Success for All:

A personal view of educational challenges and research possibilities from an assessment perspective

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Overview of comments

- "Success for all students"

- Research
  - An example of research: conceptual clarity, evidence, and argument, done iteratively and collectively
 - How our research might be more useful and used

Overview

- How has "Success for All" been defined and pursued, from a national, measurement perspective?
  - Three major approaches, from 1960 to now
    - Inclusive opportunity
    - Attainment – more and more and more
    - More than attainment
  - Role of measurement
- How can research help "All" achieve "Success"?
  - Exemplified by NRMERA conference

A personal story: Success as Inclusive Opportunity

- Walter Gong (my father)
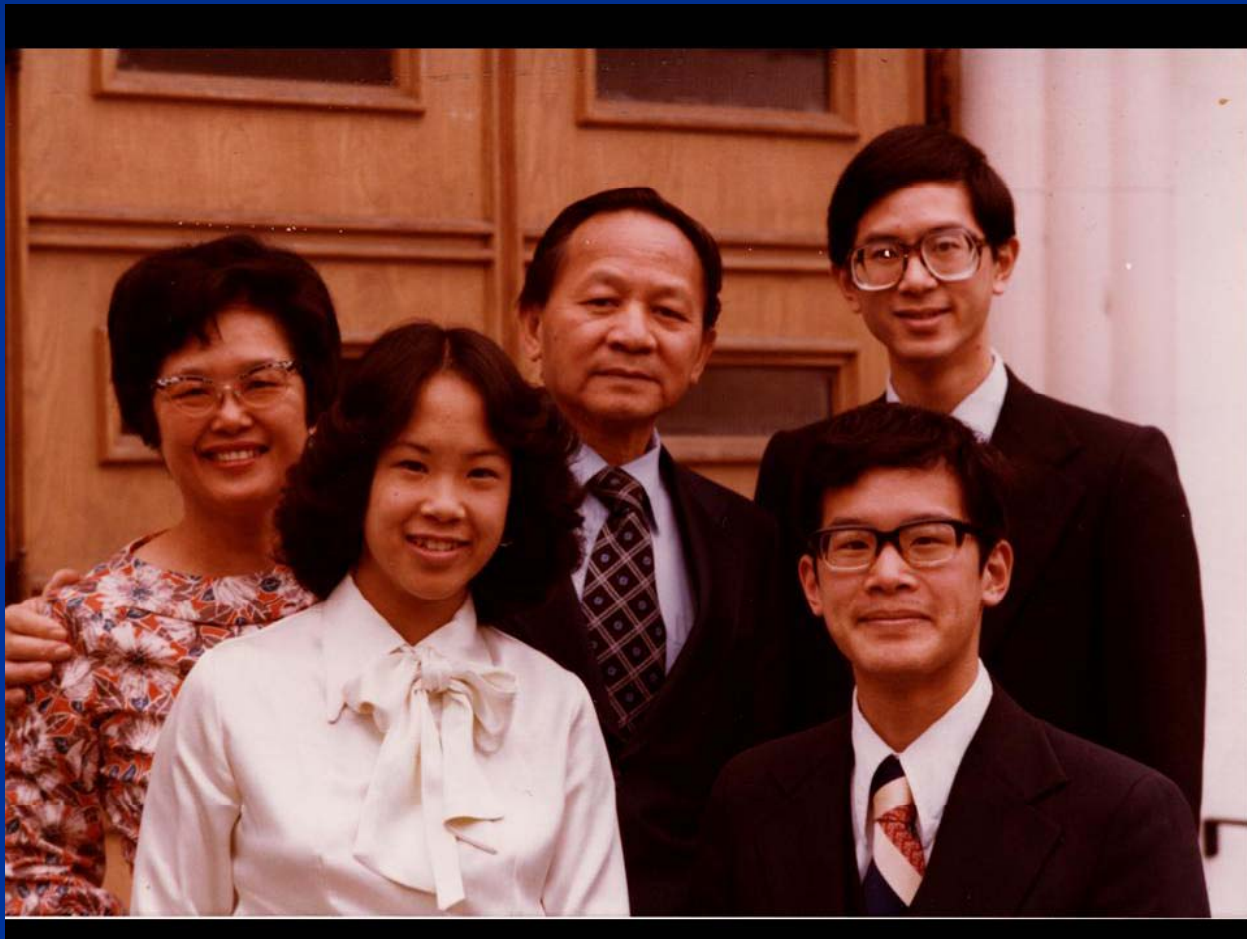
Walter Gong - 1

- Born: 1923, Merced, California
- Parents: Chee Gong and Shee Wong
  - ELL immigrants (never learned to speak English)
  - Low education in native language (3rd grade)
- Bilingual
- Low SES
  - Parents operated a hand-laundry; later owned butcher store, then grocery
- Some racial discrimination

Educational "Success"

- High school graduation (1941)
- Post-secondary training (Navy radar, 1942)
- College degrees, STEM-education career
  - Taught high school science
  - B.S., M.A., Ed.D., Stanford
  - Natural Science faculty, San José (CA) State University
  - Consultant on faculty development and problem-solving (e.g., BYU, IBM)
- 3 children advanced degrees, working in education

Current national policy

- K-12 education focused on helping almost all students be "college- and career-ready" by the time the students graduate from high school

- New definition of "success" = "college- and career-ready"

Expanding goals for public education

"Success"	Who Targeted
3 R's – Reading, 'Riting, 'Rithmetic	Some
Equitable access & opportunity	Specific subgroups
Basic job knowledge & skills	Some
Minimum competency – high school	Some
"Proficiency"	All
Now: "College- and career-readiness"	All

How did we get here?

- Brown v. Board of Education (1954) – inclusion/opportunity
- ESEA/Title 1 (1965);
  - Norm-referenced tests; Minimum competency (1970-80's)
- Nation at Risk (1984) & "Lake Woebegone" (1987)
  - "All students can learn" and Standards-based
- Fiscal equity/opportunity lawsuits (1990's+)
  - State-based, tax increases, accountability
- IASA (1995) & *No Child Left Behind* (2001) with their features and shortcomings – all students included; all students proficient by 2014; equal attainment criteria for all subgroups; individual state proficiency standards
- *Common Core State Standards* & common assessment consortia; *Race to the Top* & *ESEA Waivers* (2010 to present)

Success as Attainment

- "Success" is reaching a defined level or condition, typically marked by a valued educational indicator (e.g., test score, grade, admittance, completion, degree)
  - Focus on K-12 from concerns about high school graduation and college preparation
- More success is indicated by more people reaching the "successful" level
  - "Success for all"

U.S. High School Graduation

Figure XIII. Educational Attainment Decompositions, Males and Females 1900-1980 Birth Cohorts
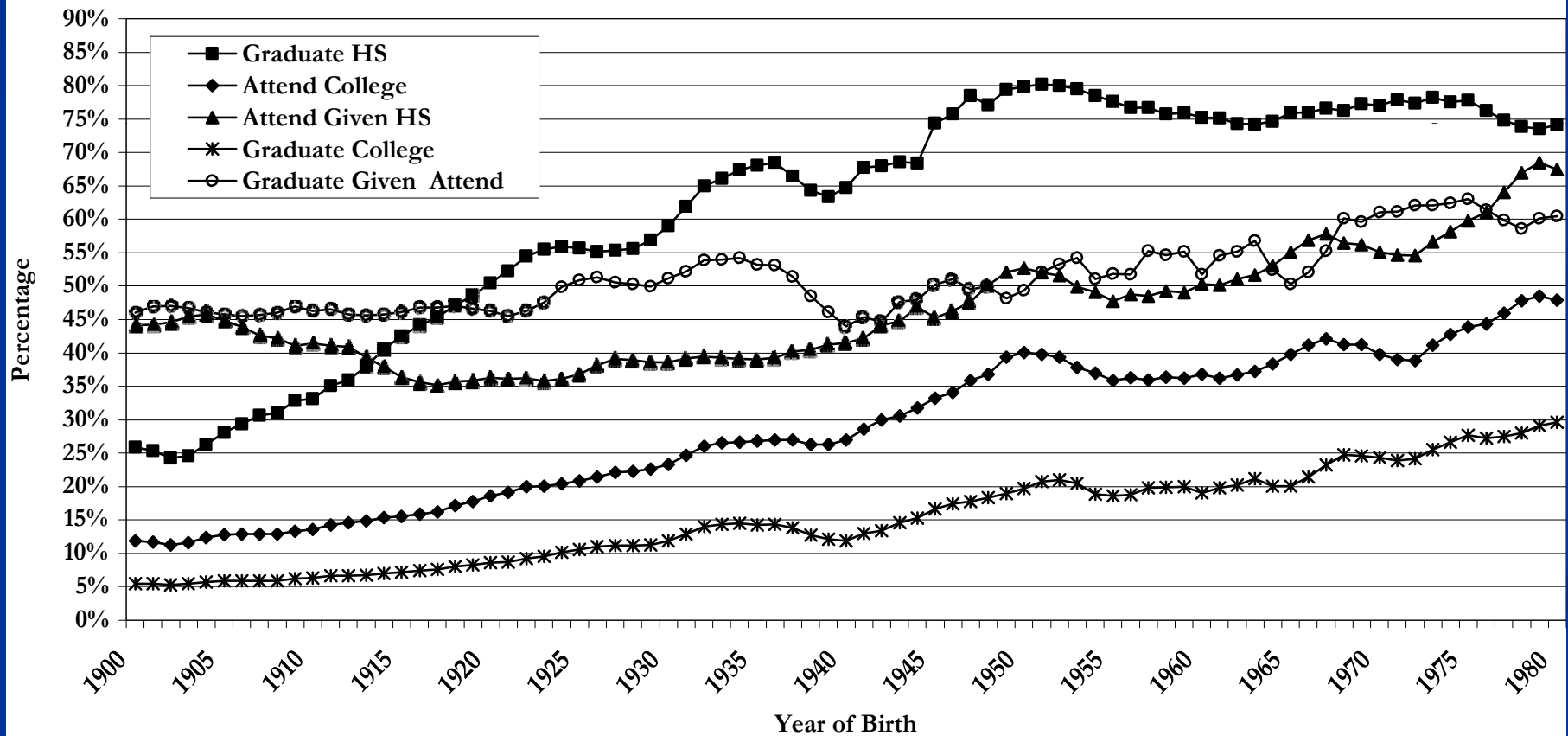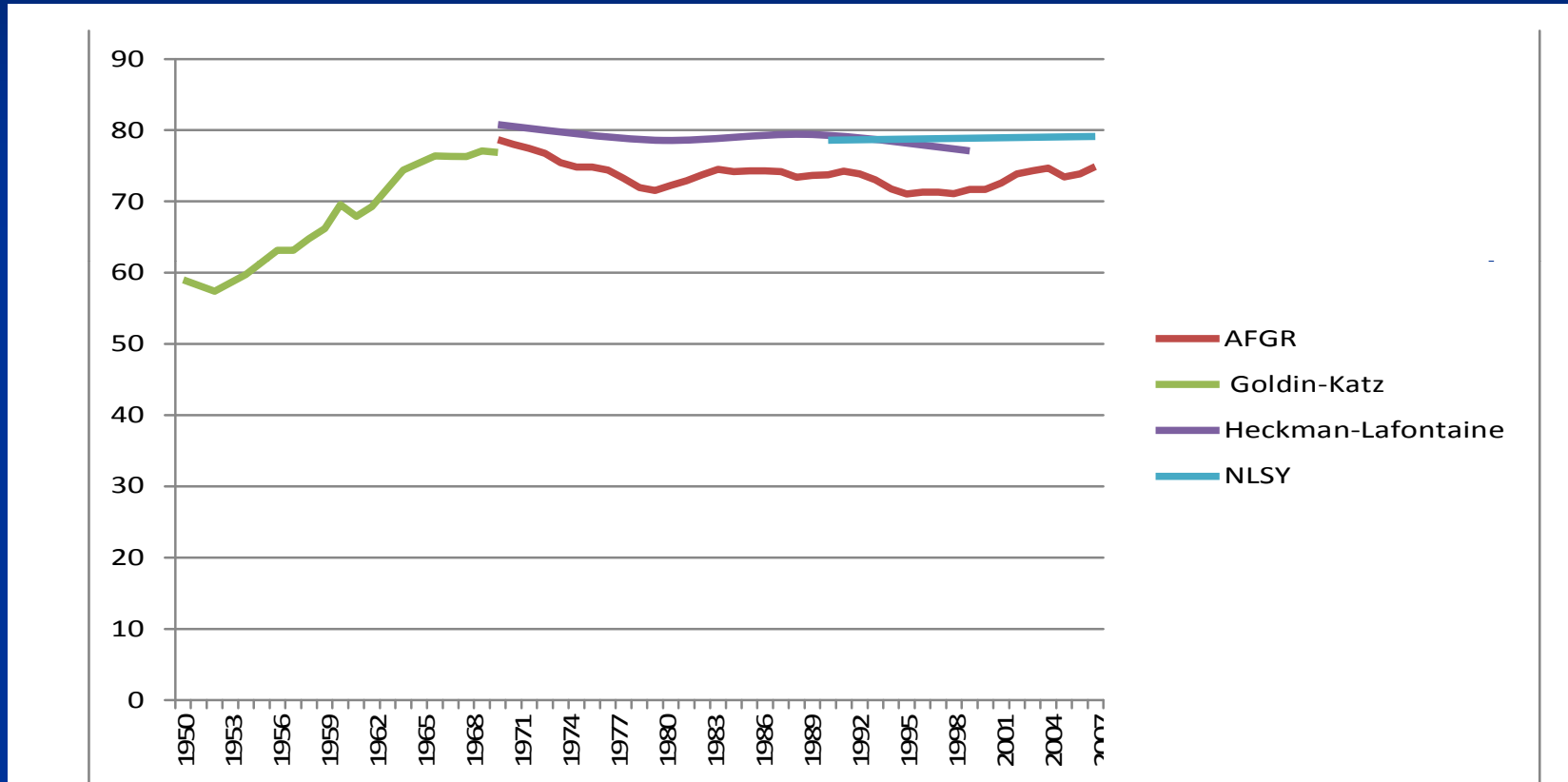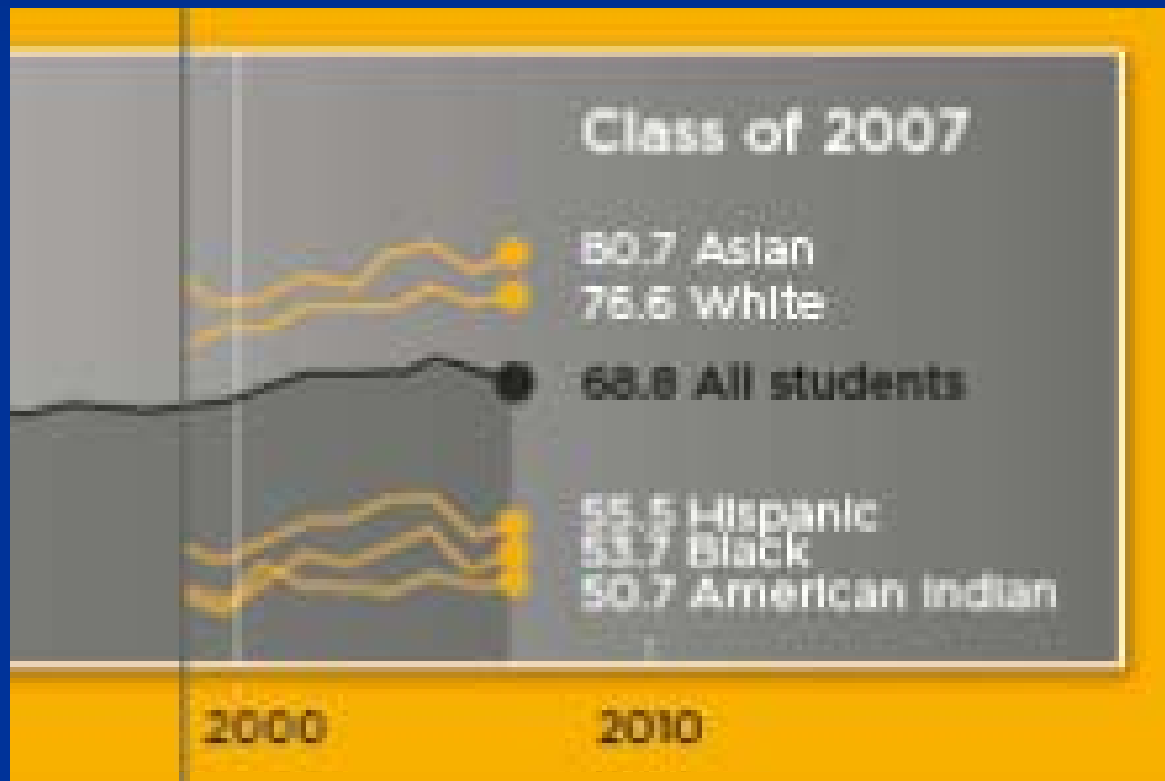
High School Graduation Rates – 2

Figure 1: High School Graduation Rate for U.S., 1950-2008, as estimated by different methods using different data sets.
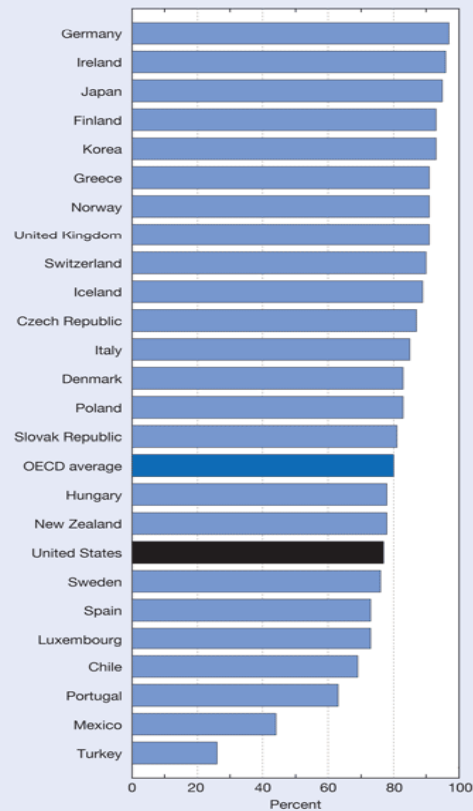
High School Graduation Rates - 3

Class of 2007

80.7 Asian
76.6 White

68.8 All students

55.5 Hispanic
53.7 Black
50.7 American Indian

1960   1970   1980   1990   2000   2010

High School Graduation Rates - 4

Class of 2007

60.7 Asian
76.6 White

68.8 All students

55.5 Hispanic
53.7 Black
50.7 American Indian

2000   2010

Comparative High School Graduation Rate

Figure 1-14
High school graduation rates, by OECD country: 2008

Country	
Germany	
Ireland	
Japan	
Finland	
Korea	
Greece	
Norway	
United Kingdom	
Switzerland	
Iceland	
Czech Republic	
Italy	
Denmark	
Poland	
Slovak Republic	
OECD average	
Hungary	
New Zealand	
United States	
Sweden	
Spain	
Luxembourg	
Chile	
Portugal	
Mexico	
Turkey	

Percent: 0   20   40   60   80   100

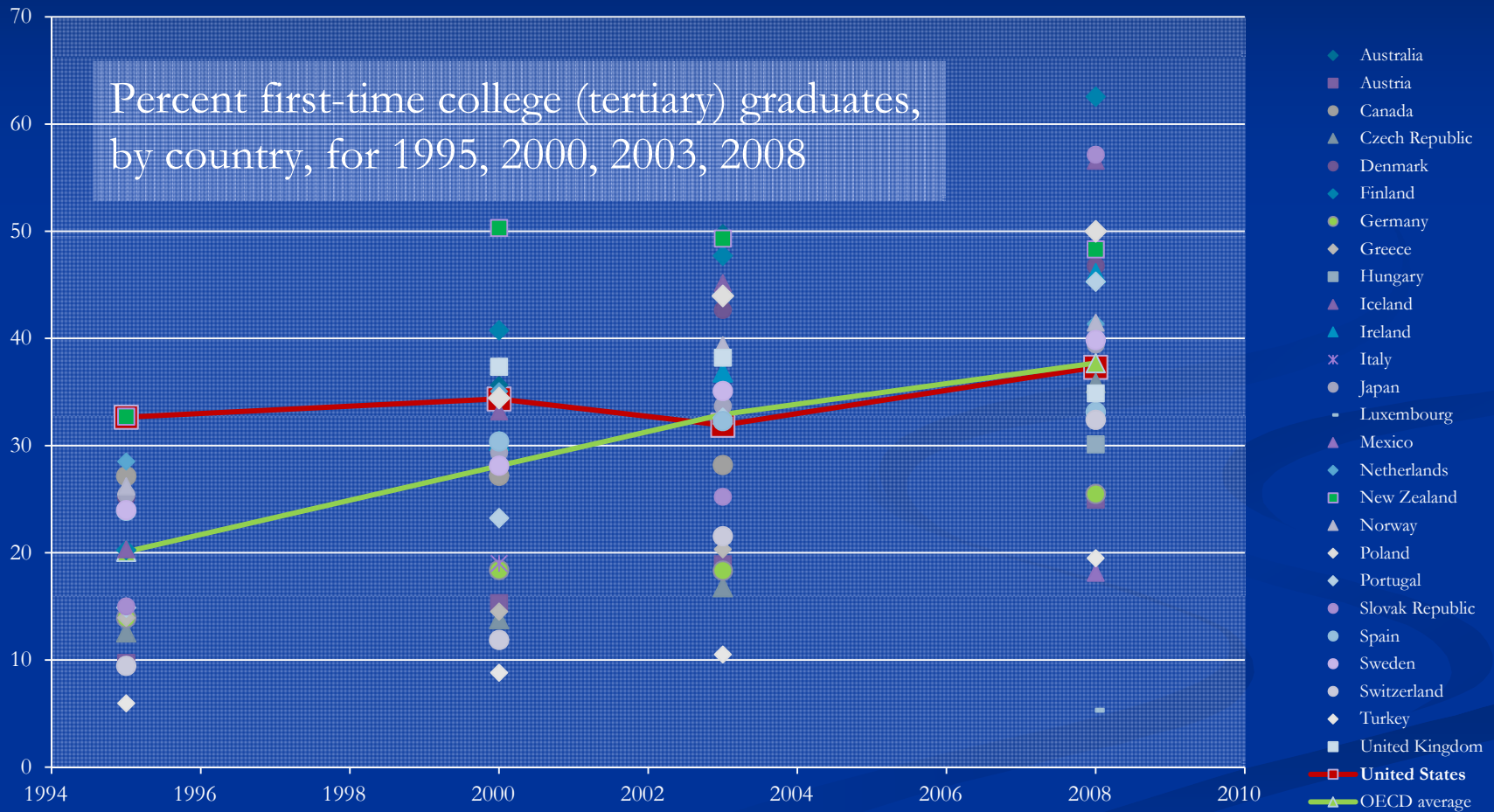OECD = Organisation for Economic Co-operation and Development

NOTES: High school graduation rate is percentage of population at typical upper secondary graduation age (e.g., 18 years old in United States) completing upper secondary education programs. OECD average based on all OECD countries with available data. To generate estimates that are comparable across countries, rates are calculated by dividing the number of graduates in the country by the population of the typical graduation age.

SOURCE: OECD, *Education at a Glance: OECD Indicators 2010* (2010).

Science and Engineering Indicators 2012

Comparative College Graduation Rate

Percent first-time college (tertiary) graduates, by country, for 1995, 2000, 2003, 2008

Legend:
- ◆ Australia
- ■ Austria
- ● Canada
- ▲ Czech Republic
- ● Denmark
- ◆ Finland
- ● Germany
- ◆ Greece
- ■ Hungary
- ▲ Iceland
- ▲ Ireland
- ✳ Italy
- ● Japan
- - Luxembourg
- ▲ Mexico
- ◆ Netherlands
- ■ New Zealand
- ▲ Norway
- ◆ Poland
- ◆ Portugal
- ● Slovak Republic
- ● Spain
- ● Sweden
- ● Switzerland
- ◆ Turkey
- ■ United Kingdom
- ■ **United States**
- ▲ OECD average

Success in the 1970's and 80's

- Norm-referenced test performance – an evaluation indicator of successful inputs
  - "Lake Woebegone" – every state and district reported as performing above the national average
- Minimum competency test performance – attainment requirement for most students, e.g., high school graduation requirement
 - Often established around grade 8 content and skills; recognized as a low bar

Standards-based Proficiency

- Learning standards (ends) same for all students; different supports to achieve goals (means)
- All students included appropriately (e.g., accommodations)
  - Use of technology
- Transform system constraints
  - Feedback-enhanced/Differentiated instruction, (e.g., RtI to achieve general curriculum; early warning dropout risk systems)
  - Disruptive/reform approaches, (e.g., technology-enhanced delivery systems; market-driven schools; "bolder" comprehensive early childhood supports)

States' "Proficiency" drawbacks

- Notably different from each other and NAEP

Percent Proficient or above, Grade 4 Reading, by state, 2009
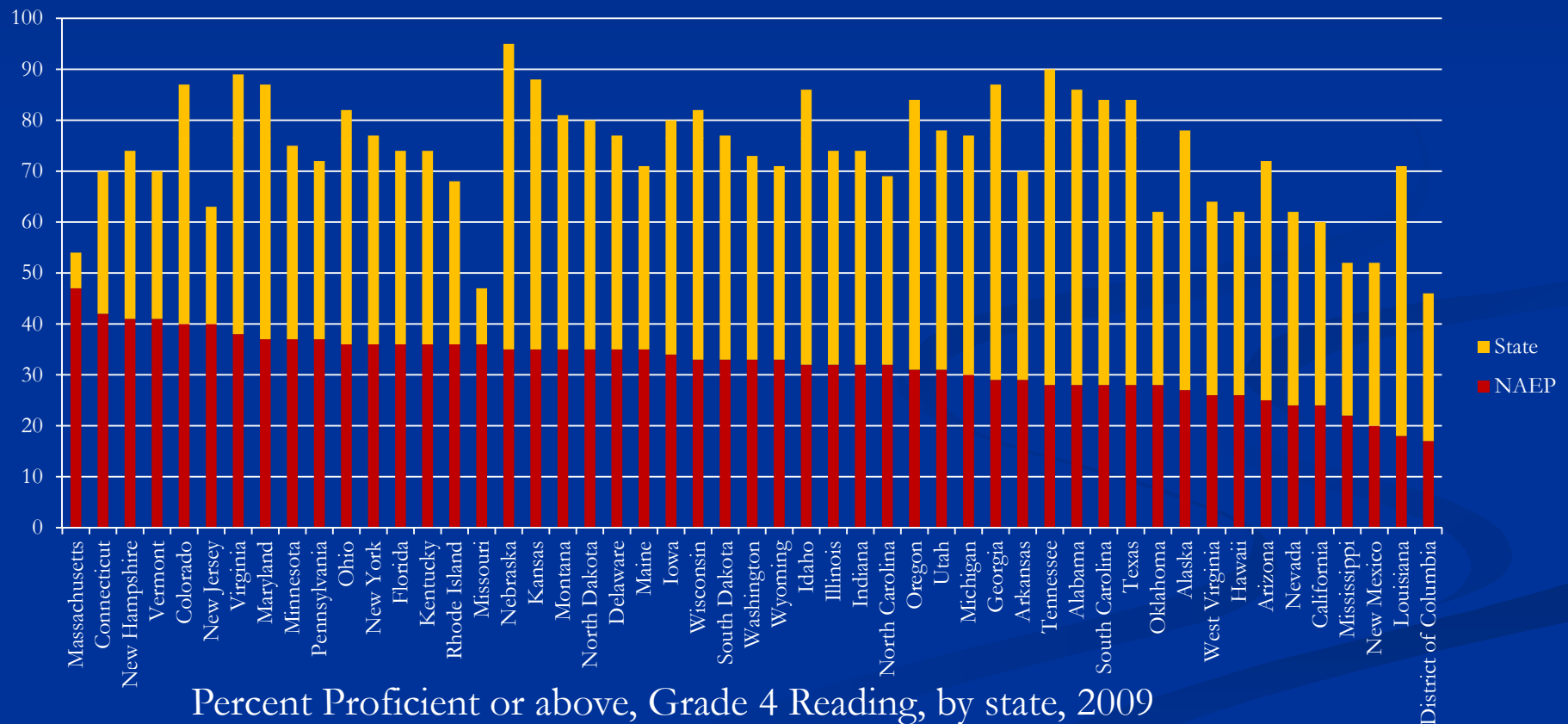
States' "Proficiency" drawbacks - 2

- High rate of high school graduates judged not ready for college
  - Placed into non-credit bearing initial course (e.g., remedial math, writing, English): About 55% nationally of students in 2-year institutions, about 25% of students in non-selective public 4-year institutions
  - Lower than desired college completion rate

Multi-state Collaboration

- Common content standards – *Common Core State Standards*
    - Sponsored by NGA and CCSSO
    - ELA and mathematics, K-12
    - Adopted by 46 states to date
- Common assessments of CCSS – common state assessment consortia (SBAC, PARCC for general population; NCSC, DLM for students with severe cognitive disabilities; WIDA, and newly announced Oregon for English language proficiency)

College and Career Ready = Success?

- College- and Career-Ready-anchored
  - Standards-based
  - Empirical (normative)

Recap: Success as attainment

- High school graduation and post-secondary indicators led to interest in K-12 achievement

- 1970's and 1980's gave rise to norm-referenced (not success for all) and minimum skills criterion-referenced testing (low bar of success for all)

- 1990's gave rise to standards-based definitions of proficiency for all (including subgroups), established by states

- 2010's gave rise to common content standards and attempts to develop common assessments linked to "college- and career-readiness" (proficiency) for all

Success as more than attainment

Four Views of School Performance

(Carlson, 2001; Gong, 2002)	Status	Change
Achievement	"Status": How high do students in this school score on state assessments?	"Improvement": Is the performance of successive groups increasing from one year to the next?
Effectiveness	"Growth": Are individual students learning as they progress from one grade to the next?	"Acceleration": Is the school becoming *more* effective or improving more rapidly?

Status, Growth, Improvement

Year	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
2008	A	B	C Status	D	E	F
2009	G	A	B	C	D	E
2010	H	G	A	B	C	D
2011	I	H	G	A	B	C
2012	J	I	H	G	A	B
2013	K	J	I	H	G	A
2014	L	K	J	I	H	G

Improvement

Longitudinal Growth

Rank the schools, give reasons

School 1

Grade	School Year		
	2000	2001	2002
3	55	56	54
4	60	61	62
5	66	67	65

School 2

Grade	School Year		
	2000	2001	2002
3	92	90	88
4	93	89	88
5	88	88	89

School 3

Grade	School Year		
	2000	2001	2002
3	65	70	71
4	66	70	72
5	63	65	68

School 4

Grade	School Year		
	2000	2001	2002
3	80	76	78
4	82	75	76
5	81	79	77

Status, Improvement, Growth

School 1

Grade	School Year		
	2000	2001	2002
3	55	56	54
4	60	61	62
5	66	67	65

	2000	2001	2002
Status	**60.3**	**61.3**	**60.3**
Improvem.		**1.0**	**(1.0)**
Growth		**6.5**	**5.0**

School 2

Grade	School Year		
	2000	2001	2002
3	92	90	88
4	93	89	88
5	88	88	89

	2000	2001	2002
Status	**91.0**	**89.0**	**88.3**
Improvem.		**(3.0)**	**(0.7)**
Growth		**(4.0)**	**(1.0)**

School 3

Grade	School Year		
	2000	2001	2002
3	65	70	71
4	66	70	72
5	63	65	68

	2000	2001	2002
Status	**64.7**	**68.3**	**70.3**
Improvem.		**3.7**	**2.0**
Growth		**2.0**	**0**

School 4

Grade	School Year		
	2000	2001	2002
3	80	76	78
4	82	75	76
5	81	79	77

	2000	2001	2002
Status	**81.0**	**76.7**	**77.0**
Improvem.		**(4.3)**	**0.3**
Growth		**(4.0)**	**1.0**

Status and Growth

Types of Performance

	Status	Change
Achieve-ment	Status	Improvement
Effective-ness	Growth	Acceleration

Status/Growth Combinations

High Status

Low Status

High/Low	High/High
Low/Low	Low/High

Low Growth   High Growth
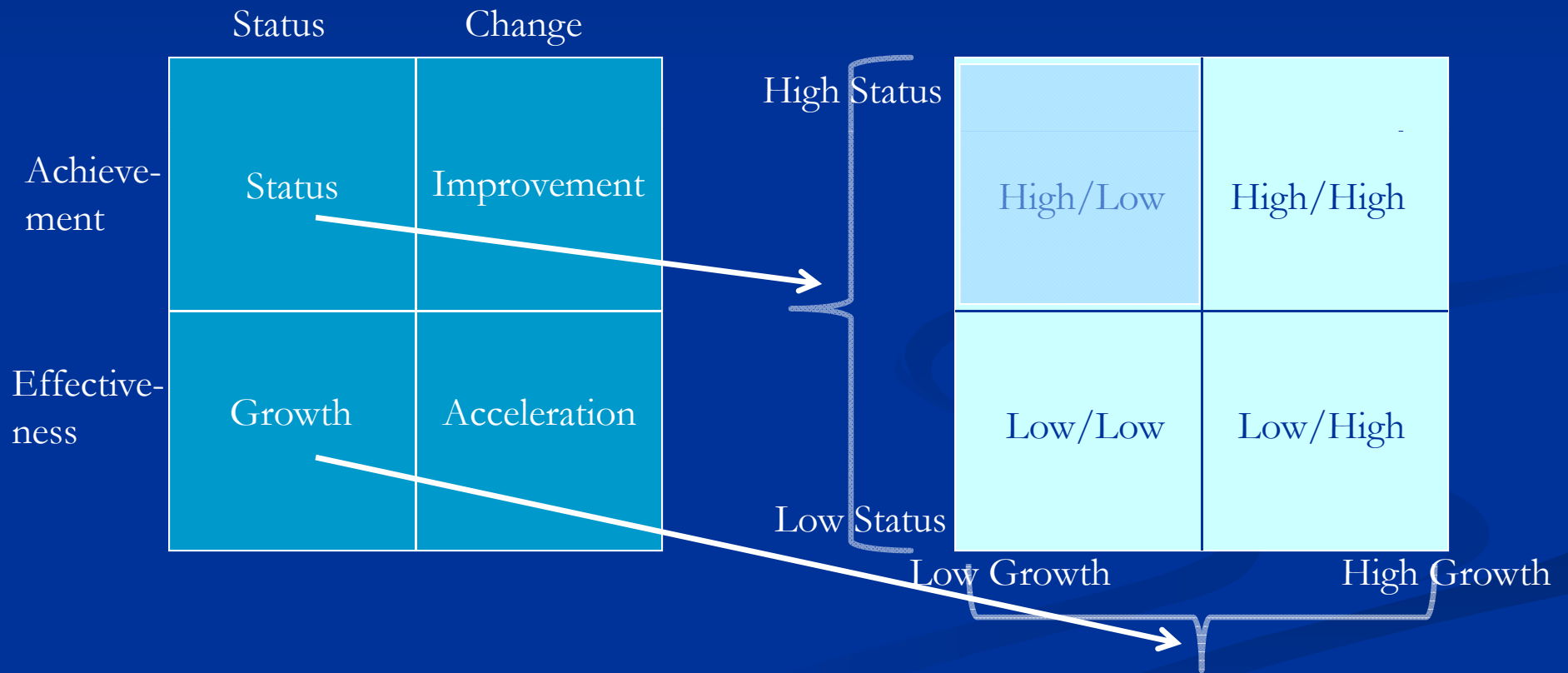
2006–2007 Rhode Island Math School Results:
Student Growth versus Student Achievement by Percent Minority
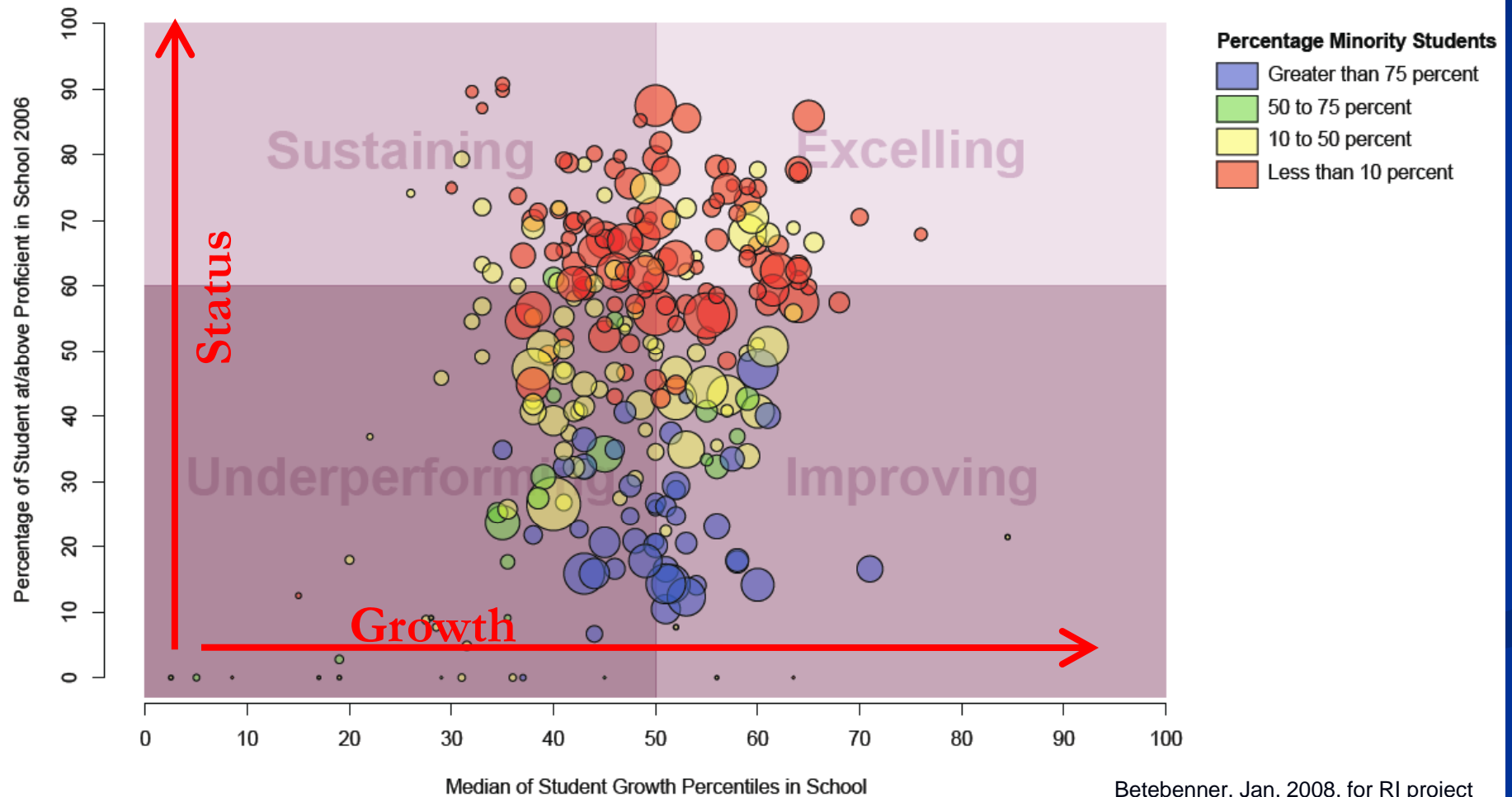
Betebenner, Jan. 2008, for RI project

Norm- and criterion-referenced interpretations over time
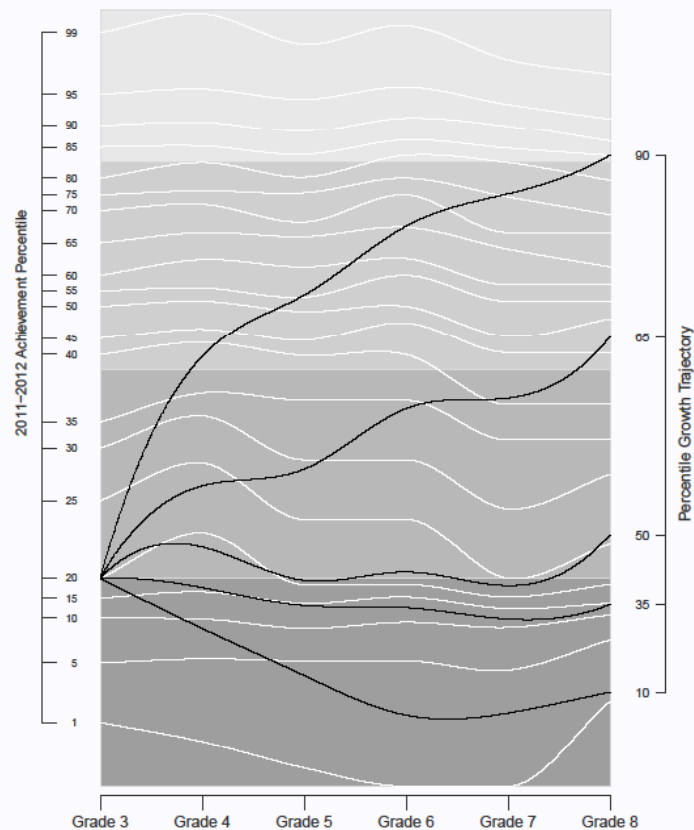
SGP projections for different starting achievement points
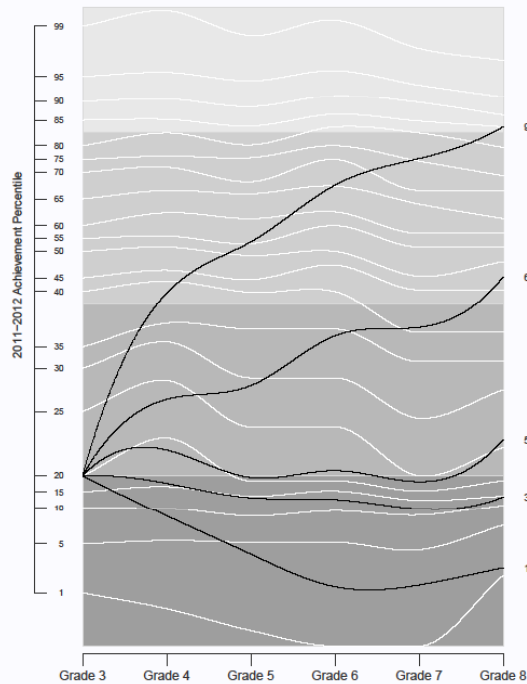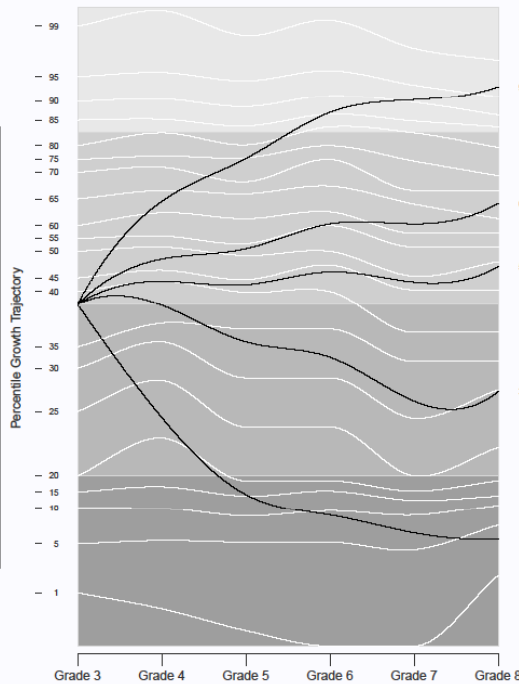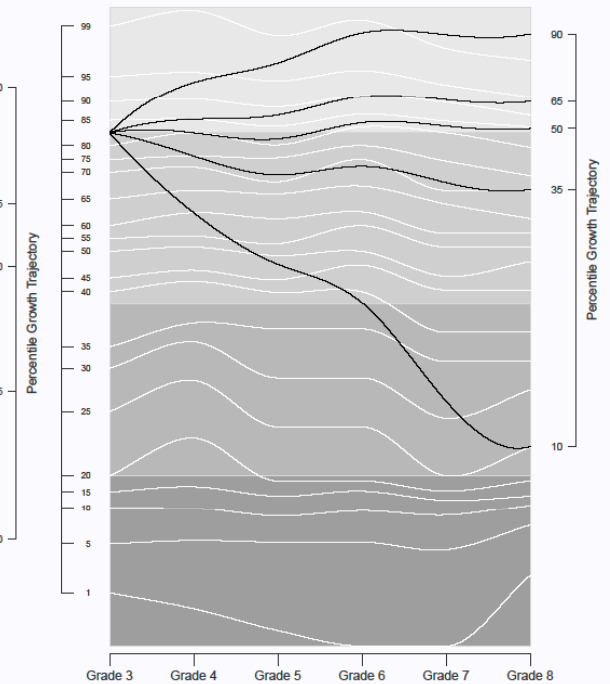
Applications of Growth

- **Value-added Growth**
  - Standardized, (de)contextualized?
- **Educator Evaluation**
  - Theory of action:
    - Effective teachers change students' growth/learning trajectories
    - How to determine "effective" teachers?
    - How to increase effectiveness of teachers?
    - How to distribute effective teachers? (obtain, place, retain)

Growth: Normative & to-Standards

- Definition of "success" for "all"
- What is "good" performance? For whom?
- What is "good enough" performance? For whom?

- Two general sources of referents:
  - Empirical (historical) performance
  - Values and theory

Needed R&D - 1

- Conceptual clarity and policy agreement
  - More comprehensive conceptions of "success" and "all"; new models/values of what to attend to
    - Growth; "learning progressions" for all
    - College-ready beyond academics; relation to career-ready
    - Desired "spread" of performance

Define desired growth (construct)

- Growth is increase in performance on the same thing, towards mastery.

- Growth is learning one topic and then learning a more advanced topic in a sequence of content.

- Growth is increase in expertise on the same thing (e.g., ability to apply or analyze due to more powerful mental model, increased fluency, greater independence).

- Growth is increase in integration across content and skills.

- Growth is increase of knowledge and skills outside the defined areas.

College- and Career-Ready

- College-ready: More than academic knowledge and skills
- Career-ready: How similar?

Domain	College	Career
Non-academic knowledge and skills		
Academic knowledge and skills		

College- and Career-Ready

- College-ready: More than academic knowledge and skills
- Career-ready: How similar?

Domain	College	Career
Non-academic knowledge and skills		
Academic knowledge and skills		

What is… What we desire

- What is (often normal distribution)
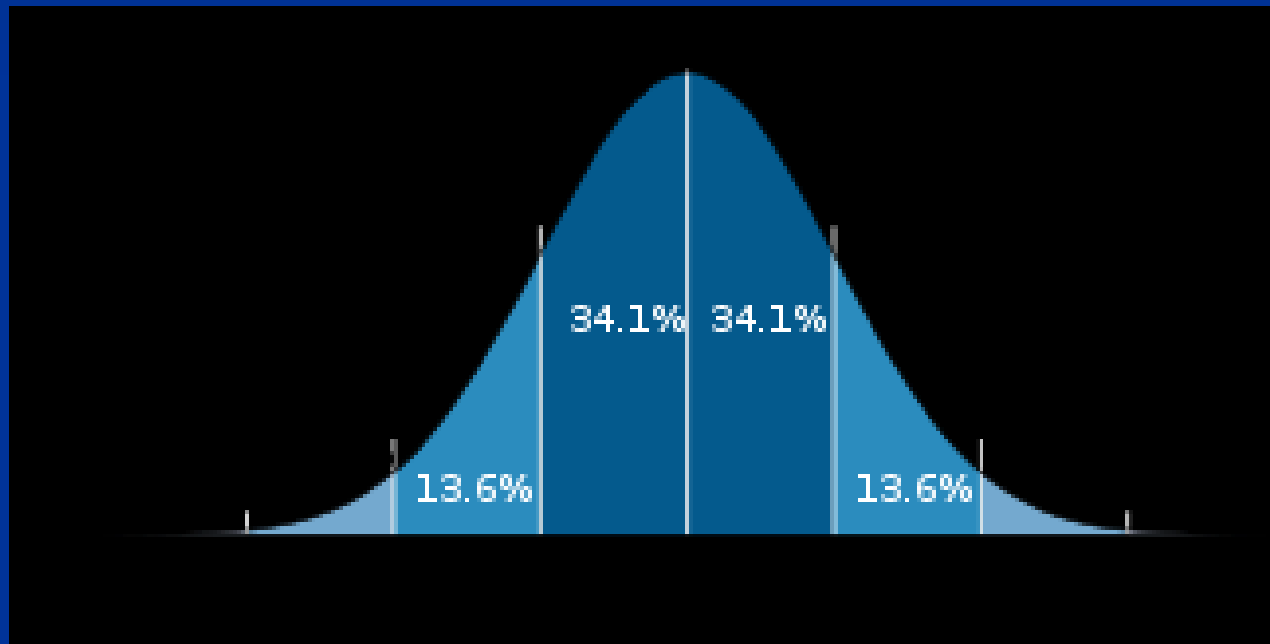
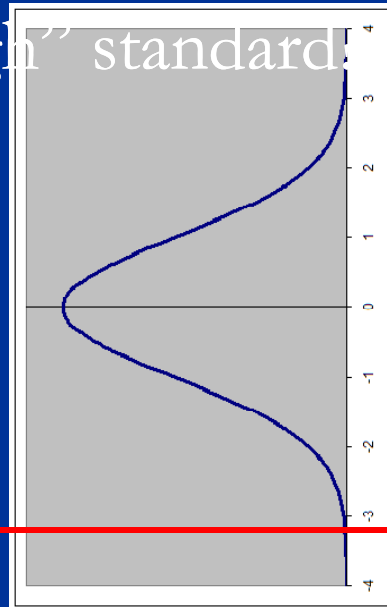# What is… What we desire - 1

■ What is (often normal distribution)
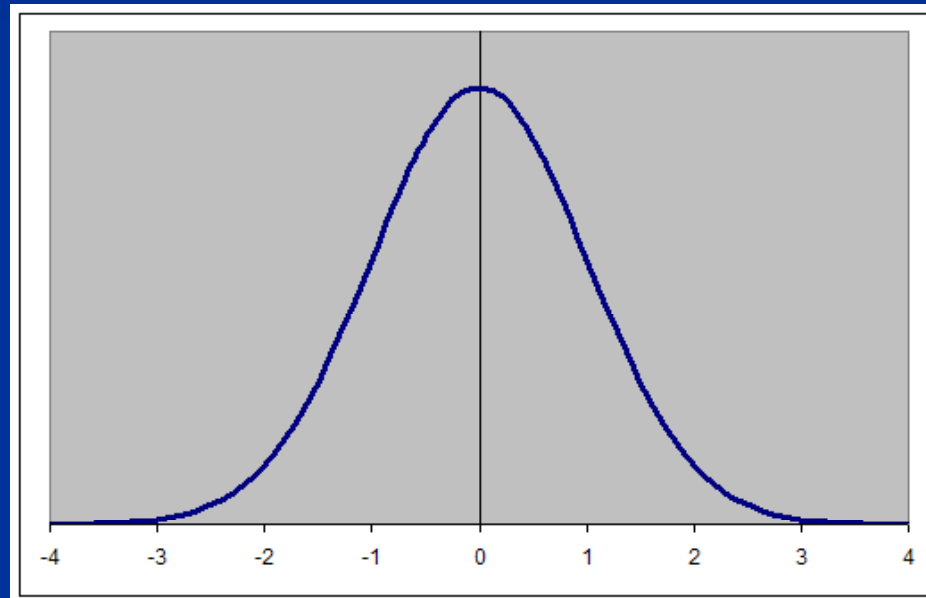
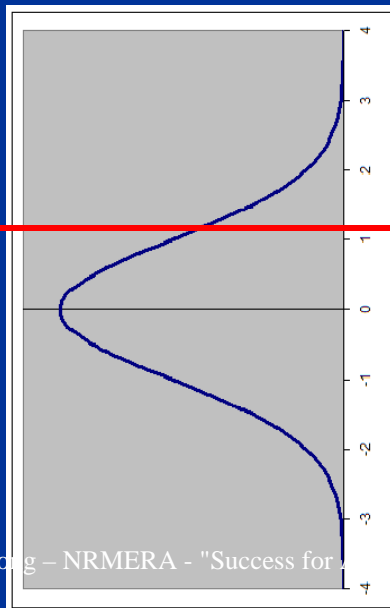# What is… What we desire – 2

- What do we desire variability of students to be in relation to each other and to a criterion-referenced "good enough" standard?
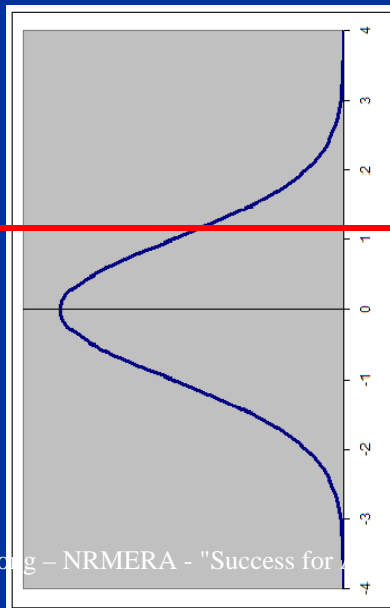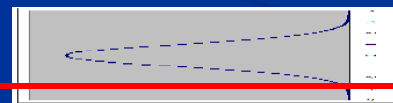
What is… What we desire – 3

- What do we desire variability of students to be in relation to each other and to a criterion-referenced "good enough" standard?

What is… What we desire – 4

- What do we desire variability of students to be in relation to each other and to a criterion-referenced "good enough" standard?
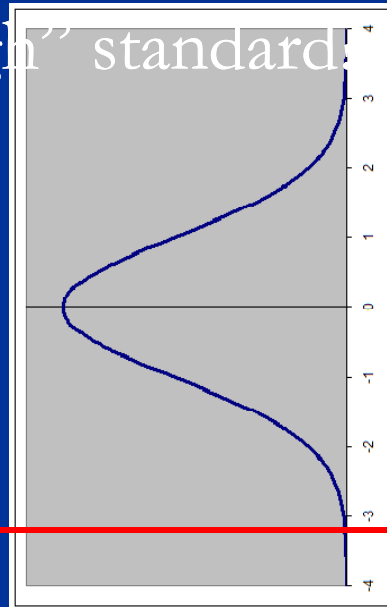
What is… What we desire – 5

- What do we desire variability of students to be in relation to each other and to a criterion-referenced "good enough" standard?
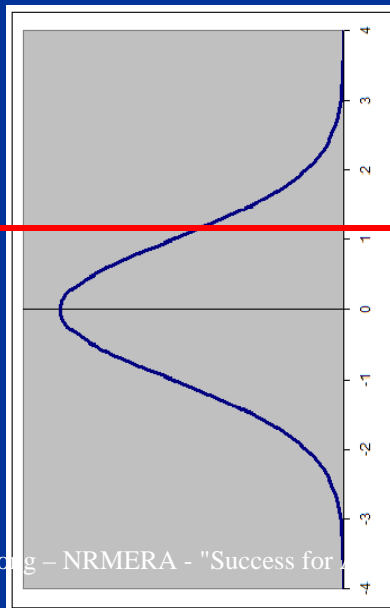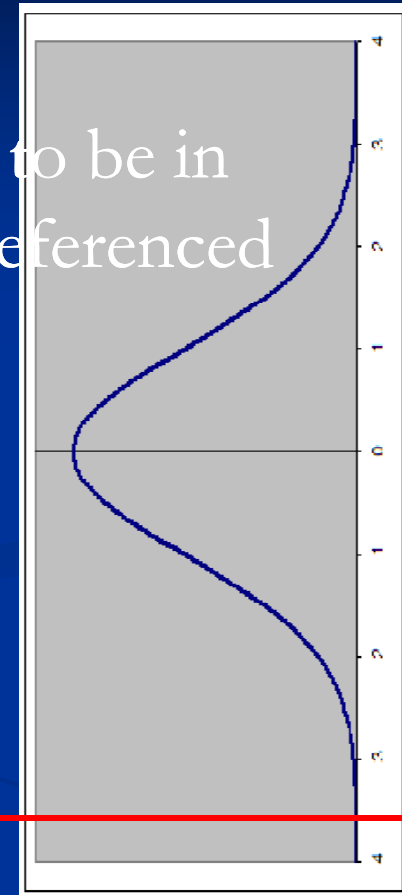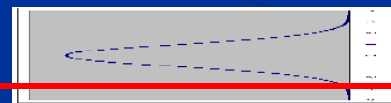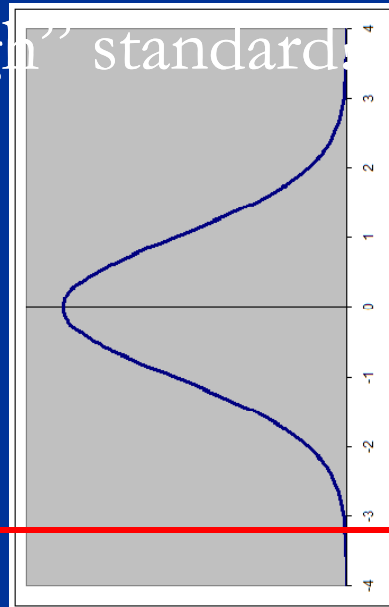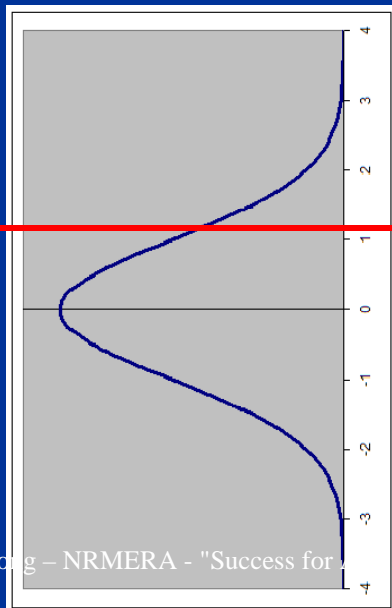
Needed R&D – 2

- New models and tools that provide for structurally better ways to achieve our goals
  - More powerful and relevant
    - Example: statistical models and studies that support dealing with greater contextualization and causal attribution
  - Disruptive – self-sustaining
  - Systemic – change the constraints
    - Example: Early warning (and action) systems
  - Broader communication of research with practice and policy

Knowledge to action

- CPRE

- Declarative vs. Procedural

- Generalized x Contextualized

- Purpose-driven

- Avenues of dissemination (audience, access, social)

Needed R&D – 3

- **Accelerate learning**
  - Move from description to diagnosis, from diagnosis to prescription, from prescription to implementation, from local implementation to scaled implementation
    - Break predictions of low performance
    - How can catch up work/keep up/move up work?
    - Feedback information for assessments to inform growth
    - Great teachers, great leaders
    - Intentional learners

Feedback Frameworks

- **Shute (2007)**
- Feedback purpose
- Cognitive (& affective, social) mechanisms & feedback
- Feedback specificity
- Features of feedback
    - Kulhavy & Stock (1989): verification, elaborative
- Feedback complexity/length
- Formative feedback as scaffolding
    - Feeding back, feeding up, feeding forward
- Goal-directed feedback and motivation
- Timing
- Feedback and other variables
    - Learner level, response certitude, goal orientation (Black & Wiliam: directive, facilitative), normative feedback

Feedback Types Arrayed Loosely by Complexity
(Shute, 2007 – computer-based assessment focus)

Feedback type	Description
No feedback	Refers to conditions where the learner is presented a question and is required to respond, but there is no indication as to the correctness of the learner's response
Verification	Also called *knowledge of results* (KR), or *knowledge of outcome*, it informs the learner about the correctness of her response(s), such as right/wrong or overall percentage correct.
Correct response	Also known as *knowledge of correct response* (KCR), it informs the learner of the correct answer to a specific problem with no additional information.
Try-again	Also known as *repeat-until-correct* feedback, it informs the learner about an incorrect response and allows the learner one or more attempts to answer the question.
Error-flagging	Also known as *location of mistakes* (LM), error-flagging highlights errors in a solution, without giving correct answer.
Elaborated	A general term, it refers to providing an explanation about why a specific response was correct, and it might allow the learner to review part of the instruction. It also might present the correct answer (see below for six types of elaborated feedback).
Attribute isolation	Elaborated feedback that presents information addressing central attributes of the target concept or skill being studied.
Topic-contingent	Elaborated feedback that provides the learner with information relating to the target topic currently being studied. This might entail simply re-teaching material.
Response-contingent	Elaborated feedback that focuses on the learner's specific response. It may describe why the answer is wrong and why the correct answer is correct. This does not use formal error analysis.
Hints/cues/prompts	Elaborated feedback that guides the learner in the right direction (e.g., strategic hint on what to do next or a worked example or demonstration). It avoids explicitly presenting the correct answer.
Bugs/misconceptions	Elaborated feedback that requires error analysis and diagnosis. It provides information about the learner's specific errors or misconceptions (e.g., what is wrong and why).
Informative tutoring	The most elaborated feedback (from Narciss & Huth, 2004), this presents verification feedback, error-flagging, and strategic hints on how to proceed. The correct answer is not usually provided.

Educator Evaluation Systems & Feedback

- Current RTTT educator evaluation systems focus on "sorting" teachers into a few categories
  - A lot of information is aggregated into highly reliable but not very useful for directing improvement, i.e., giving feedback at Shute's "verification" level
    - Also many other conditions not useful for improvement (e.g., timing, motivation, agental/social responsibilities)
      - Very much like student scores in annual summative state assessment
- Educator systems to improve would include evaluation designed to give feedback to help improve (e.g., consider Shute's other "higher complexity feedback types)

May we each have success in our learning to research, conducting of research, and providing research to benefit others so that
more students may be successful.

For more information:

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- Slide 11, High school graduation rate, birth cohort 1900-1980, graphic from: Heckman, J. J. & LaFontaine, P.A. (2007). The American High School Graduation Rate: Trends and Levels. IZA DP No. 3216. Bonn, Germany: Forschungsinstitut

- zur Zukunft der Arbeit / Institute for the Study of Labor.

- Slide 12, High school graduation rates, four sources: Murname, R. J. (2011). U.S High School Graduation Rates: Patterns and Explanations. Downloaded from http://www.newyorkfed.org/research/education_seminar_series/Murnane_12_05_11.pdf.

- Slide s13 and 14, Declining high school graduation rate, and racial/ethnic subgroup differences: in "Closing the gap between high school and college," published by the Blackboard Institute (no date). Cited source: *Diplomas Count,* 2010, p.23. Downloaded from http://www.blackboard.com/CMSPages/GetFile.aspx?guid=6c5e9639-db0e-4caf-8f50-7d801c4969af.

- Slide 15, High school graduation rates, 2008, OECD countries, source: of graphic: Science and engineering indicators, 2012, citing data source: OECD *Education at a Glance*, OECD Indicators (2010)

- Slide 16, Tertiary (college) completion rates, OECD countries, 1995, 2000, 2003, & 2005: table by author; data from http://nces.ed.gov/pubs2012/2012026/tables/table_23.asp

- Slide 19, States' "Proficiency" drawbacks, , graph by author; data from http://nces.ed.gov/nationsreportcard/studies/statemapping/2009_naep_state_table.asp; SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2009 Reading and Mathematics Assessments. SY 2008-09 Consolidated State Performance Report Part I (retrieved on 01/18/2011 from http://www2.ed.gov/admins/lead/account/consolidated/sy08-09part1)

- Slide 20: college remediation rates: see, for example, Attewell, P. Lavin, D., Thurston, D. & Levey, T. (2006). New Evidence on College Remediation. *The Journal of Higher Education, Vol. 77, No. 5 (September/October 2006). Downloaded from* http://www.gse.uci.edu/person/domina_t/docs/JHE%20remediation%20final.pdf.

Acknowledgements and References - 2

- Slide 21:, for information on the *Common Core State Standards,* see www.corestandards.org/. For information on the federally funded assessment development consortia, see: U.S. Department of Education - http://www2.ed.gov/programs/racetothetop-assessment/awards.html; PARCC - http://www.parcconline.org/; SBAC - http://www.smarterbalanced.org/; DLM - http://dynamiclearningmaps.org/; NCSC - http://www.ncscpartners.org/ ; WIDA - http://www.wida.us/assessment/assets.aspx; ELP assessment announced 10/12, with Oregon as lead state, http://www2.ed.gov/programs/eag/awards11.html.

- Slide 25, Four views of school performance: Carlson, D. (2001). Focusing State Educational Accountability Systems: Four methods of judging school quality and progress. Downloaded from: http://nciea.org/publications/Dale020402.pdf; Gong, B., et al. (2002). Designing School Accountability Systems: Towards a framework and process. http://programs.ccsso.org/content/pdfs/designing_school_acct_syst.pdf.

- Slides 27, and 28 Rank the schools example: developed by Richard Hill, personal communication.

- Slide 30, Status and Growth: from Betebenner, D.

- Slides 31-32, Norm- and criterion-referenced interpretations of growth, graphic from Betebenner, D. For an excellent discussion, see Betebenner, D.

- Slide 37, College-ready – more than academic knowledge and skills, from Conley, D. T. (2007). *Redefining College Readiness.* Eugene, OR: Educational Policy Improvement Center.

- Slide 37, College- and Career-ready – How similar?, graphic from Center for Assessment RILS 2013 development group , especially C. Domaleski.

- Slide 46, Knowledge to action: CPRE analysis personal communication.

- Slides 48-49, Feedback Frameworks: Shute, V. J. (2007).   Focus on formative feedback. ETS Research Report RR-07-11. Princeton, NJ: Educational Testing Service.