed over time. This example has trended downwards.

Clicking the **filter button** will open an interactive drill-down panel that allows you to select specific criteria such as survey year, grades, items with significant change, and the number of children a family has in school. **Click on any blue bar** to filter by that criteria.



Council for International Schools
Climate Survey, 2017-18

Endicott Research Center
Annual Climate Surveys

Surveys Tutorial