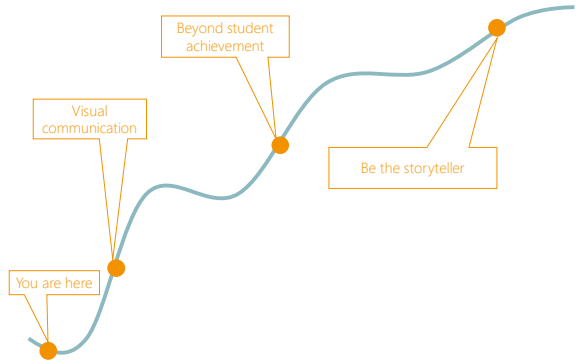


# Make the connection

Student growth to teacher action

Tara Richerson  
ASCD Annual Conference  
March 27, 2017

## Agenda



## Visual communication

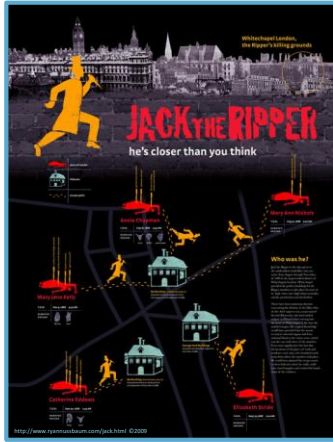


## SPACE

taken by 60 people



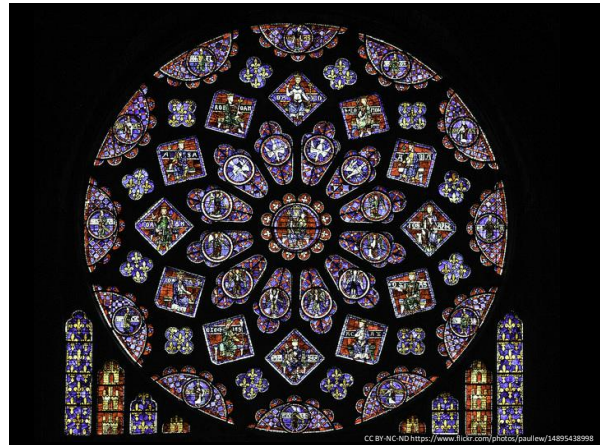
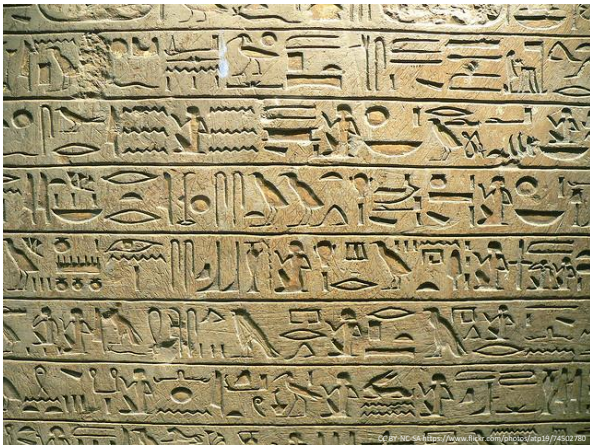
<http://www.flickr.com/photos/ascd/1316220154/>



85% of our perception, learning, cognition, and activities are mediated through vision.

Why are **visuals** so much **more powerful** than numbers and words?

The human brain processes elements of images **simultaneously**, while it processes text in a linear way.



Graphics have a *cognitive*  
and *emotional* impact.



A new kind of glasses

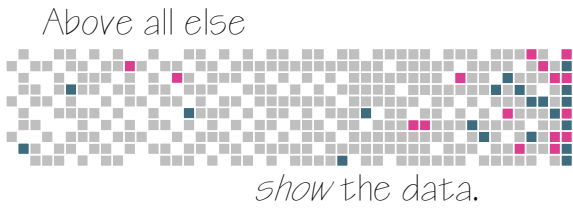


We can do *better*

Student	Item Number				
	1	2	3	4	5
Anderson, Melanie	1	0	0	0	0
Dalton, Craig	1	1	1	0	0
Gallego, Peter	1	1	1	1	1
Herrera, Sylvia	1	1	0	1	0
LaCrosse, Martin	1	1	1	0	0
Peterson, Michelle	1	0	1	1	0
Sanders, Karen	0	0	0	0	0
Walters, Darren	0	1	1	0	0
Wu, Alice	1	1	0	0	0

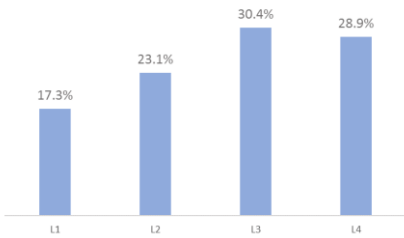
Turn and talk

1. What are the *stories* you wish could be told about your staff, students, or school?
2. What are your *successes* and *challenges* with conveying both a cognitive and emotional impact with data?

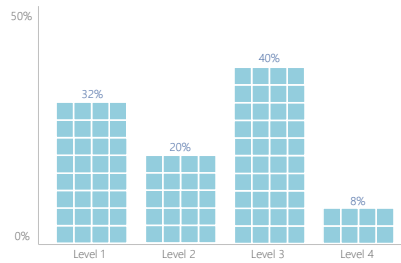


Distribution of scores

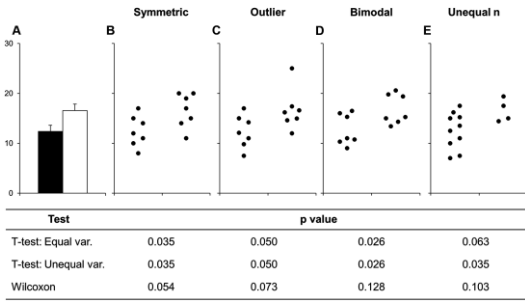
Grade 3 performance on 2015 ELA Smarter Balanced assessment  
n = 69



Distribution of scores



Bars summarize diverse data

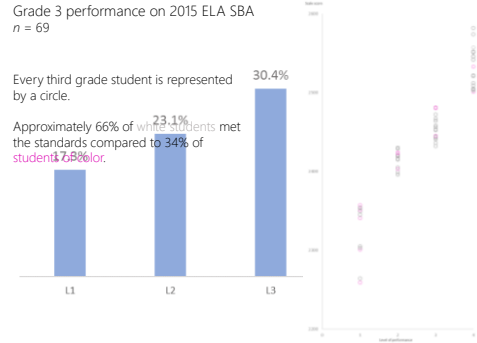


Wolinger, T.L., Miller, N.M., Winham, S.J., and Garovic, V.D. (2015)

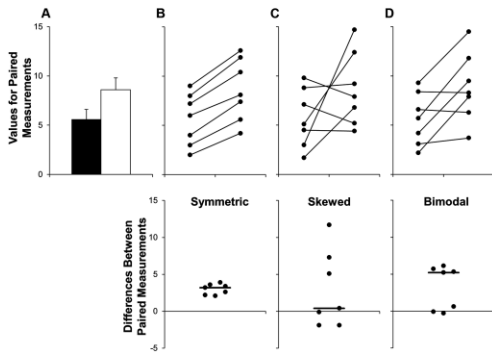
Distribution of scores

Grade 3 performance on 2015 ELA SBA  
n = 69

Every third grade student is represented by a circle.  
Approximately 66% of white students met the standards compared to 34% of students of color.

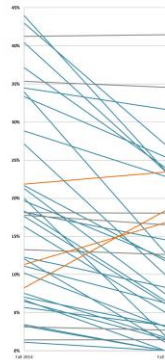


Bars summarize diverse data



Wolinger, T.L., Miller, N.M., Winham, S.J., and Garovic, V.D. (2015)

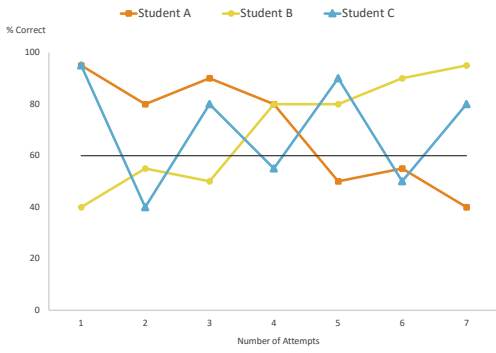
Show the data



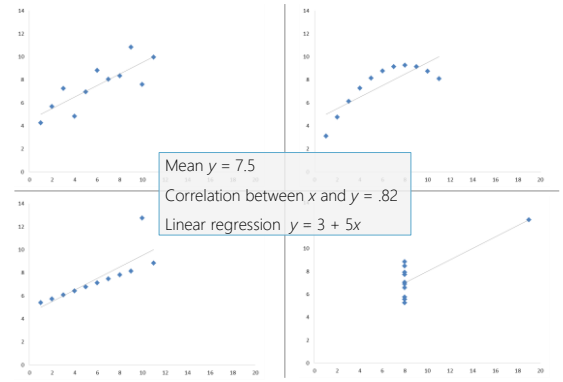
How has the percent of Ds and Fs assigned by teachers changed?

- 30 teachers assigned fewer Ds and Fs
- 7 teachers assigned about the same percent of Ds and Fs
- 3 teachers showed an increase in the percentage of Ds and Fs assigned to students

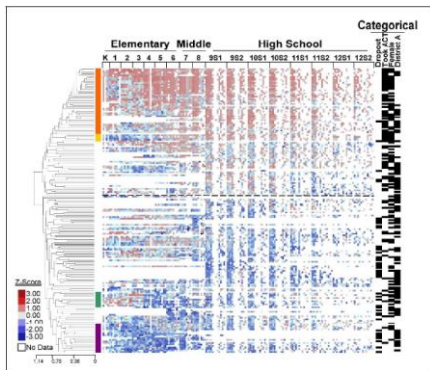
### Who packs your parachute?



### Anscombe's quartet



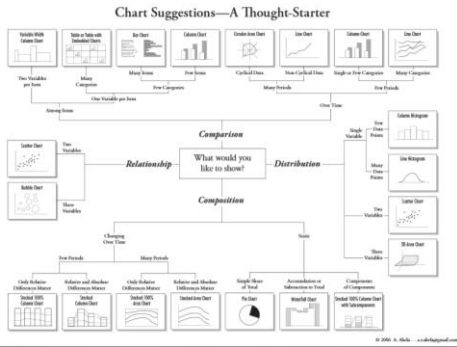
### Show the data



### Beyond achievement



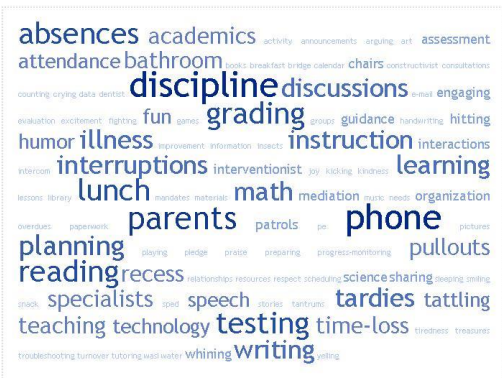
Quantitative chart chooser



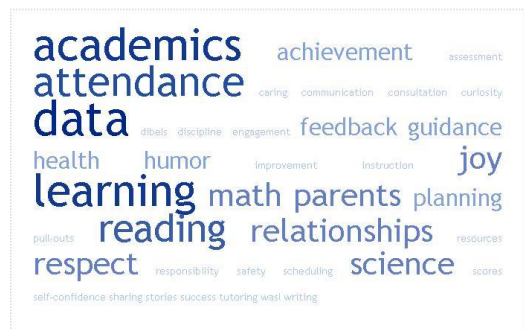
or, visit <http://www.datavizcatalogue.com/index.html>

Qualitative chart chooser

What happens?



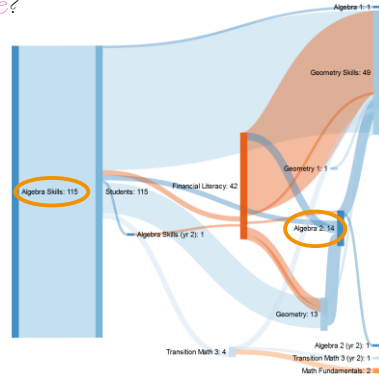
What matters?



What matters most?



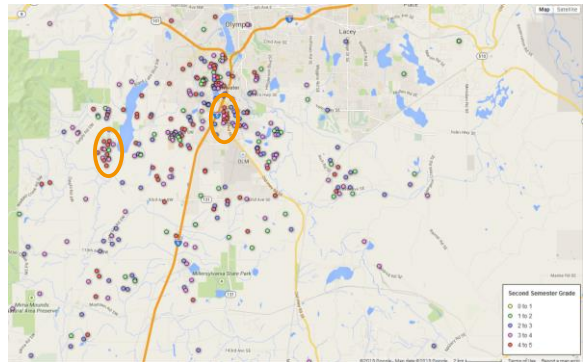
Are students who take Algebra Skills on track for college?



Qualitative chart chooser

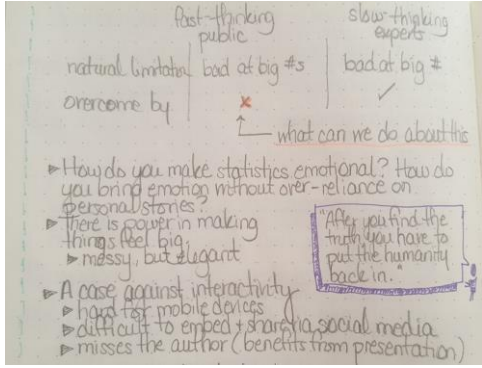
A grid of qualitative data visualization options. The top row includes Cluster Map, Flow Path Diagram, Graphic Recording, Concept Mapping, Quote and Picture, and Indicative Data. The middle row features Venn Diagram, Spectrum Display, Network Mapping, Ripple Effect Mapping, Icons & Color Coding, and Change Phases Diagram. The bottom row contains Mind Mapping, Dendrogram, Timeline, and a 'DIAGRAMS' section. Below the grid are sections for 'QUOTES & WORDS' (with options like Callout Box, Phrase Net, Word Tree, Word Clouds) and 'TABLES' (with options like Evidence Matrix, Heat Map, Histogram). A central box promotes 'QUALITATIVE CHART CHOOSER 2.0' by Jennifer Lyons and Stephanie Evergreen, with a link for more information.

What is the relationship between neighborhood and achievement?

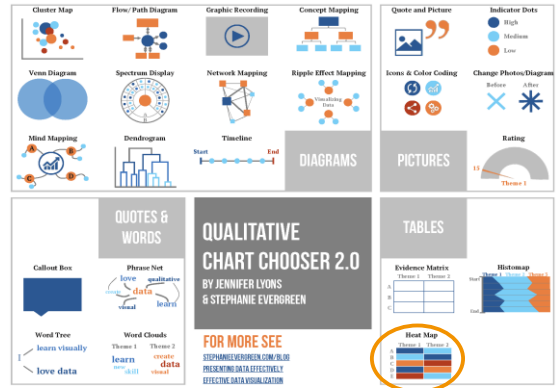




Quotes and pictures

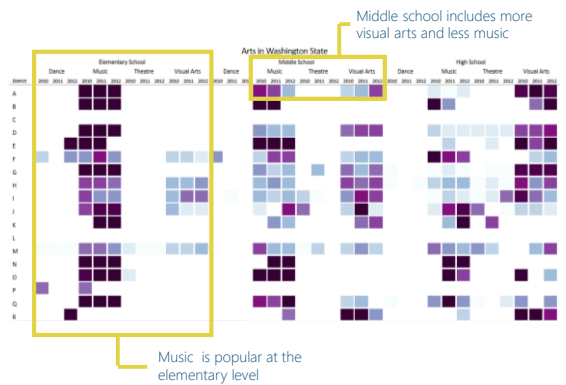


Qualitative chart chooser

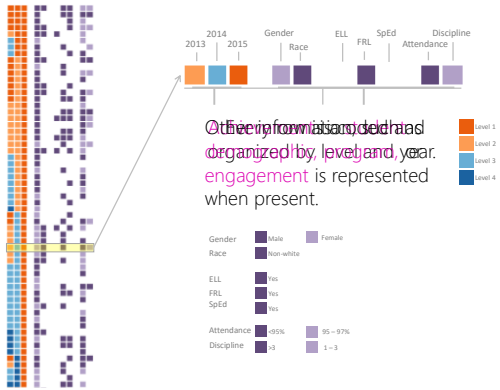


Student	Fall	Winter	Spring	Notes
K	Blue	Blue	Blue	2 students continued to meet standard
B	Blue	Blue	Blue	
D	Yellow	Yellow	Blue	7 students improved to meet standard
E	Yellow	Yellow	Blue	
R	Yellow	Yellow	Blue	
G	Yellow	Yellow	Blue	
J	Yellow	Yellow	Blue	
Q	Yellow	Yellow	Blue	
T	Yellow	Yellow	Blue	
P	Yellow	Blue	Yellow	8 students continued to almost meet the standard, including 1 that was at level 3
H	Yellow	Yellow	Yellow	
N	Yellow	Yellow	Yellow	
A	Yellow	Yellow	Yellow	
I	Yellow	Yellow	Yellow	
L	Yellow	Yellow	Yellow	
F	Yellow	Yellow	Yellow	
S	Yellow	Yellow	Yellow	
M	Blue	Yellow	Yellow	2 students improved to level 2
C	Orange	Orange	Orange	3 students have not met standard, including 1 whose performance has decreased
O	Orange	Orange	Orange	

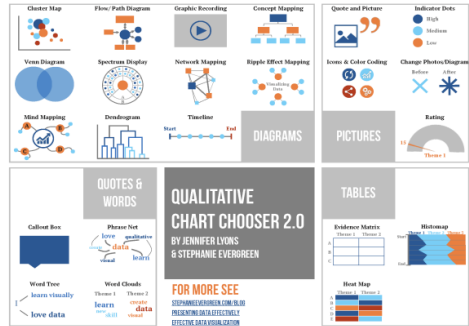
Intensity



We can cluster information to identify patterns.



Turn and talk



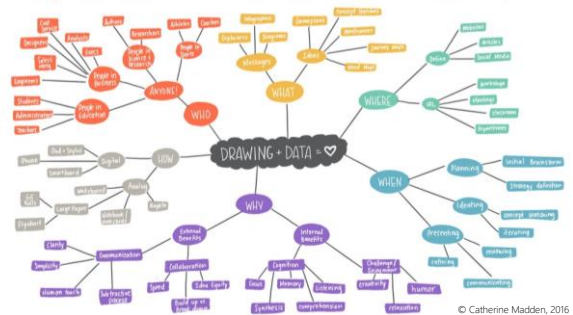
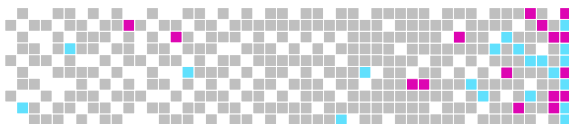
How do you use qualitative displays?

5

The power of drawing

CLARITY + COLLABORATION + CREATIVITY  
 1. Map Your Mind 2. Chart Your Ideas 3. Add Depth

Create the narrative



Draw for clarity

### Scatterplots

White students  
Students of color

Use IF function to determine value (e.g. white)

1 = IF (Race = cell = "White", score, N/A())  
2 = IF (Race = cell <= "White", score, N/A())

Need to create dynamic ranges for formulas in my list = 11

Can we use more than 1 color? will increase size of white use all demographic info for each level?

Color coding function for plot

Color between ranges = IF (Race = cell = "White", cell = "high")...

Pivot tables by level (1-4)  
L1 - L4

Row labels: Use INDEX/MATCH to determine data for remaining columns  
TERROR...

To create chart:  
select one column and insert scatter chart  
label = column header (e.g. L1 White, L1 Non-white)  
y = score

can then select data set and format points  
select data to add additional columns  
adjust axes and add labels

filter pivot from 2016  
filter by W/AFM (female) and enrolled in residential (create 2 V)  
rename rows for W/AFM, N/AFM; so if grade level = 12  
shorten school names  
could one subject from copy new data table  
rename spreadsheet name

Could use show a comparison?

Draw for clarity

### SBA Tool for Christa

- Export by school, grade, TAB
- results by teacher
- n students
- 5 best + worst items (%)
- all items (%)

would be helpful...  
class lists  
standards for each question

Performance by student  
print/download to csv  
5 best/worst items (1/10)  
all items  
Match %/teacher info sheet

questions

all students or by class?  
demographics  
comparisons?  
course grades

class summary (above/below)

questions

heat map for class list (in pivot table)

filter by teacher/subject dropdown...

Draw for clarity

district

year

Incident Type

Table by Incident (All Years)

Group Comparison Graph

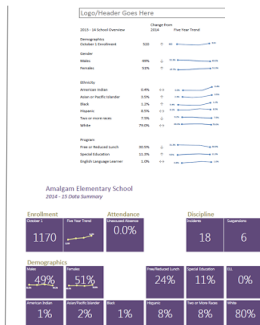
Pairing bar by year

Graph



Draw for clarity

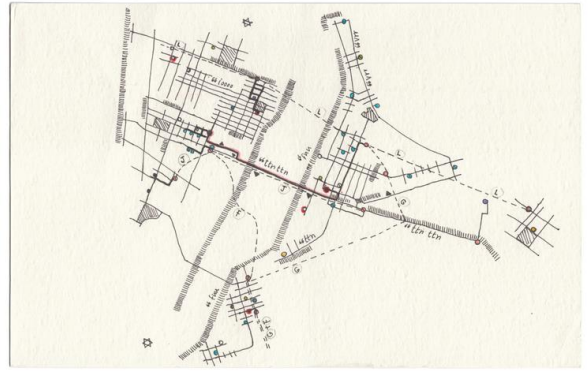
Incident Type	2009-10	2010-11	2011-12
expulsions	0	0	0
suspensions	15	15	14
expulsions + suspensions	15	15	14
expulsions	0	0	0



Draw for clarity



Draw for collaboration



Draw for collaboration

GG DEAR DATA  
 WEEK 21: MY IMAGE OF THE CITY

HOW TO READ IT:

MY NEW YORK !!

Dear Stefania, this week I wanted to make an experiment, and draw you a map of New York as I have it in my mind. I followed the image of the city by study by Kevin Lynch, and I drew a sketch map of my city without looking at any map and adding details as if I were "circulating daily" trips and the (sequence of events) that I recall.

MY ADD ON'S

- home/landmark
- cafe
- pub/restaurant
- bus stop
- transit place
- subway station
- other

FROM: GEORGIA LOMI

TO: STEFANIA POSAVEC

SEND TO: STEFANIA POSAVEC

-UK- ENGLAND

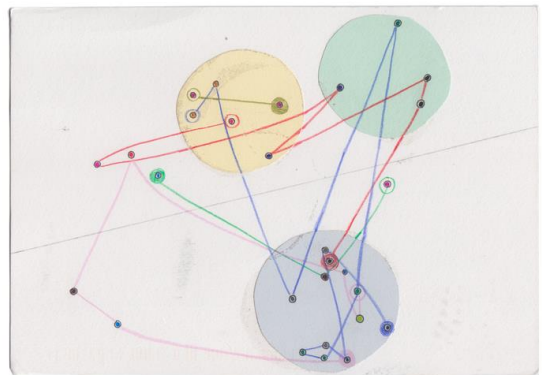
1. PATHS → channel of movement, road, street, alley, subway, shopping points

2. EDGES → linear element that considered a path by the observers

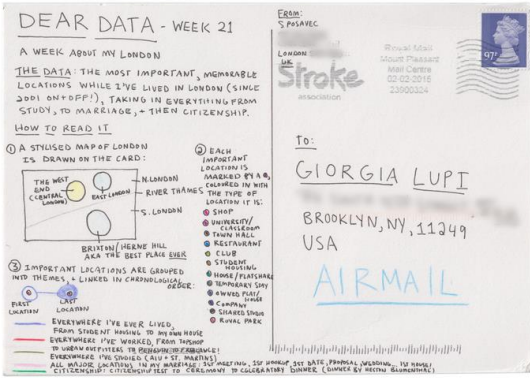
3. NODES → the strategic spots which observer can ENTER as

4. LANDMARKS → particular shape for points, the external features that act as a reference point

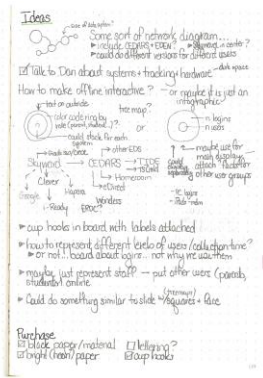
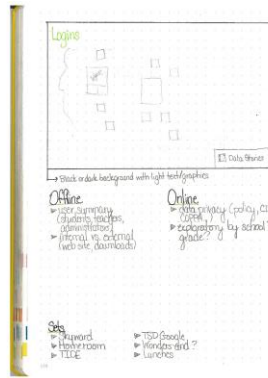
Draw for collaboration



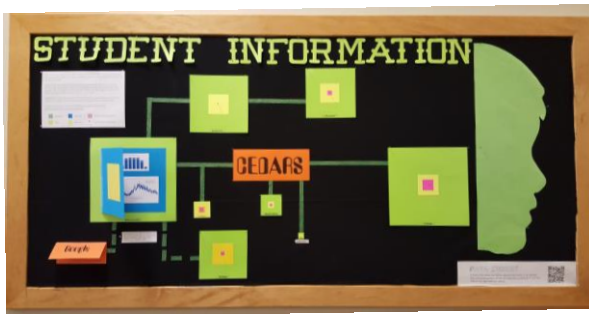
Draw for *collaboration*



Draw for *creativity*



Draw for *creativity*

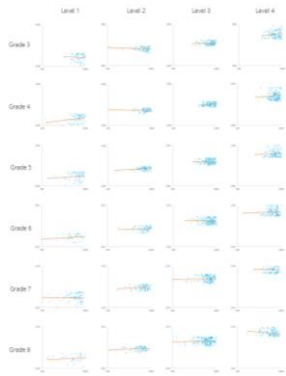


Make *connections*

Relationship between sixth grade student performance on the state ELA exam and incidents resulting in *suspension* or *expulsion*.

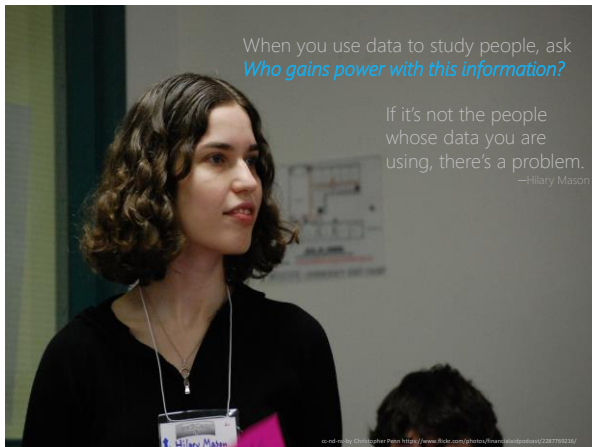
L1																			
L2																			
L3																			
L4																			

Does attendance influence achievement?

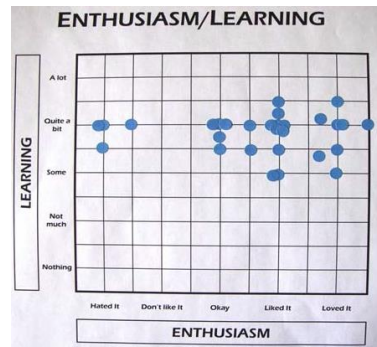


Small multiples enable simultaneous comparison among groups to observe patterns.

### Closure



### Student perceptions






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 <http://blog.whatitslikeontheinside.com>  
<http://excellforeducators.blogspot.com>

 science\_goddess



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