

Curriculum-Based Measurement in Response to Intervention Systems

Gerald Tindal

Castle-McIntosh-Knight Professor

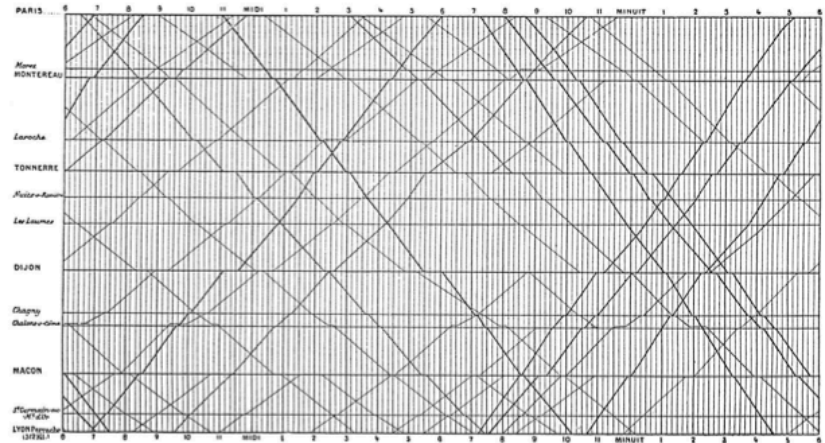
Behavioral Research and Teaching – UO

An Overview in Three Parts

Part 1: A history of nearly everything on CBM

Part 2: What a formative assessment should have (with attention to easyCBM)

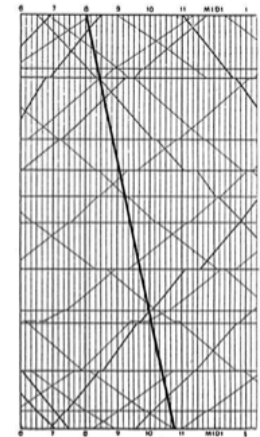
Part 3: Be careful of the question you ask: Is it working?



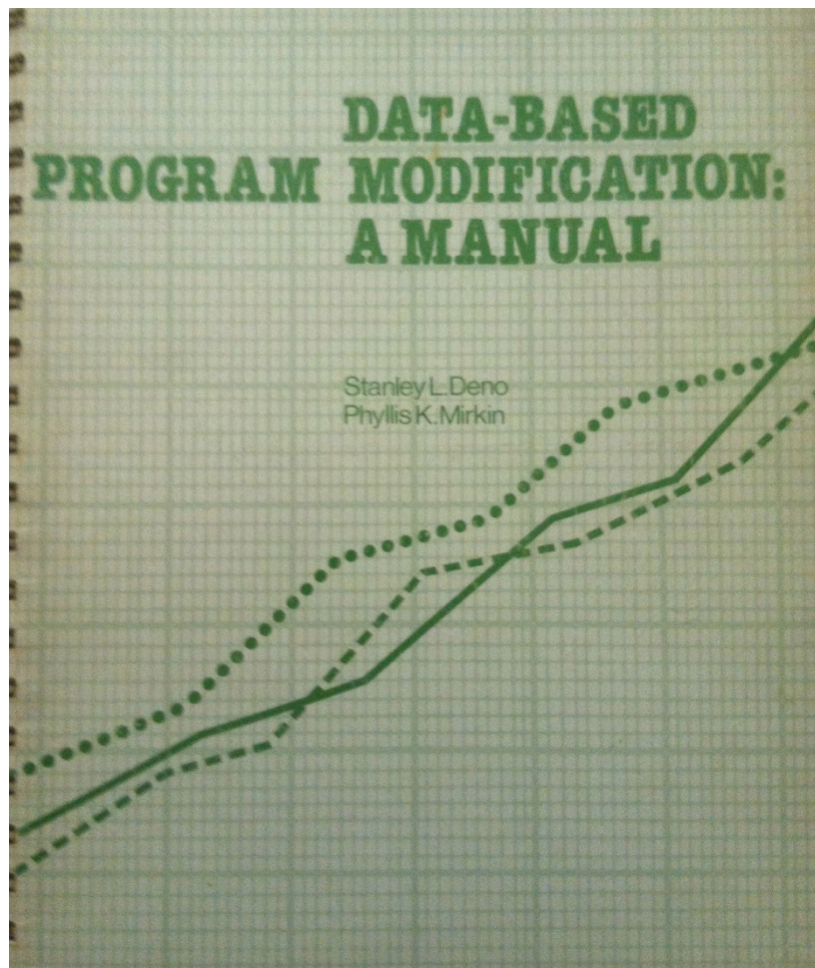
E. J. Marey, *La Méthode Graphique* (Paris, 1885), p. 20. The method is attributed to the French engineer, Ibry.

A design with similar strengths is Marey's graphical train schedule for Paris to Lyon in the 1880s. Arrivals and departures from a station are located along the horizontal; length of stop at a station is indicated by the length of the horizontal line. The slope of the line reflects the speed of the train: the more nearly vertical the line, the faster the train. The intersection of two lines locates the time and place that trains going in opposite directions pass each other.

In 1981 a new express train from Paris to Lyon cut the trip to under three hours, compared to more than nine hours when Marey published the graphical train schedule. The path of the modern TGV (*train à grande vitesse*) is shown, overlaid on the schedule of 100 years before:

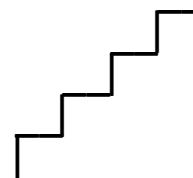


In the beginning...

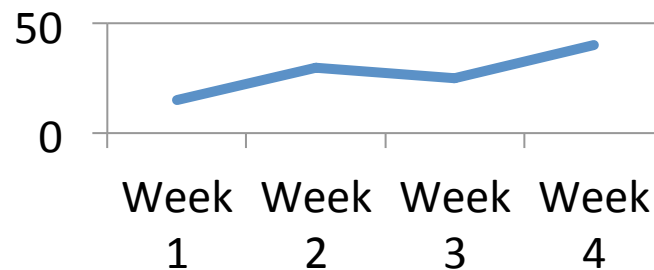


1977

Mastery monitoring: Time to master a set of instructional objectives



General outcome measurement: Performance graphs reflecting how a student's behavior changes on a single task...over time



Original Conditions and Emphases

- Technically adequate: Must be valid...
- Sensitive to relatively small adjustments made in: instructional methods and materials, motivational techniques, administrative arrangements
- Easy to develop and administer
- Alternate forms available to administer frequently
- Time efficient
- Inexpensive
- Unobtrusive
- Simple to teach

And an atheoretical approach...

“Our hope is that regardless of personal philosophical, theoretical, historical, and current situational constraints, those responsible for ensuring the quality of learning disabilities services will continuously evaluate the impact of those services on the academic and social behavioral of their individual students” (p. 4).

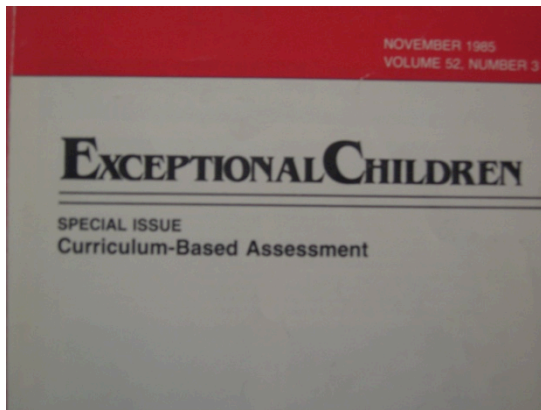
Deno, S., Mirkin, P., Chiang, B. & Lowry, L. (1980). *The relationship among simple measures of reading and performance on standardized achievements tests*. UM — IRLD Research Report 20.

And then there was research....

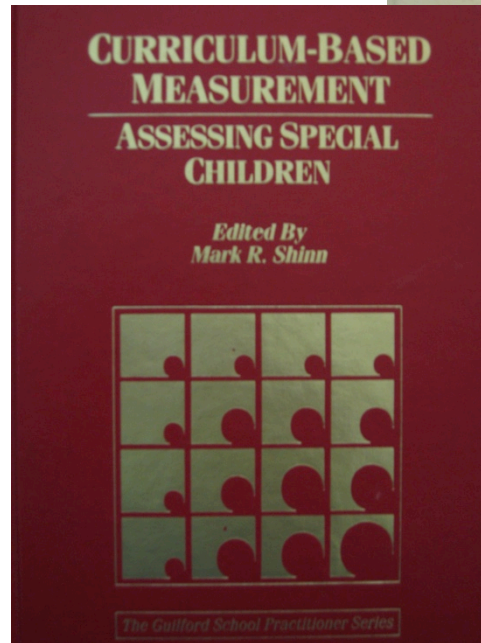


1980

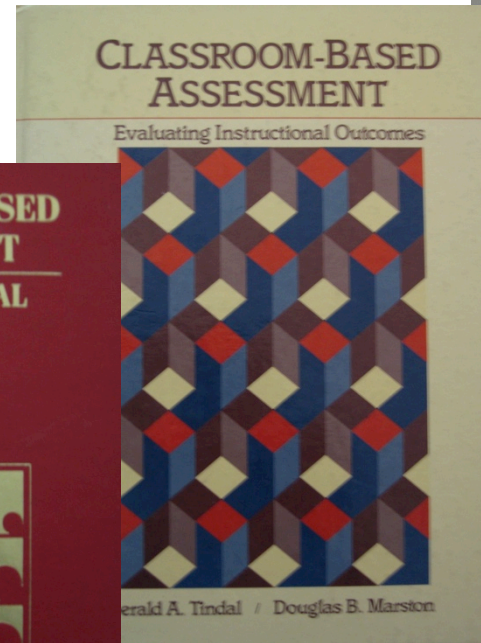
And eventually proliferation...



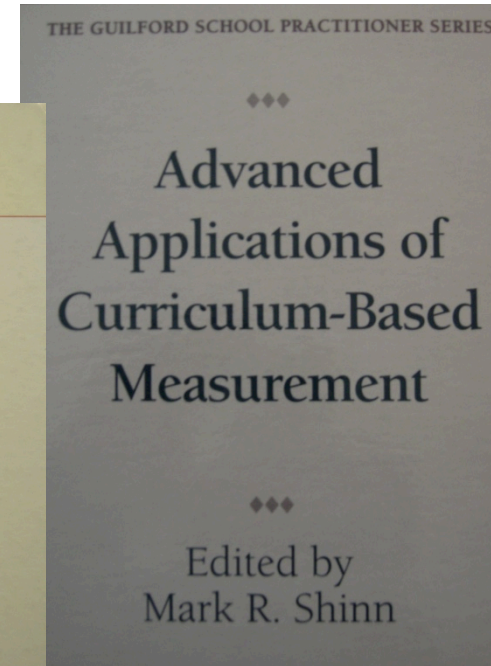
1985



1989



1990



1998

Various definitions appeared...

- **Curriculum-Based Assessment – Gickling (1985)**
27,800 references found in Google Scholar (119 in DBs)
- **Curriculum-Based Measurement – Deno (1985) -**
13,400 references found in Google Scholar (106 in DBs)
- **Classroom-Based Assessment – Tindal (1990)**
30,700 references found in Google Scholar (120 in DBs)
- **Curriculum-Based Evaluation– Howell (1999)**
27,000 references found in Google Scholar (77 in DBs)

Ironically, perspectives were ignored...

- Measurement principles de-emphasized (no tenets from *National Council on Measurement in Education*)
- Scaling never addressed (though alternate forms considered) and therefore no items or attention to IRT
- Normative performance implicit (and without sampling plans) and lack attention to standard setting technology
- Time series graphs presented but no other graphic displays
- Integrated decision making implicit (at systems above classroom)

Note to Field on Validity

- Messick – Evidence and consequence
- *Standards for Educational and Psychological Testing* – Propositions and Interpretations
- Gersten – Validity as instructional practice

Messick ala 1994

- “The **construct basis** of test validity **includes evidence and rationales** for evaluating the **intended and unintended consequences of test interpretation** and use in both the **short and the long term**” (p. 21).
- Particularly prominent is the **evaluation of any adverse consequences for individuals and groups** that are associated with bias in test scoring and interpretation or with unfairness in test use” (p. 21).

Messick, S. (1994). The interplay of evidence and consequences in the validation of performance assessments. *Educational Researcher*, 23(2), 13-23.

Messick ala 1995

- “Validity is an overall **evaluative judgment** of the degree to which **empirical evidence** and **theoretical rationales support** the *adequacy* and *appropriateness* of *interpretations* and *actions* based on test scores or other modes of assessment.
- **Validity is not a property of the test** or assessment as such, **but** rather of the **meaning of the test scores...and a function of the persons** responding as well as the **context of the assessment.**

Messick, S. (1995). Standards of validity and the validity of standards in performance assessments. *Educational Measurement: Issues and Practice*. Winter, 5—8.

Educational Standards ala 1999

- “Validity refers to the degree to which **evidence and theory support the interpretations** of test scores entailed by the **proposed uses** of tests.”
- “The **proposed interpretation** refers to the **construct** or concepts the test is intended to measure.”
- Clarified by **propositions** that **support proposed interpretations**, each of which may require different types of evidence.

AERA, APA, NCME (1999). *Standards for Educational and Psychological Testing* (Page 9).

Gersten et al 1995

- “Fully determining the **validity** of an assessment process **transcends what any one researcher can accomplish**. It is a task for a **community of researchers and practitioners to consider meanings and utility** of assessment procedures in relation to current **thinking about how to improve instructional practice and** issues raised by studies of **implementation”** (p. 512).

Gersten, R., Keating, T., & Irvin, L. K. (1995). The burden of proof: Validity as improvement of instructional practice. *Exceptional Children, 61*(6), 510-519.

NC – RTI Evaluation Criteria

Validity of the Performance Level Score is the extent to which the score (or average/median of 2-3 scores) represents the underlying construct.

Rating Rating defined

- *Convincing evidence*: The validity for the performance level score (e.g., content, concurrent, predictive and/or construct) is adequate.
- *Unconvincing evidence*: The validity for the performance level score (e.g., content, concurrent, predictive and/or construct) is not adequate.
- *No evidence*: Validity for the performance level score data were not provided.

Rates of Improvement Specified as the slopes of improvement or average weekly increases, based on a line of best fit through the student's scores.

The Wisdom of Crowds

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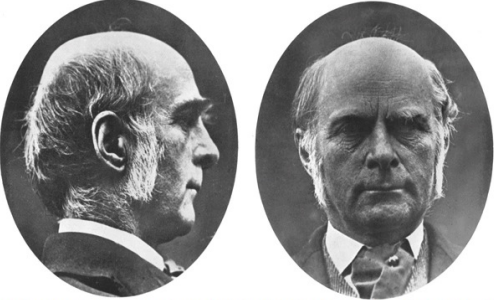
http://galton.org/ Sir Francis Galton F.R.S. 1822-1911

galton.org Biography Collected Works Correspondence List Gallery News Editor

Exploration | Meteorology | Genetics | Psychology | Statistics | Anthropology | Composite Portraiture | Fingerprinting

See also burtoniana.org for Sir Richard Francis Burton Many new Galton facsimiles have been added recently.

Francis Galton
Sir Francis Galton F.R.S. 1822-1911



Victorian polymath; geographer, meteorologist, tropical explorer, founder of differential psychology, inventor of fingerprint identification, pioneer of statistical correlation and regression, convinced hereditarian, eugenicist, proto-geneticist, half-cousin of Charles Darwin and best-selling author.

I have no patience with the hypothesis occasionally expressed, and often implied, especially in tales written to teach children to be good, that babies are born pretty much alike, and that the sole agencies in creating differences between boy and boy, and man and man, are steady application and moral effort. It is in the most unqualified manner that I object to pretensions of natural equality. The experiences of the nursery, the school, the University, and of professional careers, are a chain of proofs to the contrary.

— Francis Galton, *Hereditary Genius*

Despite his colossal achievements, contemporary reputation and far-reaching influence, Sir Francis Galton is no longer widely known or appreciated except among specialists. This site corrects the record, collecting online all of Galton's original [published work](#), including all his books, papers and other published work. The complete, definitive biography by Karl Pearson, rare even in libraries, is provided here, as are contemporary reviews of, and commentary on, Galton's work. There is a substantial gallery of photographs and portraits of Galton, and concise overviews of his major areas of interest are provided.

The collection contains many newly discovered items and material that has long been almost impossible to obtain. The product of over five years of research - an international treasure-hunt through rare Victorian journal and newspaper collections, archives, bibliographies and other arcana - it is now practically complete. New items continue to be added, as a clearer picture of Galton's wide-ranging research programme is uncovered.

Intelligence and IQ
http://webpace.ship.edu/cgboer/intelligence.html

Is it genetic or environmental?

Here are a few correlations to ponder, between one person's IQ and another's:

father-child	.51
mother-child	.55
siblings	.50

	biological families	adoptive families
mother-child	.41	.09
father-child	.40	.16
child-child	.35	-.03

	identical twins	fraternal twins
fingerprints	.97	.46
height	.93	.65
IQ (Binet)	.88	.63
IQ (Otis)	.92	.62
word meaning	.86	.56
nature study	.77	.55
history and literature	.82	.67
spelling	.87	.73

So intelligence clearly has a powerful genetic component. But we can also see a number of environmental hindrances: A stimulating environment, parental encouragement, good schooling, specific reasoning skill practice, and so on, certainly help a person become more intelligent. Likewise, there are certain biological are nevertheless environmental: prenatal care, nutrition (especially in early childhood), freedom from physical trauma, and so on.

All of these are important and cannot be ignored -- especially when these are the things we can most easily control! But I do believe that something better than half of intelligence is accounted for by genetics. Am I simply, a matter of brain efficiency. If your brain is well-developed, free from genetic defects, free from imbalances, then it will work well, given a decent environment. But no matter how good your environment forced to rely on "bad equipment," it will be much more difficult to attain high intelligence.

Most of the normal curve of intelligence, I believe, is due to a variety of physiological impairments of the sort such as that resulting from malnourishment, prenatal trauma, chromosomal damage, and, most often, sir of certain neurochemical makeups. These stretch what would otherwise be a much "tighter" curve out

BellShapeCurveCorrelation.pdf (1 page)

Previous Next Zoom Move Text Select Annotate

SIX

The Real Error of Cyril Burt

Factor Analysis and the Reification of Intelligence

It has been the signal merit of the English school of psychology, from Sir Francis Galton onwards, that it has, by this very device of mathematical analysis, transformed the mental test from a discredited dodge of the charlatan into a recognized instrument of scientific precision.

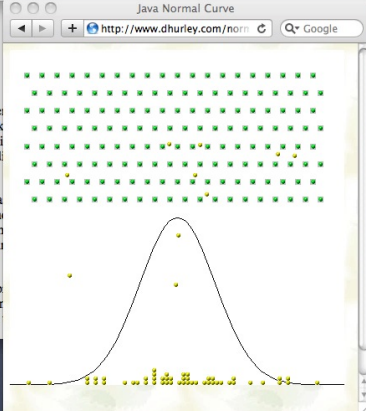
— Cyril Burt, 1941, p. 130

The case of Sir Cyril Burt

If I had any desire to lead a life of indolent ease, I would wish to be an identical twin, separated at birth from my brother and raised in a different social class. We could hire ourselves out to a host of social scientists and practically name our fee. For we would be exceedingly rare representatives of the only really adequate natural experiment for separating genetic from environmental effects in humans—genetically identical individuals raised in disparate environments.

Studies of identical twins raised apart should therefore hold pride of place in literature on the inheritance of IQ. And so it would be but for one problem—the extreme rarity of the animal itself. Few investigators have been able to rustle up more than twenty pairs of twins. Yet, amidst this paltriness, one study seemed to stand out: that of Sir Cyril Burt (1883–1971). Sir Cyril, doyen of mental testers, had pursued two sequential careers that gained him a preeminent role in directing both theory and practice in his field of educational psychology. For twenty years he was the official psy-

Java Normal Curve
http://www.dhurley.com/norm



easyCBM Learning Management Systems

- Adaptability to fit district context with settings to control fields, resource allocation, and access
- Historical record of academic performance, progress, and intervention information
- Capacity to share student data seamlessly within data teams using differential levels of access
- Designed to facilitate sharing information and guide decision making for key stakeholders: teachers, administrators, specialists, parents, and students

easyCBM

- Free teacher version
- Riverside district version
- Disclosure on income to BRT for research and development with no personal remuneration
- Current use patterns
- Funded since 2006 with over \$6,000,000.

easyCBM Grants


- *Reliability and Validity Evidence for Progress Measures in Reading.* U.S. Department of Education, Institute for Educational Sciences, Budget \$1,596,638 from June 2010 – June 2014.
- *Developing Middle School Mathematics Progress Monitoring Measures.* U.S. Department of Education, Institute for Educational Sciences, Budget \$1,631,401 from June 2010 – June 2014.
- *Response to Intervention with Reading Curriculum-Based Measures.* U.S. Office of Special Education Programs, Steppingstones of Technology Innovation for Children with Disabilities. Budget \$396,736 from May 2009 – April 2011.
- *Assessments Aligned with Grade Level Content Standards and Scaled to Reflect Growth for Students with Disabilities (SWD) and Persistent Learning Problems (PLP).* U.S. Department of Education, Institute for Educational Sciences. Budget \$1,525,552 from May 2007 – April 2011.
- *Model Demonstration Centers on Progress Monitoring (CFDA 84.326M).* U.S. Department of Education. Budget: \$1,189,790 from January 2006 – December 2008.

Three References for Personalizing Learning

- Norm Referenced Evaluation [NRE] – How do students compare to others? (used for allocation of resources)
- Criterion Referenced Evaluation [CRE] – How well do students perform? (used for diagnostics and targeting the content of instruction)
- Individual Referenced Evaluation [IRE] – How much are students improving? (used for evaluating instructional programs – a.k.a. RTI)


Measures on easyCBM

Select the grade level difficulty of the measure you want to access, then scroll to its section. For measures that can be administered online, have your students go to <http://4j.or.easycbm.com/brtadmin> and follow the on-screen instructions. For Benchmark measures, your district admin must enable them before they'll show up for your students. For Progress Monitoring measures, mark the checkbox next to each measure you want listed for your students. An answer key for the Benchmark measures is provided below.




Benchmarks


Progress Monitoring



[Enter Fall Scores](#)



[Enter Winter Scores](#)



[Enter Spring Scores](#)

Combined Booklets:

- [K - 5th Grade](#)
- [6th - 8th Grade](#)
- [9th Grade](#)
- [All Answer Keys](#)

Reading

- [Student Copies](#) [Assessor Copies](#)
- [Student Copies](#) [Assessor Copies](#)
- [Student Copies](#) [Assessor Copies](#)

Math

- [Student Copies](#)
- [Student Copies](#)

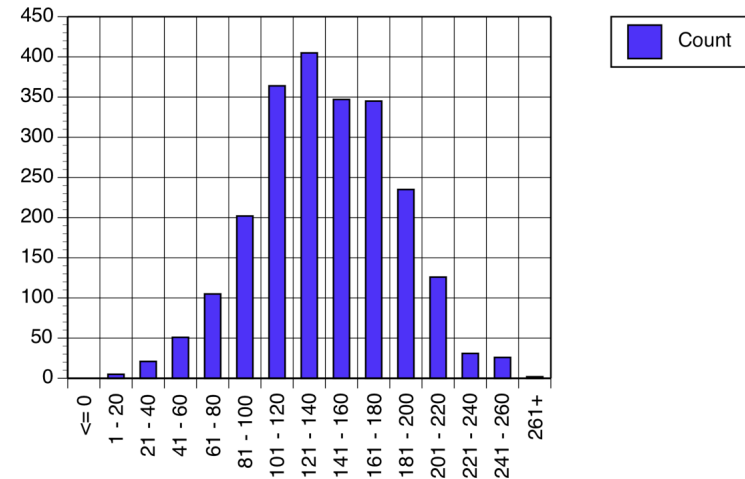
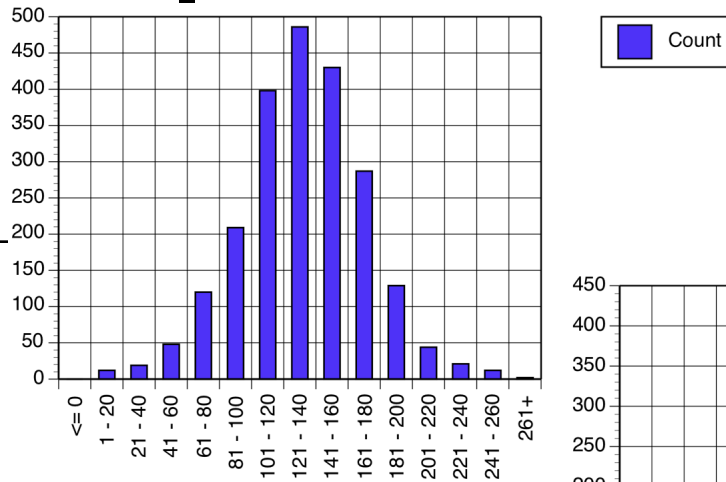
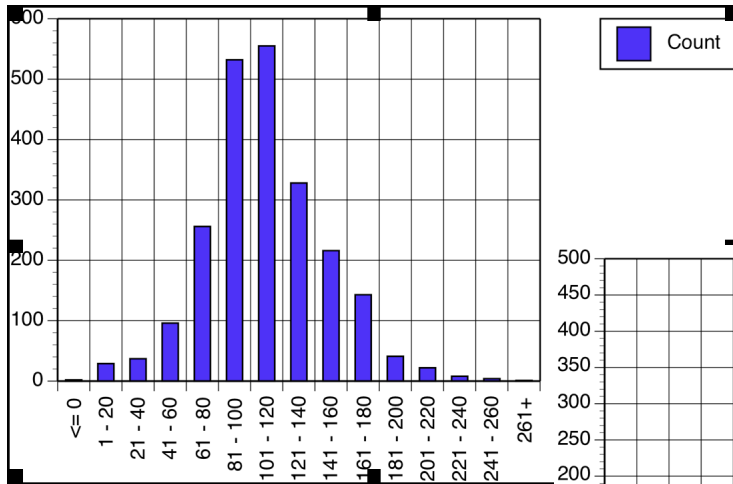
By Grade:

-

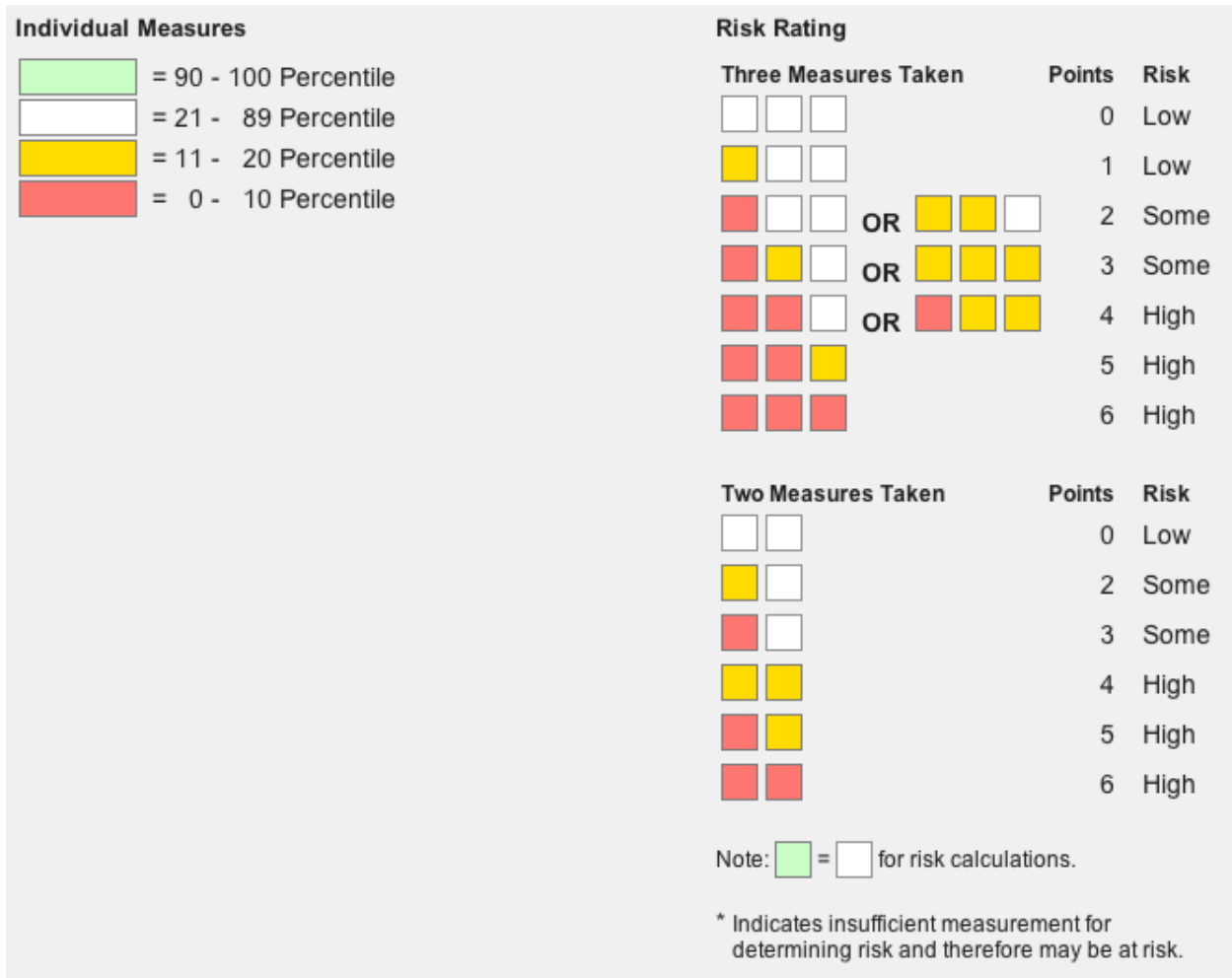
Fall Tests

- [Passage Reading Fluency 3_Fall](#) [Student Copy](#) [Assessor Copy](#)
- [Vocabulary 3_Fall](#) [Student Copy](#) or Take Online
- [Reading Comprehension 3_Fall](#) [Student Copy](#) or Take Online
- [Math Computations 3_Fall](#) [Student Copy](#) or Take Online
- [Math Applications 3_Fall](#) [Student Copy](#) or Take Online

Norm-Referenced Evaluation [Oral Reading Fluency]



Defining Risk and Allocation of Resources



Measures on easyCBM

Select the grade level difficulty of the measure you want to access, then scroll to its section. For measures that can be administered online, have your students go to <http://4j.or.easycbm.com/brtadmin> and follow the on-screen instructions. For Benchmark measures, your district admin must enable them before they'll show up for your students. For Progress Monitoring measures, mark the checkbox next to each measure you want listed for your students. An answer key for the Benchmark measures is provided below.

Benchmarks
Progress Monitoring

Grade: K 1 2 3 4 5 6 7 8

Passage Reading Fluency

Passage Reading Fluency 5_1	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_2	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_3	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_4	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_5	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_6	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_7	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_8	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_9	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_10	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_11	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_12	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_13	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_14	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_15	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_16	Student Copy	Assessor Copy	Enter Scores
Passage Reading Fluency 5_17	Student Copy	Assessor Copy	Enter Scores

Multiple Choice Reading Comprehension

Note: Students can take this measure [online](#).

Buzkashil [Student Copy](#) or Take Online List for students

[Home](#)
[Students](#)
[Measures](#)
[Reports](#)
[Account](#)

Managing your Students

Add new Students or Groups by clicking the Add Student or Add Group buttons. If a student is in the currently selected group, they will have a check next to their name. If the student is not in the group, their checkbox will be unchecked. When a grouping or student is selected, links will appear that allow you to edit the entry.

[My Students](#)
[Teacher/Student Setup](#)

Groups

[Add Group](#)

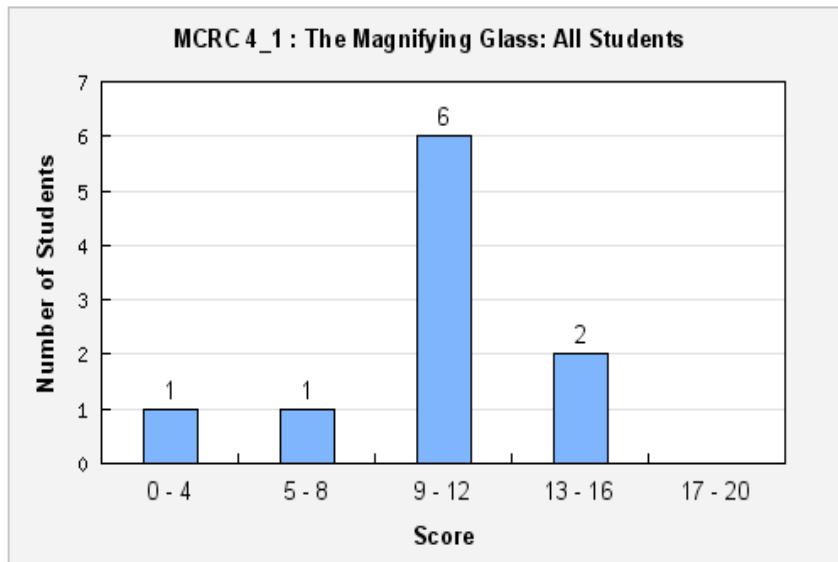
	Group Name
1	2nd grade intervention
2	2nd grade peer readers
3	All Students

Students

[Create Temporary Record](#)

	In Group	Student Name
1	<input checked="" type="checkbox"/>	Adalberto Ball
2	<input checked="" type="checkbox"/>	Alaina Bernier
3	<input checked="" type="checkbox"/>	Bobbie Dimauro
4	<input checked="" type="checkbox"/>	Darline Engstrom
5	<input checked="" type="checkbox"/>	Perry Leiser
6	<input checked="" type="checkbox"/>	Rusty Macy
7	<input checked="" type="checkbox"/>	Reatha Nelson
8	<input checked="" type="checkbox"/>	Ross Pitcher
9	<input checked="" type="checkbox"/>	Christopher Poore

Summary



Students Completed: 9 Min Score: 0.0 Avg Score: 9.9
Students in Group: 70 Max Score: 15.0 Std Deviation: 4.4

Item Analysis

Top Easiest			
Item	Type	Students Correct	Percentage
6	Inferential	8 of 9	89%
8	Literal	7 of 9	78%
10	Evaluative	7 of 9	78%
13	Evaluative	6 of 9	67%
1	Literal	6 of 9	67%
11	Literal	6 of 9	67%
17	Literal	6 of 9	67%
7	Evaluative	6 of 9	67%
4	Inferential	6 of 9	67%
5	Literal	6 of 9	67%

Top Hardest			
Item	Type	Students Correct	Percentage
14	Literal	2 of 9	22%
16	Evaluative	2 of 9	22%
9	Inferential	3 of 9	33%
19	Inferential	3 of 9	33%
15	Inferential	3 of 9	33%
2	Literal	4 of 9	44%
20	Evaluative	4 of 9	44%
3	Inferential	4 of 9	44%
12	Inferential	5 of 9	56%
18	Evaluative	5 of 9	56%

Group Report:
provides
information
helpful for
grouping
students and
insight into the
item types on
which they
need more
work

Item-Person Maps

Item Analysis with Student Names

All item analysis reports have been updated to show a single table of items from easiest to hardest, and they now have a column for the names of the students who got the corresponding item incorrect. Hovering your mouse cursor over a name will highlight the same name for other items as well.

Item Analysis

Easiest to Hardest Items				
Item	Type	Students Correct	Percentage	Student Names, Incorrect
6	Inferential	4 of 4	100%	
5	Literal	4 of 4	100%	
1	Literal	4 of 4	100%	
12	Inferential	3 of 4	75%	Christia T
19	Literal	3 of 4	75%	Denver S
14	Literal	3 of 4	75%	Denyse F
16	Evaluative	3 of 4	75%	Christia T
15	Inferential	3 of 4	75%	Denyse F
8	Literal	3 of 4	75%	Denyse F
3	Inferential	3 of 4	75%	Christia T
2	Literal	3 of 4	75%	Christia T
17	Inferential	3 of 4	75%	Christia T
4	Inferential	2 of 4	50%	Gail P, Christia T
7	Evaluative	2 of 4	50%	Denyse F, Christia T
20	Evaluative	2 of 4	50%	Denyse F, Denver S
18	Evaluative	1 of 4	25%	Gail P, Denver S, Christia T
10	Evaluative	1 of 4	25%	Gail P, Denver S, Christia T
9	Inferential	1 of 4	25%	Denyse F, Gail P, Christia T
11	Literal	0 of 4	0%	Denyse F, Gail P, Denver S, Christia T
13	Evaluative	0 of 4	0%	Denyse F, Gail P, Denver S, Christia T

All of these enhancements originated from district requests. Thank you!

Interventions



Progress Monitoring
Scoring Guidelines

Reports and Analysis

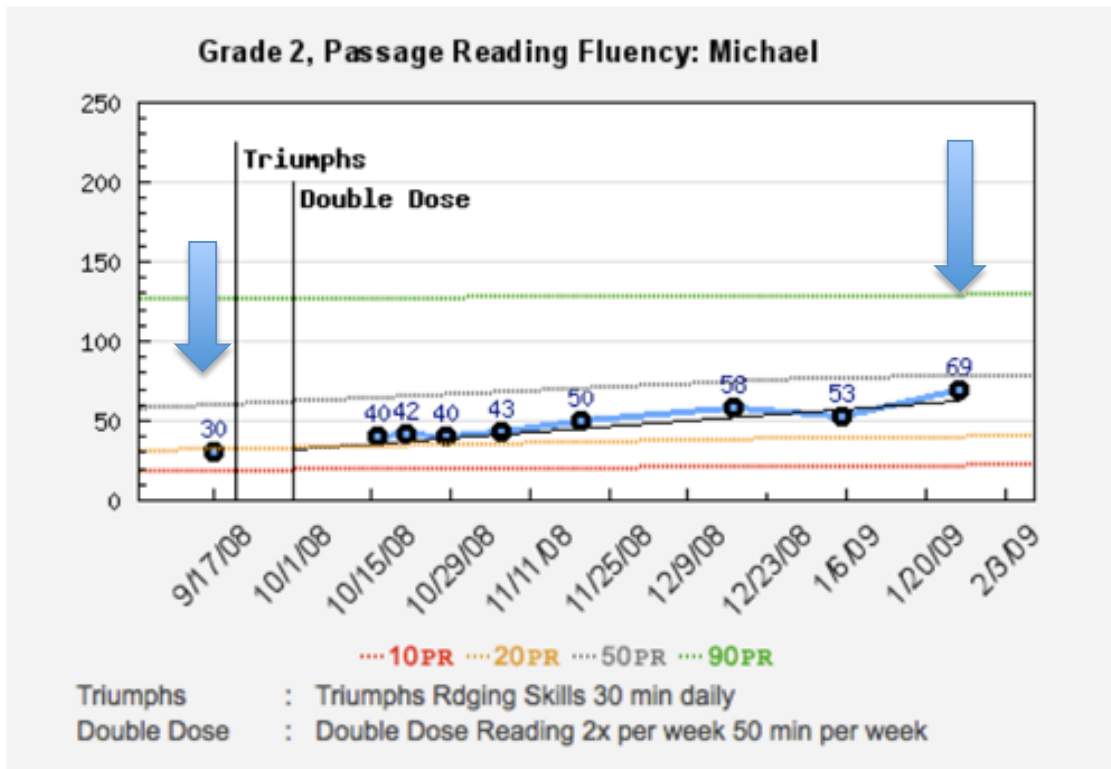
To view a **Group** report, click on the name of the group, and all of their active CBMs will appear below. Select a CBM name to see a summary and list of student scores. Then click "View" to see any student's actual submission. Select the **Individuals** subsection for easy one-click access to system wide data by student. **Interventions** are now accessible under the Individuals subsection, on the right-hand side of the table. **NEW!**

Students > Interventions for Ruthanne Almendarez

Date	Subject	Label	Description	
10/16/2008	Reading	Tier 3	Instructor: Certified Teacher Curriculum:Phonics/PA Number of sessions/week:1 Length of session:20 minutes Size of group:5 PM measure:LN/LS Frequency of PM:every 2 weeks	Edit Delete
11/15/2008	Reading	Change	Increase to 2 days per week.	Edit Delete
1/30/2009	Reading	Change	Increase to five days per week with certified teacher	Edit Delete
3/11/2009	Reading	Change	Decrease to two days per week with certified teacher and focus on PA and segmentation	Edit Delete
3/19/2009	Reading	Change	Increase to three days a week with IA	Edit Delete

New Intervention

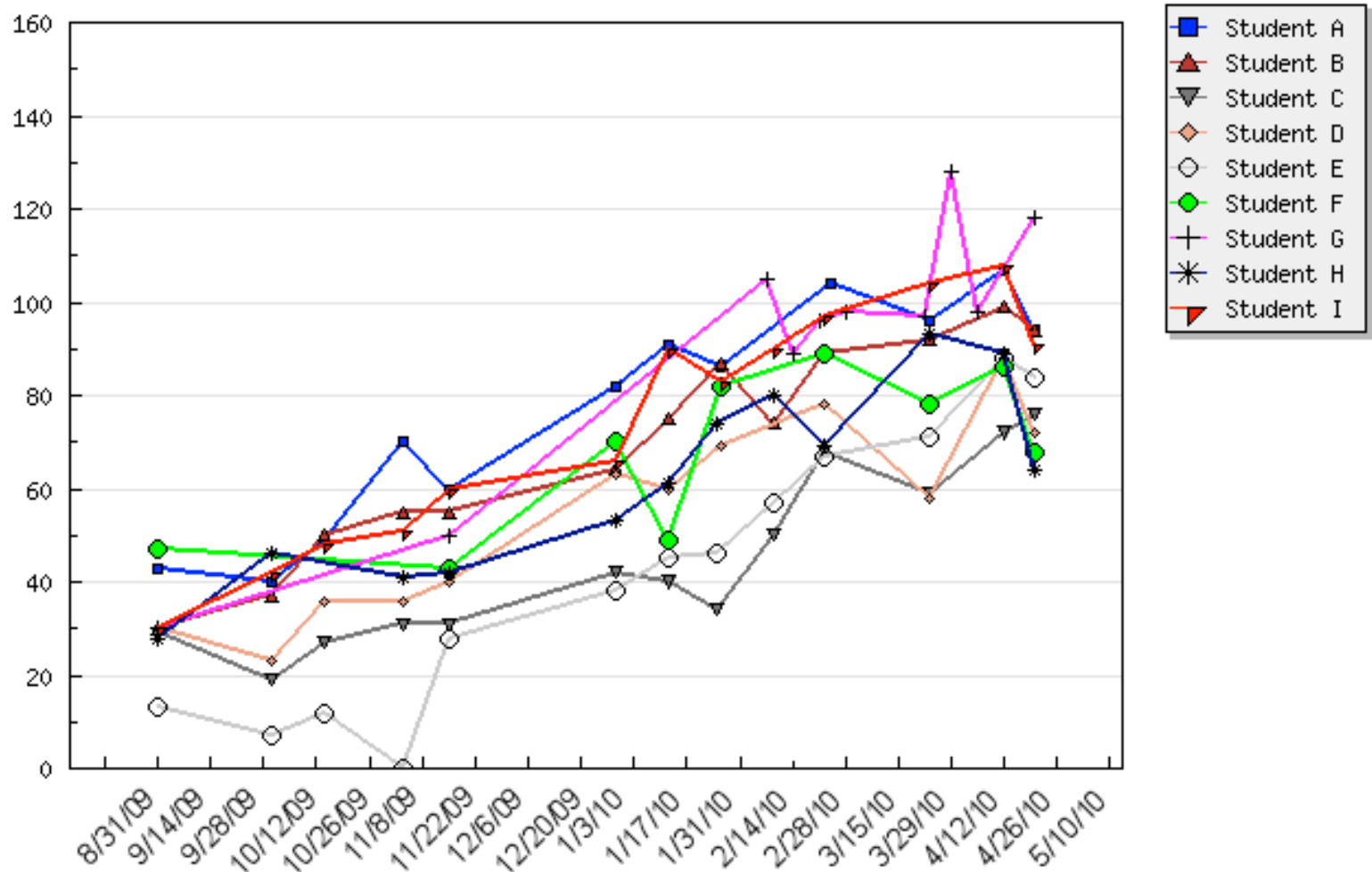
Individual Student Report



This report provides information helpful for judging the effectiveness of interventions for a particular student.

Response to Intervention

Group Passage Reading Fluency Performance (Only shown for groups of 10 students or less)



Summative Risk Analysis

Risk Analysis Report

This report compares student risk ratings for fall vs winter, winter vs spring, and fall vs spring. Here is an example of the report when viewing a particular grade, building-wide:

Grade K Risk Analysis

Risk Level ▲	Fall	Winter	Change	Winter	Spring	Change	Fall	Spring	Change
Risk 0	49%	47%	2%↓	47%	97%	50%↑	49%	97%	48%↑
Risk 1	6%	29%	23%↑	29%	3%	26%↓	6%	3%	3%↓
Risk 2	18%	9%	9%↓	9%	0%	9%↓	18%	0%	18%↓
Risk 3	6%	9%	3%↑	9%	0%	9%↓	6%	0%	6%↓
Risk 4	12%	3%	9%↓	3%	0%	3%↓	12%	0%	12%↓
Risk 5	3%	1%	2%↓	1%	0%	1%↓	3%	0%	3%↓
Risk 6	7%	1%	6%↓	1%	0%	1%↓	7%	0%	7%↓
Totals	100%	100%	-	100%	100%	-	100%	100%	-

Options: [Total](#) | [Percentage](#) | [Intact](#) | [Cohort](#)

And here is the report when viewing a teacher's class list:

Grade 3 Risk Analysis

Student Name ▲	Fall	Winter	Change	Winter	Spring	Change	Fall	Spring	Change
1 Boulton, Fanny	0	0	-	0	-	-	0	-	-
2 Canterbury, Earle	0	0	-	0	-	-	0	-	-
3 Catlett, Michal	2	2	-	2	-	-	2	-	-
4 Colley, Milford	6	2	4↓	2	-	-	6	-	-
5 Fambro, Cristin	-	0	-	0	-	-	-	-	-
6 Fawcett, Lenard	0	0	-	0	-	-	0	-	-
7 Gamache, Joane	3	0	3↓	0	-	-	3	-	-
8 Kan, Virgil	1	2	1↑	2	-	-	1	-	-
9 Killey, Zeeb	4	0	4↓	0	-	-	4	-	-

On Two Metaphors for Learning and the Dangers of Choosing Just One

- “Educational research is caught between two metaphors...the *acquisition metaphor* and the *participation metaphor*. Both of these metaphors are simultaneously present in most recent texts, but while the *acquisition metaphor* is likely to be more prominent in older writings, more recent studies are often dominated by the *participation metaphor*” (p. 4).

Sfard, A.(1998). On Two Metaphors for Learning and the Dangers of choosing just one. *Educational Researcher*, 27(2), pp. 4–13.

Acquisition and participation become coins of the realm...

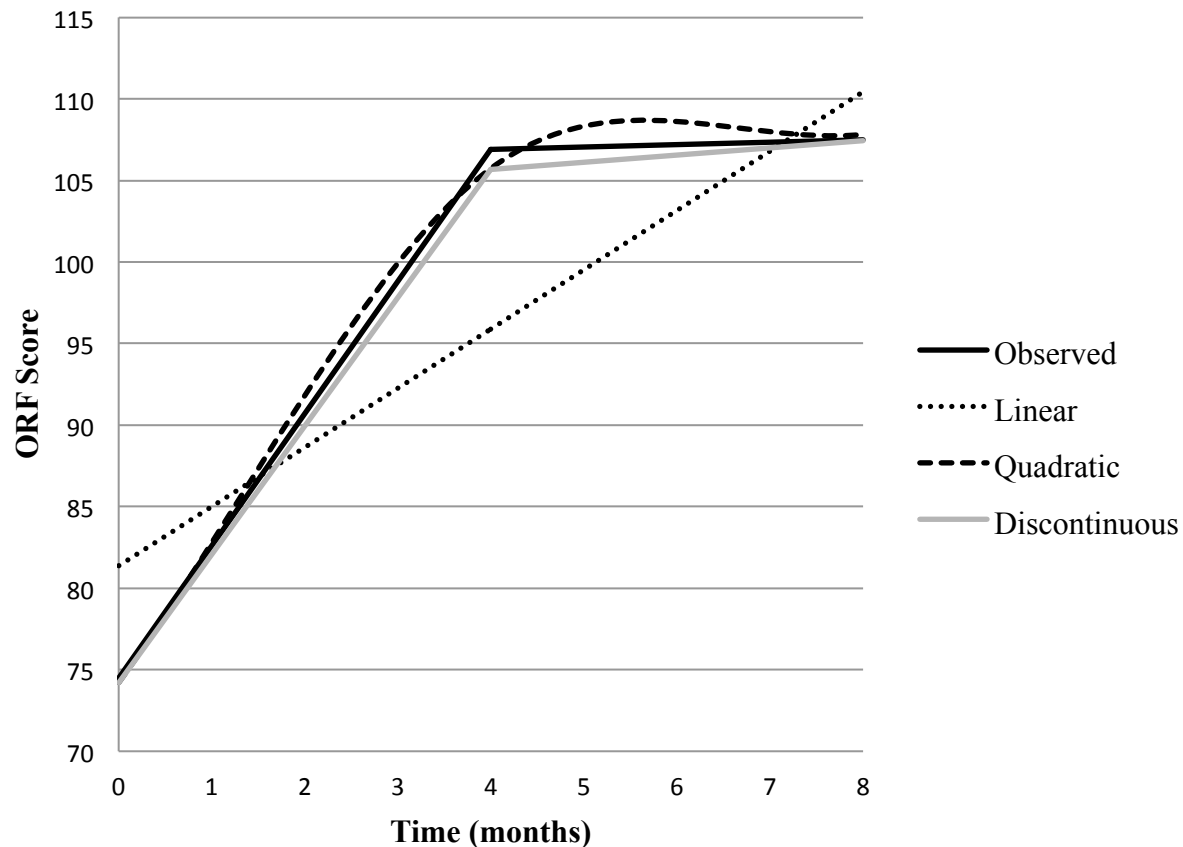
- Measurement of growth and attention to individual differences and making an individual difference (ala learning from an acquisition metaphor)
- Importance of human capital, structures and functions (ala learning from a participation metaphor)

ORF Means and SDs by Grade*

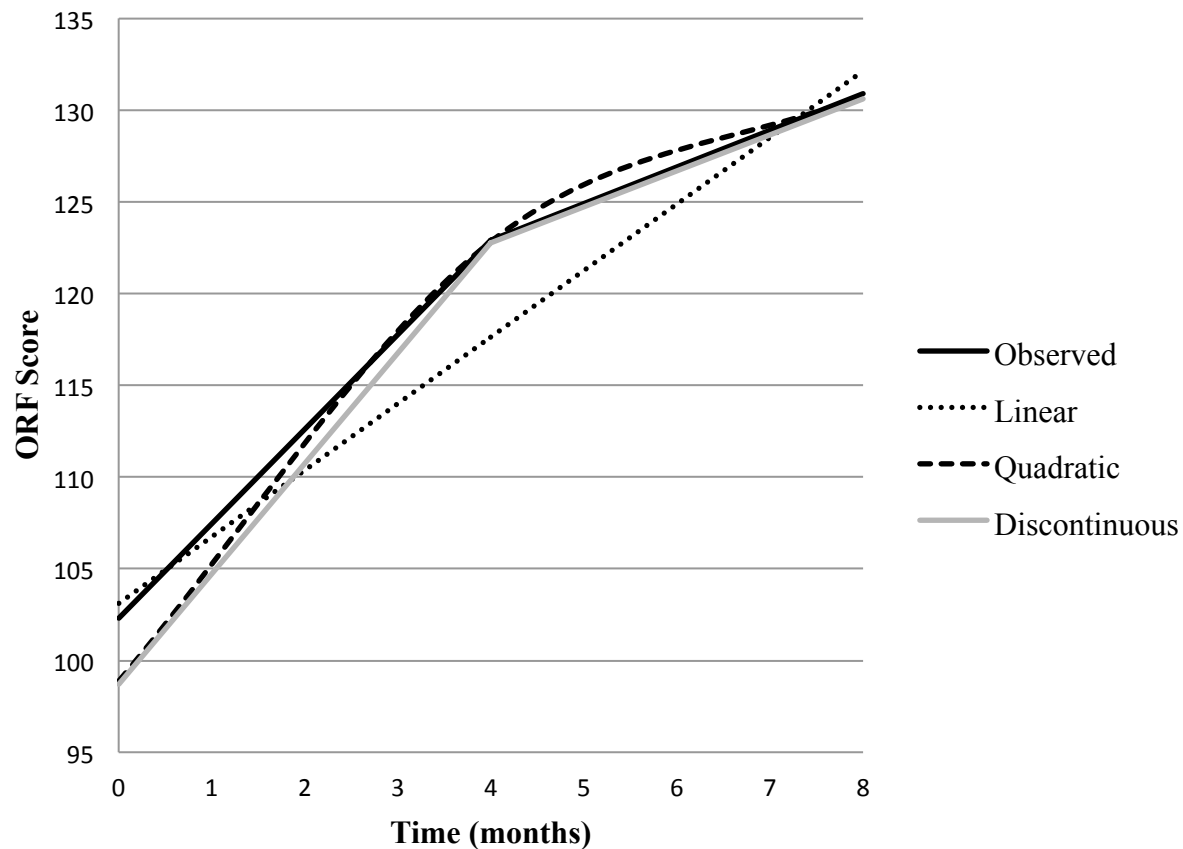
Grade	Fall	Winter	Spring
	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)
3	74.48 (35.41)	106.90 (39.94)	107.48 (39.24)
4	102.31 (36.58)	122.89 (38.43)	130.91 (41.49)
5	134.48 (42.81)	143.38 (39.72)	156.01 (40.18)

*Nese, J. F. T., Biancarosa, G., Anderson, D., Lai, C. F., Alonzo, J., & Tindal, G. (in press). Within-year oral reading fluency with CBM: A comparison of models. *Reading and Writing: An Interdisciplinary Journal*.

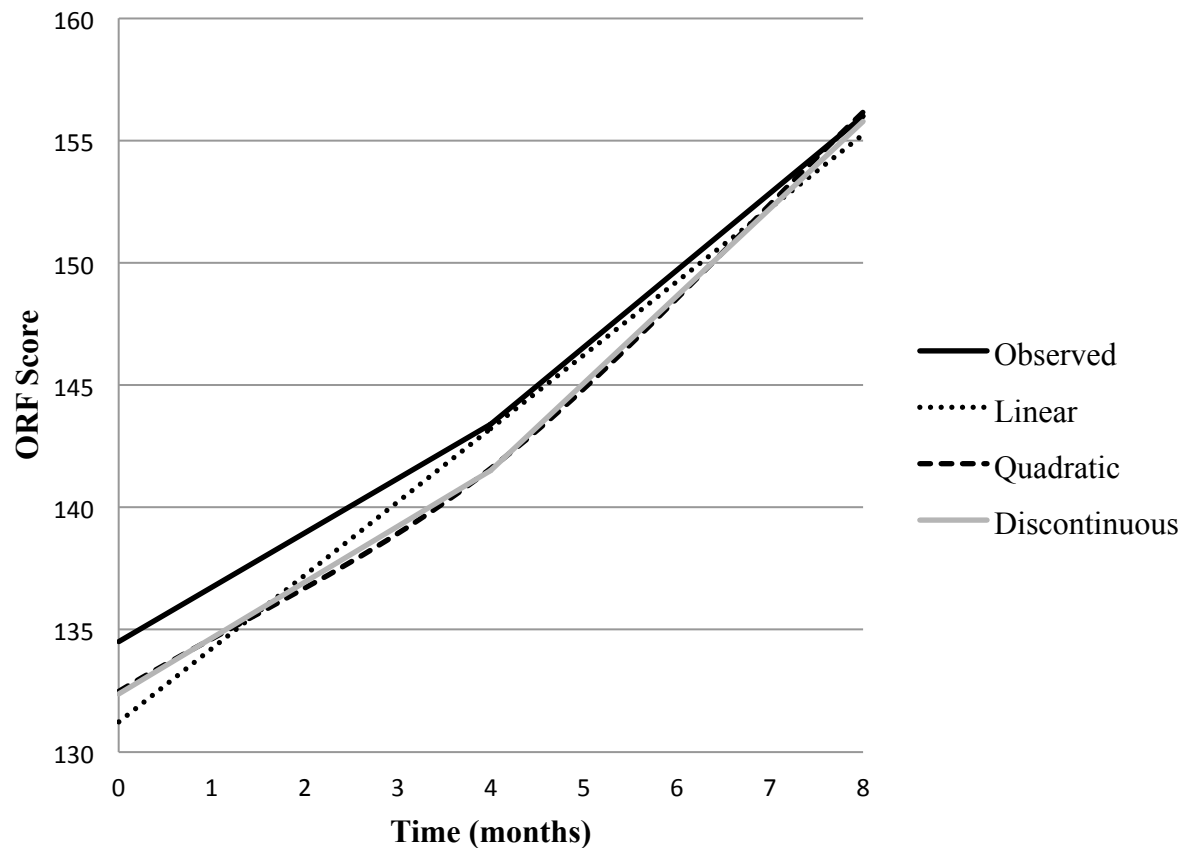
Predicted Trajectories for Three Parameterizations of Growth Compared to Observed Growth in Grade 3



Predicted Trajectories for Three Parameterizations of Growth Compared to Observed Growth in Grade 4



Predicted Trajectories for Three Parameterizations of Growth Compared to Observed Growth in Grade 5



Learning in different student groups...

- Across grade levels, females began the year reading about **4** more cwpm than males.
- Students eligible for FRPL began the year reading about **11** cwpm less than students not eligible.
- SWD began the year reading about **37** cwpm less than general education students.
- LEP students began the year reading about **20** cwpm less than non-LEP students

Implications for students...

- “We also see variability in student easyCBM scores that seem to be related to their home life, lack of sleep or food, the time of day of testing or their emotional state on the days they test.”
- “When there hasn't been enough progress over 12-18 weeks of tier 3, or there have been enough data points below the 20th percentile, we look to see if it is possible to refer that student to special education.”
- “There are still very low performing students; there is still flat achievement for some.”

Implications for teachers...

- Adequate funding and highly skilled personnel seem to be our two biggest challenges
- “We have had little professional development relating to teaching reading skills.”
- “I haven't received any training in several years about progress monitoring, or decision making either.”
- As we can't find time to take students out of other core subjects like writing or math, Tier 3 must be done out of our reading block.

The nexus of acquisition and participation...

- In the focus groups, teachers referred to the usefulness of having access to this common data, regardless of school site.
- “easyCBM assessment system enables everyone in the district to use a common, streamlined benchmarking and progress monitoring assessment system that makes it easy to track interventions and their impact over time.”

Classroom instruction gets arranged...

- We have a **90 minute reading block** where all students receive **tier one** (adopted main curriculum) and some form of **tier two (differentiated instruction)**.
- Students get in this time **whole group, independent centers/work and small group instruction**.
- Students under the **20th PR** and **Tier 3** get twice a week for **25-30 minutes** outside the reading block.
- **Split the kids up into skills groups** that vary with the most needy group having far fewer students; groups are fluid
- We utilize three classroom teachers, 3 instructional assistants, and a retired volunteer teacher.
- Interventions are based on **skills to develop within the group**.

Student performance and progress data get used...

- PM every 2 weeks for students in the lowest 20th percentile.
- Whole class progress monitoring every 6 weeks.
- Grade level standards 3 times in a row pulled from Tier
- Data meetings are held at each grade level every 6 weeks.
- Rotating schedule for particular grade level to meet
- The structure: review the past meeting notes, discuss current data, and decide which students are to be given Tier 3 and how the Tier 2 needs to be adjusted.
- Make instructional decisions: changing curricula, changing groups, entering or exiting kids from Tier 3 services and RFA's (Requests for Assistance).
- Look first at students from the last meeting and then new students of concern that surface because of easyCBM data.

New roles get established...

- Data Scene Investigator (DSI)
- Student Achievement Coordinator (SAC)
- Title I teacher
- Instructional Intervention Progress Monitoring – IIPM Response to Intervention (RTI) team members
- Learning Center (SPED) time
- TLC
- School psychologists

In the end...results from three centers

- MPLS: Key thing is the OCR website in the MSP as helpful and supportive
- PA: Changes in language and professional relationships (even though the original crew is no longer present; this is what you do, not a special project).
- PA and OR: Due to the _____ who maintained the general outline

Explanations and attributions...

- Data team and administrative teams with professional development; all said the principal was key factor and has added behavior support to building wide perspective.
- Teachers said that once they saw kids achieving and that kids were reading, it affirmed their value as a teacher; they see kids learn who they had given up on before.

Eventual attention to parts and whole...

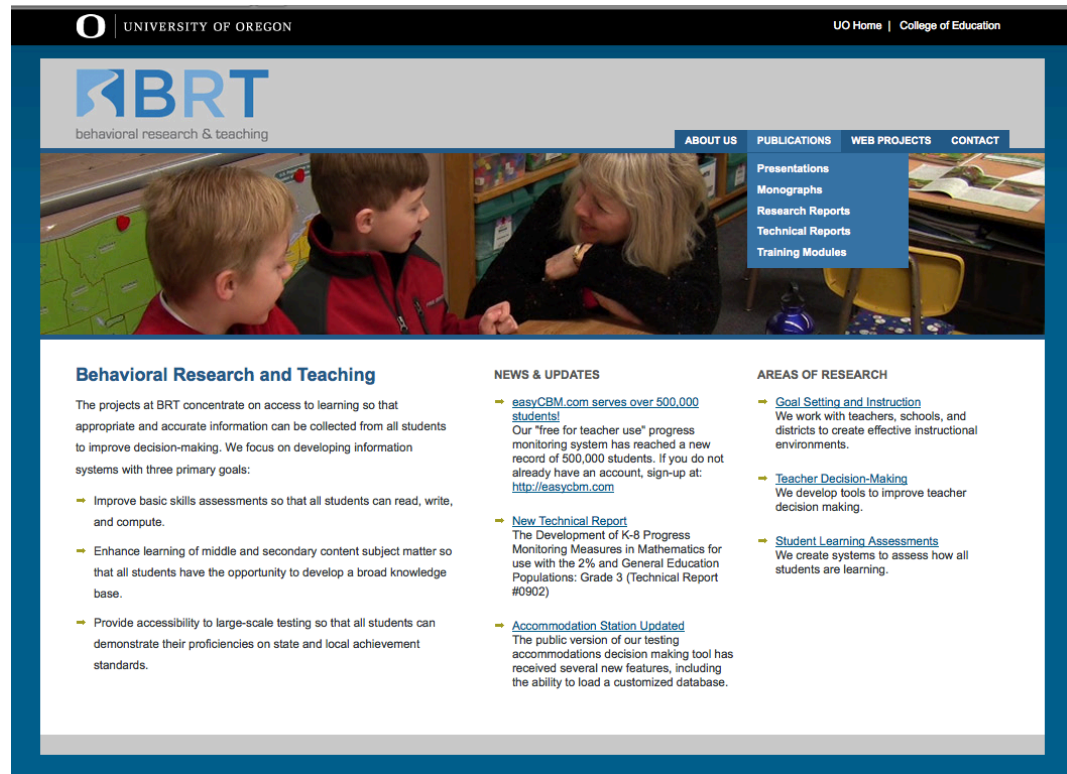
- Principal takes perspective of ensuring teachers' needs (and interests) to support RTI: Advocate and someone to push for it and with power and influence.
- Though school leadership may not be the only critical level, as teachers are needed. Teachers appear to be more stable than leadership.

Other factors for RTI success...

- Schedule time and meetings: Make the trains run on time
- Delegate someone to run the meeting
- Provide strong school level leadership
- Secure extra supports
- Continue to use local resources

The end...

<http://www.brtprojects.org/>



The screenshot shows the homepage of the Behavioral Research and Teaching (BRT) website. The header includes the University of Oregon logo and navigation links for 'ABOUT US', 'PUBLICATIONS', 'WEB PROJECTS', and 'CONTACT'. A dropdown menu is open under 'PUBLICATIONS', listing 'Presentations', 'Monographs', 'Research Reports', 'Technical Reports', and 'Training Modules'. The main content area is divided into three columns: 'Behavioral Research and Teaching' with a paragraph and three bullet points; 'NEWS & UPDATES' with three news items; and 'AREAS OF RESEARCH' with three research areas. A large image of a teacher and two students is visible in the background of the main content area.

UNIVERSITY OF OREGON UO Home | College of Education

BRT
behavioral research & teaching

ABOUT US PUBLICATIONS WEB PROJECTS CONTACT

Presentations
Monographs
Research Reports
Technical Reports
Training Modules

Behavioral Research and Teaching

The projects at BRT concentrate on access to learning so that appropriate and accurate information can be collected from all students to improve decision-making. We focus on developing information systems with three primary goals:

- Improve basic skills assessments so that all students can read, write, and compute.
- Enhance learning of middle and secondary content subject matter so that all students have the opportunity to develop a broad knowledge base.
- Provide accessibility to large-scale testing so that all students can demonstrate their proficiencies on state and local achievement standards.

NEWS & UPDATES

- [easyCBM.com serves over 500,000 students!](#)
Our "free for teacher use" progress monitoring system has reached a new record of 500,000 students. If you do not already have an account, sign-up at: <http://easycbm.com>
- [New Technical Report](#)
The Development of K-8 Progress Monitoring Measures in Mathematics for use with the 2% and General Education Populations: Grade 3 (Technical Report #0902)
- [Accommodation Station Updated](#)
The public version of our testing accommodations decision making tool has received several new features, including the ability to load a customized database.

AREAS OF RESEARCH

- [Goal Setting and Instruction](#)
We work with teachers, schools, and districts to create effective instructional environments.
- [Teacher Decision-Making](#)
We develop tools to improve teacher decision making.
- [Student Learning Assessments](#)
We create systems to assess how all students are learning.

BRT
behavioral research & teaching