

Applying SAMR to classroom observations

- How can we leverage technology to create better (more reliable, and more descriptive) classroom observation tools?
- Developed over numerous studies:
 - USEiT Study
 - Newton Public Schools Cloud Computing Pilot
 - Mendon Upton (MA)

Components for observation tool kit

- 1) Running Narrative
- 2) Summary Checklist
- 3) Interval Checklist

Observation Summary Document

- Completed at the end of each observational period
- Measures:
 - Teacher-student interactions
 - Lesson purposes,
 - Classroom learning activities
 - Technologies used for those activities
 - General effectiveness rating

Observation Summary	
Date:	
Start time:	
Observer:	
Teacher:	
Number of students:	
Lesson subject:	1-Math, 2-Science, 3-English, 4-Social Studies, 5-Other
Other:	
Indicate the primary intended purpose(s) of this lesson or activity: <input type="checkbox"/> Assess prior student knowledge <input type="checkbox"/> Introducing new concepts <input type="checkbox"/> Developing conceptual understanding <input type="checkbox"/> Reviewing subject concepts <input type="checkbox"/> Developing problem-solving skills <input type="checkbox"/> Learning subject processes or procedures <input type="checkbox"/> Learning vocabulary/specific facts <input type="checkbox"/> Practicing procedures for mastery <input type="checkbox"/> Apply concepts and skills to authentic tasks <input type="checkbox"/> Assess student understanding	
Indicate the major activities of students in this lesson: Listened to a presentation <input type="checkbox"/> Engaged in discussion/seminar <input type="checkbox"/> Engaged in problem-solving/investigation <input type="checkbox"/> Engaged in reading/reflection/written communication <input type="checkbox"/> Worked on producing an artifact in a medium other than writing <input type="checkbox"/> Engaged in other activities <input type="checkbox"/>	Check if technology was used: <input type="checkbox"/>
General description: 	
Student-student interactions: 	
Teacher-student interactions: 	
Student engagement: 	
Technology management: 	
Other description: 	
How often did the following behaviors occur during the lesson? 1 – not at all, 2 – once or twice, 3 – several times, 4 – this interaction was a controlling factor of the lesson The teacher encouraged active participation of all students. When students provided ideas, questions, and other contributions, they were responded to with respect. Students demonstrated collegial working relationships by working together, discussing the lesson with each other, etc. Teacher and students collaborated on work. Students volunteered ideas, questions, conjectures, and/or propositions. Communications promoted intellectual rigor, provided constructive criticism, and/or challenged ideas. Provide a capsule rating for the lesson and a rationale:	
Rate the lesson for the presence of the following traits on a scale where 1 = not at all and 5 = to a great extent Attention to students' experience, preparedness, and/or learning styles Attention to issues of access, equity, and diversity for students Pace of the lesson as appropriate for the developmental levels/needs of the students and the purposes of the lesson Teacher's ability to "read" the students' level of understanding and modify the lesson as needed	
End time:	

Time Interval Observation Form

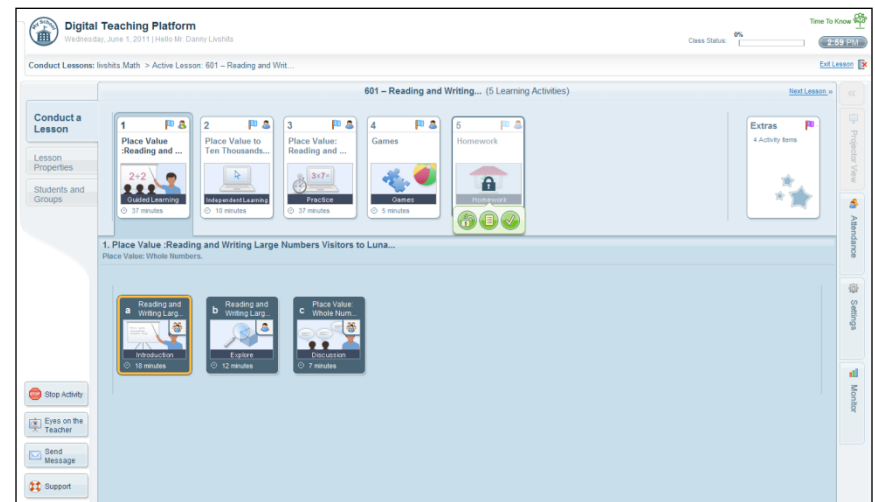
Initially completed at the beginning of each observation, and then at fixed time intervals throughout remainder of the lesson.

The screenshot shows a web-based form titled "Time Interval Observation Form" within a browser window labeled "frmTimeInterval". The form is divided into two main columns. The left column contains three sections: "How many students are working with technology?" with input fields for Desktop Computer, Laptop Computer, Paper/Book, and Other; "How many students are working with others?" with input fields for Individual, Pairs, Groups, and Whole Class; and a checkbox for "Check if individuals or groups are working on different assignments:" followed by a "Rate student engagement (1 = Low engagement, 5 = High engagement)" input field. The right column contains two sections: "What are the teacher and aide doing?" with a legend (1 = Administrative, 2 = Whole class instruction, 3 = Interacting with students) and input fields for Teacher and Aide; and "How are they using technology?" with a legend (1 = Non-instructional, 2 = Content presentation, 3 = Technology use as content, 4 = Computer science instruction) and input fields for Teacher and Aide. At the bottom right of the form is a "Finished" button. The bottom of the browser window shows a status bar with "Record: 1 of 1", "No Filter", and a "Search" button.

Measures: students' use of various technologies, student engagement, student organization (i.e. working groups of various sizes), and teacher role and activity

Using classroom observations to measure teaching and learning modalities

- **Teaching to whole class with computers** was noted when the teacher held a discussion with the entire class group and encouraged student participation with computers.
- **Lecture** was noted when the teacher presented information to the class without student participation.
- **Independent work** was noted when students were directed to complete work on their own facilitated by the teacher.



Example of data collected and analyzed from classroom observations

Percentage of pilot and comparison student activities observed with technology in use

Major student activities using technology	Pilot		Comparison	
	Pre	Post	Pre	Post
Listened to a presentation	90%	86%	67%	71%
Engaged in discussion/seminar	25%	40%	13%	25%
Engaged in problem-solving/investigation	8%	50%	55%	17%
Engaged in reading/reflection/written communication	18%	89%	15%	14%
Worked on producing an artifact in a medium other than writing	0%	55%	0%	0%
Engaged in other activities	40%	83%	0%	0%

Example of data collected and analyzed from classroom observations

Summary of teachers' classroom activities with and without technology

	Pilot		Comparison	
Activities	Pre	Post	Pre	Post
Administrative	34%	27%	20%	22%
Whole-class instruction	31%	32%	46%	54%
Interacting w/ students	35%	41%	34%	24%
Technology use				
Administrative	16%	12%	6%	7%
Presentation	75%	43%	66%	84%
Content-oriented use instruction	7%	45%	28%	7%

Example of data collected and analyzed from classroom observations

Average student engagement levels reported across pilot and comparison settings

	Pre/Pilot	Post/Pilot	Pre/Comparison	Post/Comparison
Average Rating	3.9	3.8	3.6	3.6
Number of Intervals	116	132	118	140

Leveraging SAMR for Classroom Observations

Over 1-year study: 146 observations resulted in 3,510 minutes (58.5 hours) of classroom observations across all major subject areas in grades 5-12:

How many students are working with technology?

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

TOTAL # of STUDENTS IN CLASS (with or without technology)

iPads

Smartphones

Laptops/Desktops

Paper/Book

Other

How many students are working with others?

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Individuals

Pairs

Groups

Whole class

Please report what is the teacher doing?

☐ Whole class instruction

☐ Administrative work

☐ Working with students

Please select if/how the teacher was using technology?

☐ Non-instructional

☐ Content Presentation

☐ Technology use as content

☐ Computer science instruction

Rate the overall student engagement:

5 (high engagement)

3 components of observation toolkit:

1. Running Narrative
2. Observation Summary Checklist
3. Time Interval Observation Checklist

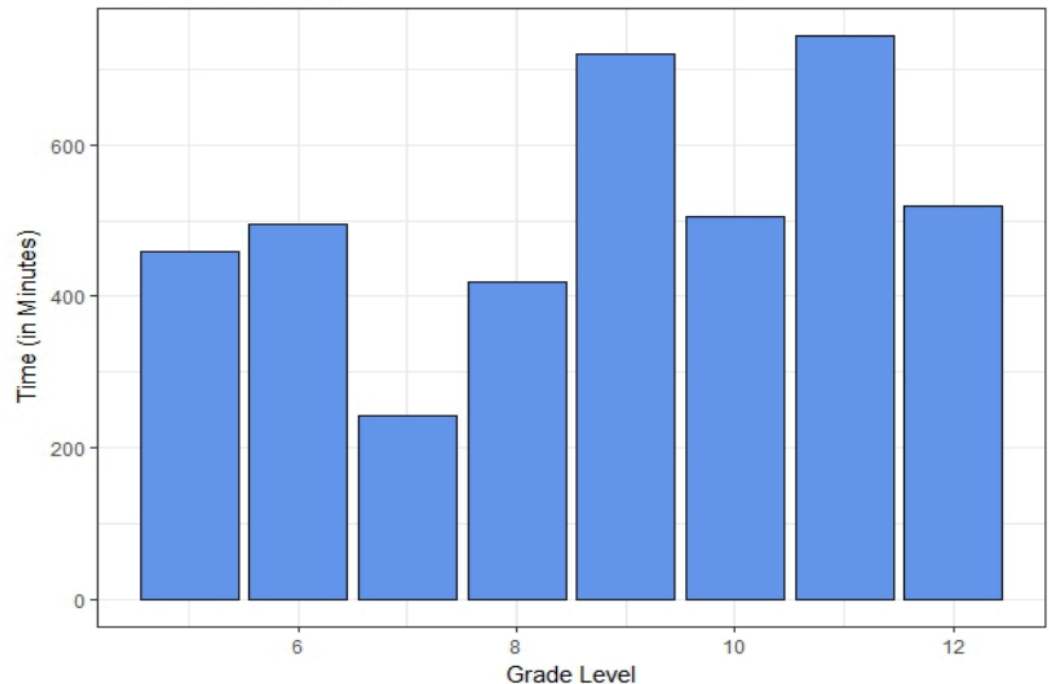
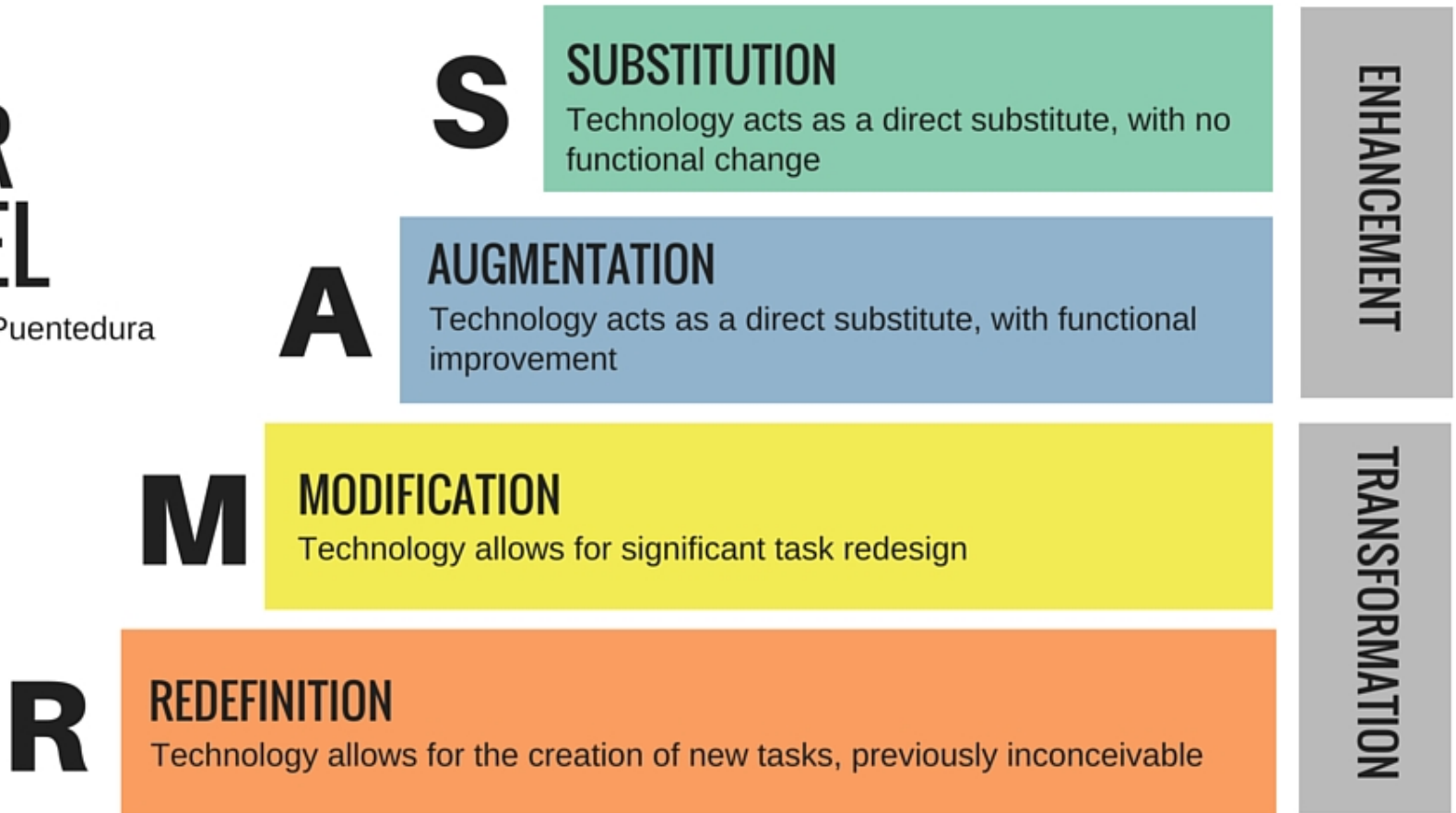


Figure 2: Total classroom observations (# of minutes) conducted across grade level

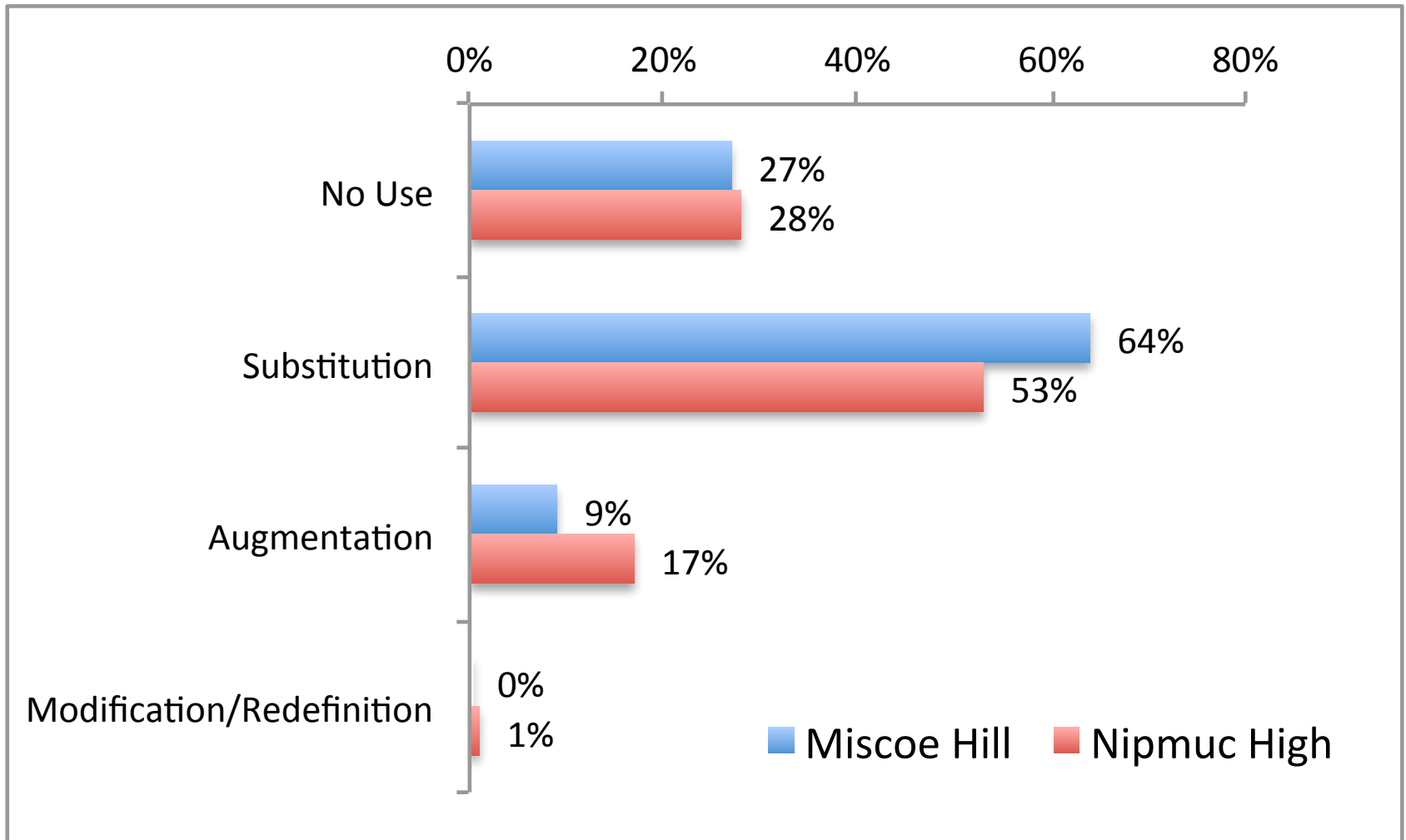
Classroom observation: SAMR Analyses

THE SAMR MODEL

Dr. Ruben R. Puentedura

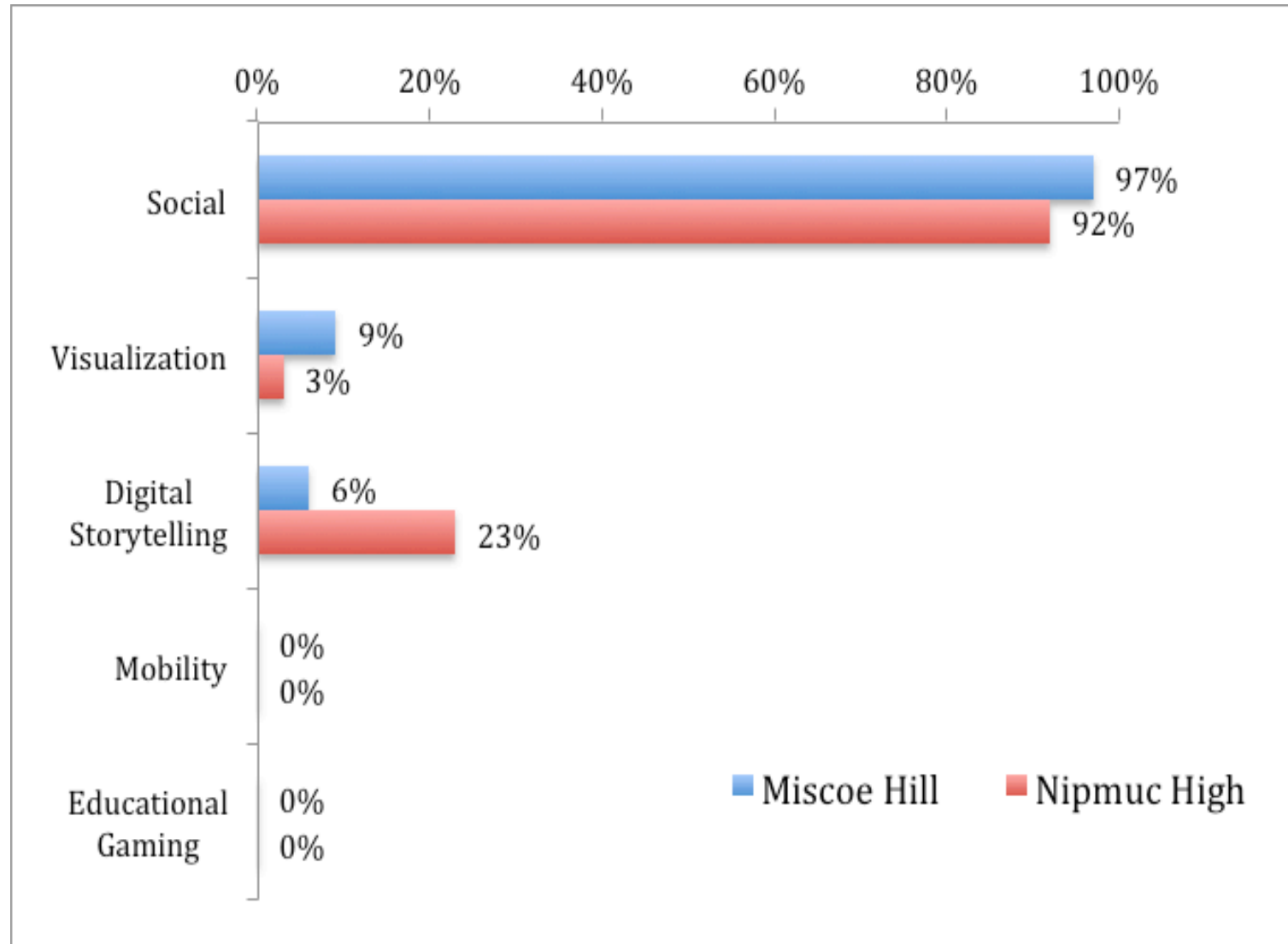


Classroom observation: SAMR Analyses



SAMR Analyses of Miscoe classroom observations (N=44) & Nipmuc High classroom observations (N=86)

Classroom observation: EdTech Quintet Analyses



EdTech Quintet analyses of Miscoe (n=44) and Nipmuc (n=86) classroom observations

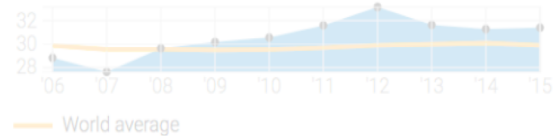
Score distribution by year

Total Scores

Compare with 2014

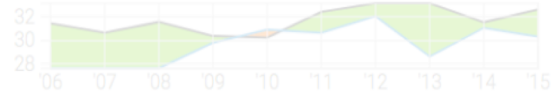


Mean Score and number of students by year



Gender differences

Do girls score higher than boys?

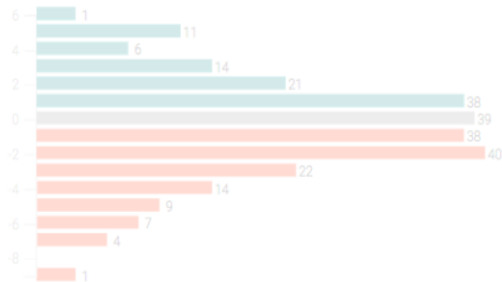


Predicted vs Achieved Scores

All

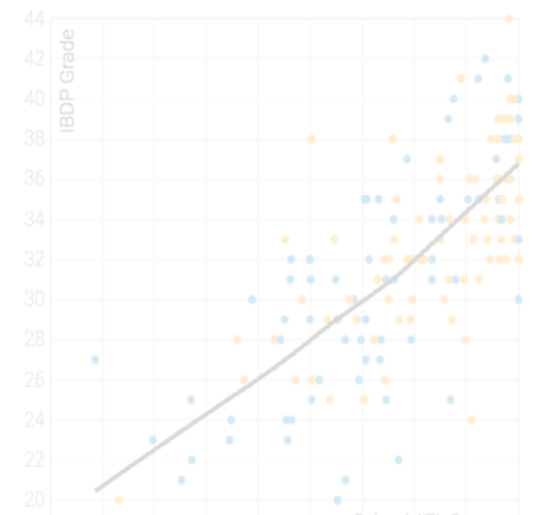


Frequency distribution of difference between predicted and achieved scores



Impact of school grades and ATLs on IBDP Score

All Totals 12



Welcome to the golden age of educational research and data science

Ideas for creating more informed reflections:

Student and Teacher drawings

Efficient student (and teacher) surveys

Classroom observations

Perhaps try and measure:

- Attitudes and perceptions
- Classroom practices (and preferences)
- Aspirations
- Engagement
- Time on Task
- Creativity

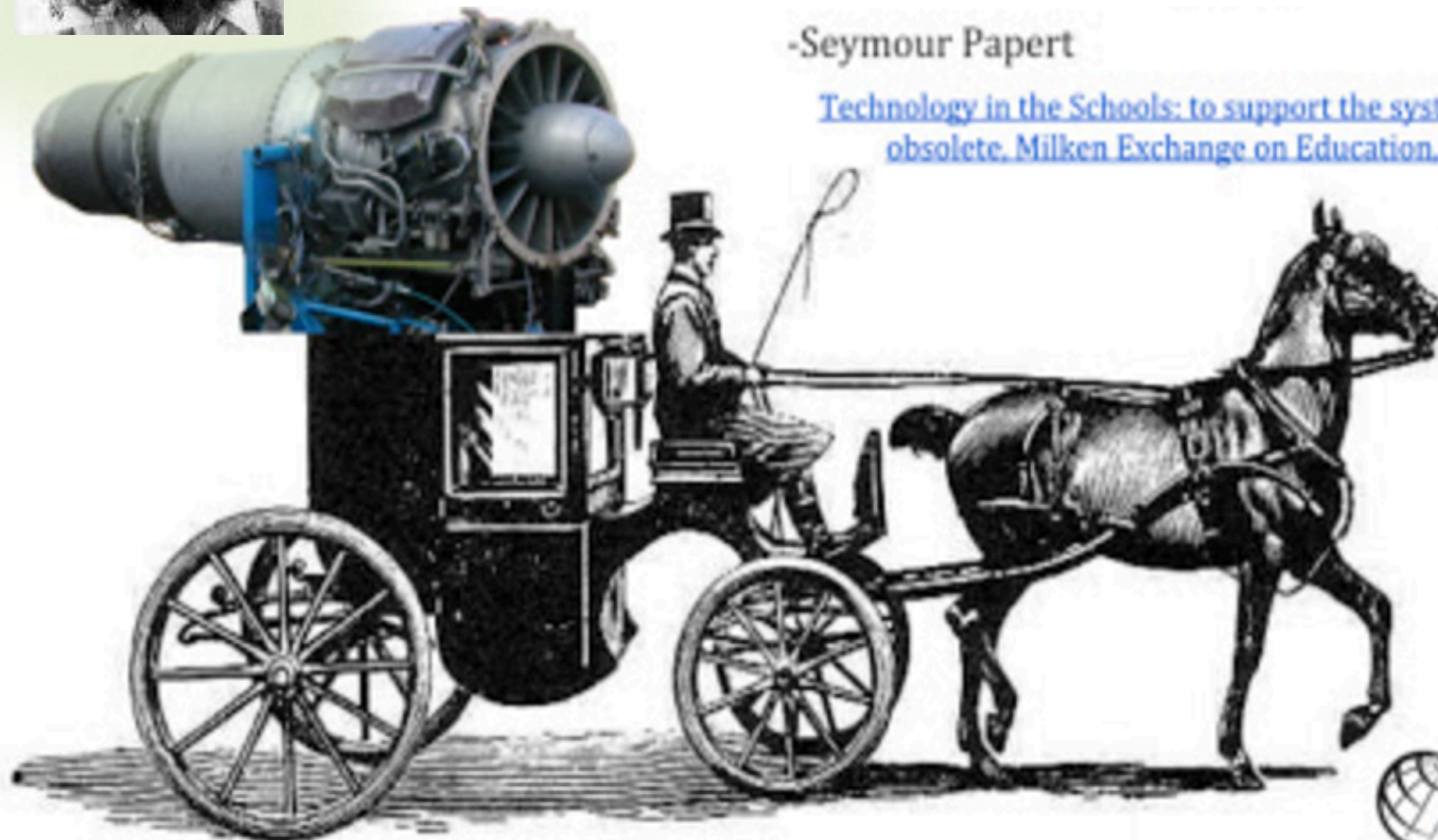
Connected Learning...
Learning Analytics...
Dynamic Data Visualization Tools...
Big Data...

...but for what
purpose?



-Seymour Papert

Technology in the Schools: to support the system or render it
obsolete. Milken Exchange on Education, July 1998.



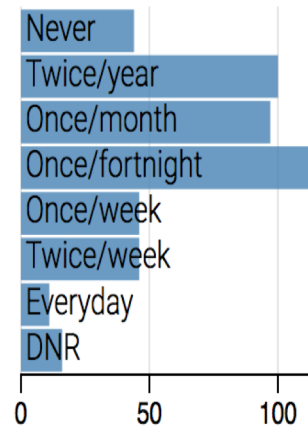
Web-based, dynamic, data visualization pages:

Teacher and student data visualizations:

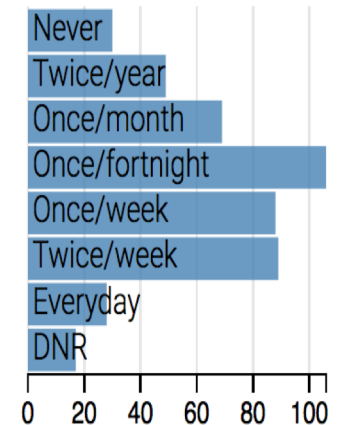
Demographics
Classroom practices
Attitudes and beliefs
Access to resources
Home access and use

Technology Use

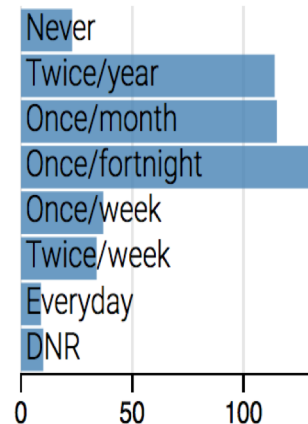
⚙ Frequency of recording audio
or video



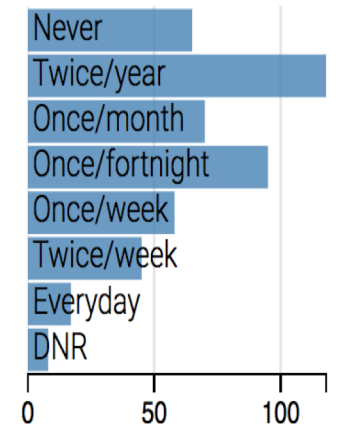
⚙ Frequency of
capturing/creating digital
images



⚙ Video Projects



⚙ Multimedia



New Generation of Visualization Tools: LAC Student Profile example

“



De Smidt, Resi

15 years, 6 months and 18 days

Grade 8

Attendance

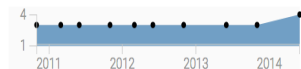
Days missed



ES Reports

Unit of Inquiry

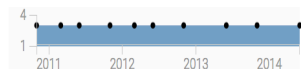
Thinking Skills



Research Skills



Understanding of the Central Idea



Standards Based Grades

EX: Exceeds, ME: Meets, AP: Approaches, DM: Does not Meet

English

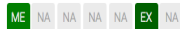
Reading Literature Texts



Writing



Reading Informational Texts



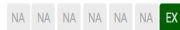
Listening and Speaking



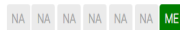
Language Usage



Reading



Communication



Modern Language

Listening



Reading



Writing



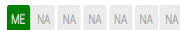
Speaking



Language Usage

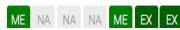


Language Register



Mathematics

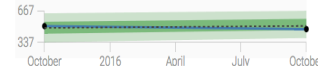
Data Analysis and Probability



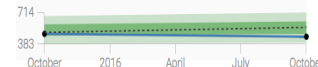
ACER ISA

International Schools Assessment

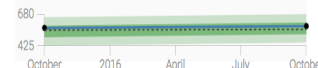
Reading



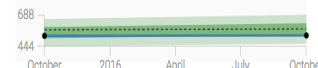
Mathematics



Narrative/Reflective Writing



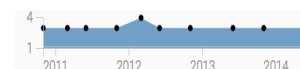
Exposition/Argument Writing



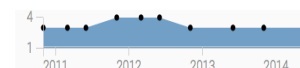
ES Reports

Art

Art



Effort



ES Reports

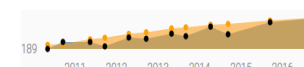
Music

Music

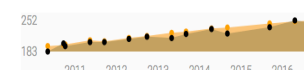
NWEA MAP

Measures of Academic Progress

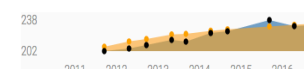
Reading



Mathematics



Language Usage

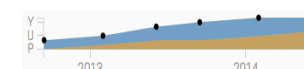


Student's score School Norm

Literacy Assessments

Observational Assessments (ES)

Fountas & Pinnell



Words Spelled Correctly



Feature Points

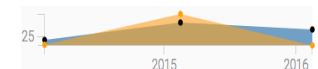


ES Reports

French

ERB WrAP

Writing Assessments

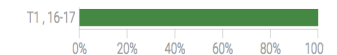


Student's score Expectation: based on School Norms

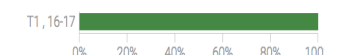
ATLS

Approaches to Learning

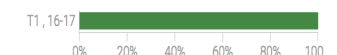
Managing Complexity



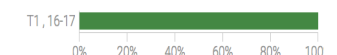
Collaboration and Social Skills



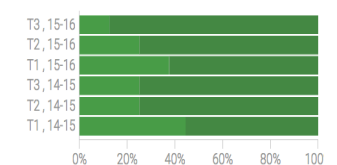
Critical Thinking



Creativity and Innovation



Manages time, resources, and commitments responsibly.



Demonstrates intellectual curiosity, initiative and perseverance.

New Visualization Tools: Predicting IB Diploma Pass Rates

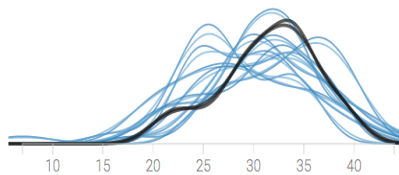
tappin' IB Diploma Program Total Scores Group 1 Group 2 Group 3 Group 4 Group 5 Group 6 Find a student



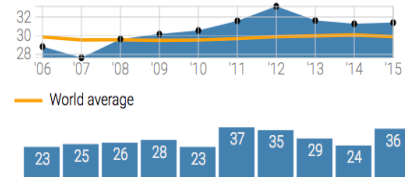
Score distribution by year

Total Scores

Compare with 2014

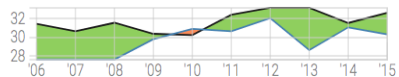


Mean Score and number of students by year



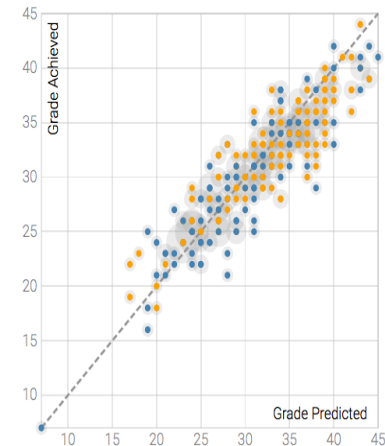
Gender differences

Do girls score higher than boys?

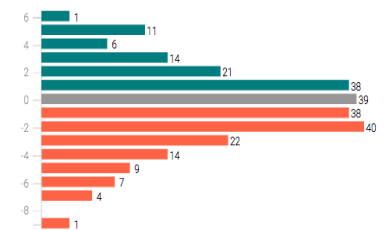


Predicted vs Achieved Scores

All

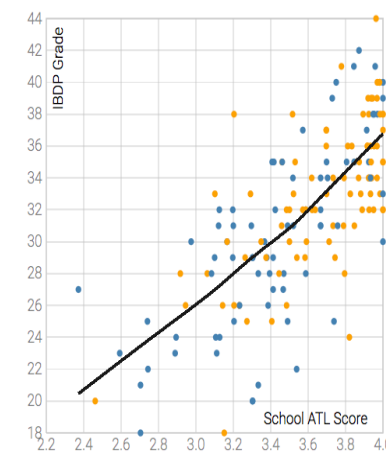
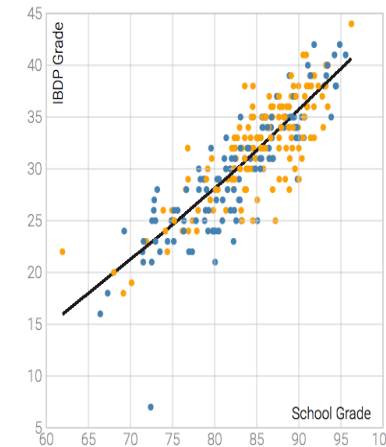


Frequency distribution of difference between predicted and achieved scores



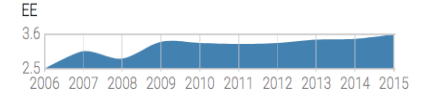
Impact of school grades and ATLs on IBDP Score

All Totals 12

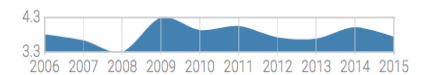


Components

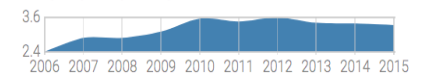
EXTENDED ESSAY



THEORY OF KNOWLEDGE::TK
PRESENTATION WORK



THEORY OF KNOWLEDGE



Eventually, can we define (and empirically measure) exactly what you value and think is important?

PURPOSE OF SCHOOL

- HOME
- PERSPECTIVES
- COMPETENCIES
- MISSION STATEMENTS
- CONTACT

What is the purpose of schooling? This page explores various perspectives, including [empirical research](#), literature on [educational philosophy](#), [case law](#), [state constitutions](#), and [educational research](#) that relate to this question.

Dr. Damian Bebell of Boston College and Dr. Steven Stemler of Wesleyan University have developed a model for thinking about the purpose of schooling.

M

IMPLEMENTATION


A

MISSION IMPLEMENTATION ASSESSMENT

In short, this model states that schools should be in charge of defining for themselves what they believe their core purpose to be. Next, the curricular and extracurricular offerings should align with the school mission. Finally, assessments of success should be congruent with the unique mission of the school.

Historical Purposes of Schooling

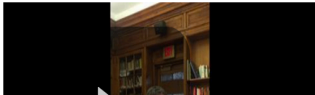
Professor Steven Stemler of Wesleyan University briefly discusses how the primary purposes of schooling have shifted over time.



0:00 / 1:04

Featured School Leader

James Steckart, Head of the [THINK Global School](#), discusses the *Mission Deconstruction Activity* and explains how it can be a powerful tool for educators.



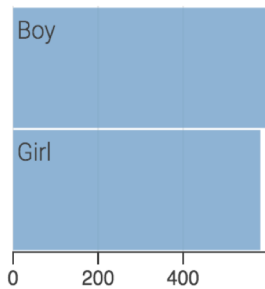
www.purposeofschool.org

Is your community ready to make use of it?

Demographics

⚙️ Are you a boy or girl?

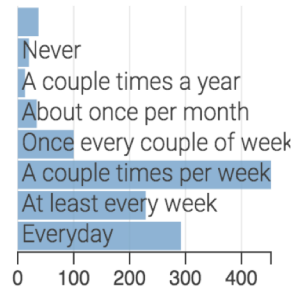
Are you a boy or girl?



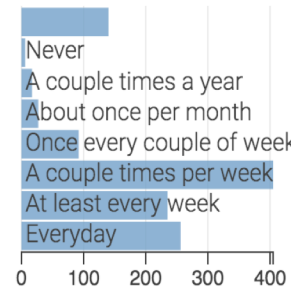
Use

Frequency of Tech Use

⚙️ ELA Use



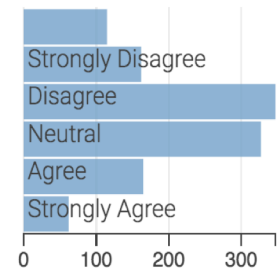
⚙️ Math Use



Beliefs

⚙️ Beliefs

It is hard to concentrate on schoolwork when using technology.



Comparing Subject-level Use

English Language Arts/ Reading



Social Studies/History/Humanities/Geography



Mathematics



Science



Comparing Technology Use

Your teacher delivers instruction to the class.



The teacher uses a technology device/tool to present information to your class



I work collaboratively with pairs or groups of other students in class.



Comparing Technology Function

Worked collaboratively with other students on a project



Taken notes in class using a computer or iPad



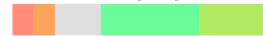
Used the Internet to research information



Downloaded or watched online video in

Mapping Beliefs

I learn a lot in school everyday.



I work hard in school everyday.



I like connecting my learning to real life problems.



I like collaborating with other students.



I like to use technology in school.



Reform
Faculty

Harmony
Education
Center

www.nsrfharmony.org

ATLAS Looking at Data

Learning from Data is a tool to guide groups of teachers discovering what students, educators, and the public understands and how they are thinking. The tool, developed by Eric Buchovecky, is based in part on the work of the Leadership for Urban Mathematics Project and of the Assessment Communities of Teachers Project. The tool also draws on the work of Steve Seidel and Evangeline Harris-Stefanakis of Project Zero at Harvard University. Revised November 2000 by Gene Thompson-Grove for NSRF. Revised August 2004 for Looking at Data by Dianne Leahy.

Selecting Data to Share

Data is the centerpiece of the group discussion. The following guidelines can help in selecting data or artifacts that will promote the most interesting and productive group discussions. Data or artifacts that do not lead to a single conclusion generally lead to rich conversations.

Sharing and Discussion of Data

Discussions of some forms of data sometimes make people feel “on the spot” or exposed, either for themselves, for their students or for their profession. The use of a structured dialogue format provides an effective technique for managing the discussion and maintaining its focus.

A structured dialogue format is a way of organizing a group conversation by clearly defining who should

http://www.nsrfharmony.org/system/files/protocols/atlas_looking_data_0.pdf



Analytics Collaborative

Follow

A partnership between educational researchers, data scientists, and visionary leaders from schools f...

Dec 12, 2016 · 9 min read

Building and leading a school culture that values data informed dialogue to improve student learning

Megan Brazil, Elementary Principal, United Nations International School, Hanoi

In a 'silo schools' approach, teachers have generally been left to work independently on collecting, understanding and using their own classroom data to make decisions about instruction, planning and assessment. Many schools have not yet made the successful transition from individual to collaborative: to enable teams of teachers to collectively analyse learning data in order to improve learning outcomes for all students.

<https://medium.com/learning-analytics-collaborative/building-and-leading-a-school-culture-that-values-data-informed-dialogue-to-improve-student-1ec982ebc35#fhregw9o4>



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