Texas Public Education Outcomes

TEXAS COMMISSION ON PUBLIC SCHOOL FINANCE

JANUARY 23, 2018
What do we want our education system to produce?

A split focus on Inputs vs Outcomes:

TEC §4.001: “The mission of the public education system of this state is to ensure that all Texas children have access to a quality education that enables them to achieve their potential and fully participate now and in the future in the social, economic, and educational opportunities of our state and nation.”

Of 11 statutory objectives, the following reference outcomes:

- **OBJECTIVE 2**: Students will be encouraged and challenged to meet their full educational potential.
- **OBJECTIVE 3**: Through enhanced dropout prevention efforts, all students will remain in school until they obtain a high school diploma.
- **OBJECTIVE 5**: Educators will prepare students to be thoughtful, active citizens who have an appreciation for the basic values of our state and national heritage and who can understand and productively function in a free enterprise society.
- **OBJECTIVE 7**: The state's students will demonstrate exemplary performance in comparison to national and international standards.
What do we want our education system to produce?

TEC §4.002. PUBLIC EDUCATION ACADEMIC GOALS:

- **GOAL 1**: The students in the public education system will demonstrate exemplary performance in the reading and writing of the English language.
- **GOAL 2**: The students in the public education system will demonstrate exemplary performance in the understanding of mathematics.
- **GOAL 3**: The students in the public education system will demonstrate exemplary performance in the understanding of science.
- **GOAL 4**: The students in the public education system will demonstrate exemplary performance in the understanding of social studies.
What do we want our education system to produce?

Summary:

◦ We want graduates
◦ Who are prepared to be engaged citizens
◦ Who are prepared to be productive
How can we evaluate whether our system is doing this?

We have to find measurements that are proxies for these concepts.

For the outcomes of the K-12 system, we focus on:

- High School graduation
- College, Career, or Military Readiness (CCM-R) of those graduates
- And ultimately:
  - College (2-year, 4-year) completion
  - Employment

For “all Texas children”

Near term goal: 60x30TX
How do we measure CCM-Readiness? HB22 provides the path

**College Ready**
- Meet criteria on AP/IB exams
- Meet TSI criteria (SAT/ACT/TSIA) in reading and mathematics
- Complete a college prep course offered by a partnership between a district and higher education institution as required from HB5
- Complete a course for dual credit
- Complete an OnRamps course
- Earn an associate’s degree
- Meet standards on a composite of indicators indicating college readiness

**Career Ready**
- Earn industry certification
- Be admitted to post-secondary industry certification program

**Military Ready**
- Enlist in the United States Armed Forces
Certain Details: 74 Industry Certifications

2017-18 Final List of Industry-Based Certifications
A-F Accountability System
Student Achievement Domain

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<th>#</th>
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1/23/2018
Why do we think College, Career, and Military Readiness (CCM-R) measures are valid?

• There is a relationship between the performance of students on these measures and what they ultimately go on to do, in terms of longer term life outcomes (including employment and college completion)

• Specifically: The college readiness benchmarks on SAT (1110 or higher on Reading/Math) and ACT (24 or higher composite) have been shown to correlate with roughly a 75% chance of passing freshman level college courses
How do we evaluate the whole system?

• We want graduates who are prepared to be productive citizens, and we have a method to approximate how well we are doing that.
• But K-12 is 13 years of public schooling, starting with 5 year-olds.
• We don’t think of 6 year-olds as prepared for college, career, or the military. So how do we evaluate outcomes before graduation?
• Texas has developed a set of standard expectations, describing what students should know and be able to do by grade level for English, math, science, and social studies: the Texas Essential Knowledge & Skills (TEKS)
• Each successive grade level is more advanced, leading to ultimate HS graduation standards that are intended to ensure all students are CCM-R
What is an Example of a Standard?

- Third Grade Math, Standard 4.F
- **Strand:** Number and operations.
- **Knowledge & Skill:** The student applies mathematical process standards to develop and use strategies and methods for *whole number computations* in order to solve problems with efficiency and accuracy.
- **The student is expected to:**
  - (F) recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts

$3 \times 7 = 21$
Standards are Vertically aligned:

- For each set of standards, there is an issue of scope and depth – for students of varying age levels, what breadth of skills should be known, and how well should they be known – building up to CCM-R for all students at graduation.
- Teaching these standards is extremely technical work, and teachers have a job that requires tremendous skill and expertise.
The State of Texas Assessments of Academic Readiness (STAAR) are designed to tell us how well our students know grade level knowledge & how well they can demonstrate grade level skills.
Masters Grade Level
- Performance in this category indicates that students are expected to succeed in the next grade or course with little or no academic intervention. Students in this category demonstrate the ability to think critically and apply the assessed knowledge and skills in varied contexts, both familiar and unfamiliar.
- For students at the end of high school, this is associated with a 75% chance of passing freshman level college courses.

Meets Grade Level
- Performance in this category indicates that students have a high likelihood of success in the next grade or course but may still need some short-term, targeted academic intervention. Students in this category generally demonstrate the ability to think critically and apply the assessed knowledge and skills in familiar contexts.
- For students at the end of high school, this is associated with a 60% chance of passing freshman level college courses.

Approaches Grade Level
- Performance in this category indicates that students are likely to succeed in the next grade or course with targeted academic intervention. Students in this category generally demonstrate the ability to apply the assessed knowledge and skills in familiar contexts.
- This is the passing standard applied by the state to students who take the EOCs, and for students on the 5th and 8th grade in reading & math STAAR.
Abbreviations:
CR = College Readiness
TSI = Texas Success Initiative
Student Achievement and Attainment Summary

Spring 2017 - “Meets” Standard

- **Kindergarten Reading-Reading**: 60%
  Based on local district assessments
- **3rd Grade Reading**: 45%
  STAAR “Meets” Grade Level or Above
- **3rd Grade Math**: 48%
  STAAR “Meets” Grade Level or Above
- **8th Grade Reading**: 49%
  STAAR “Meets” Grade Level or Above
- **8th Grade Math**: 44%
  STAAR “Meets” Grade Level or Above
- **SAT/ACT Passing**: 16%
  2016 Cohort Attaining College Ready Score
- **High School Completion**: 89%
  2016 Cohort graduating within 4 years
- **College Enrollment**: 56%
  2015 Cohort Enrolled within 1 yr at a Texas IHE
- **Postsecondary Completion**: 24%
  2009 Cohort 2-or-4-year TX Postsecondary Completion within 6 years
* The Approaches Grade Level standard was raised (made more difficult) in 2016.
The Approaches Grade Level standard was raised (made more difficult) in 2016.

* These 8th Grade Math numbers include only 8th graders taking 8th grade math. The percentages do not include those students taking Algebra I in 8th grade, whose performance tends to be higher. Including those students, 8th grade students Meeting Grade Level is closer to 50%. That consolidated data will begin being published Fall 2018.
Four-Year Graduation Rates, by Race/Ethnicity, Texas Public Schools

2014-15 Graduation Rates

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<thead>
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<th>Rank</th>
<th>State</th>
<th>Rate</th>
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<tr>
<td>1</td>
<td>Iowa</td>
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<td>2</td>
<td>New Jersey</td>
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<td>Alabama</td>
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<td>Texas</td>
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<tr>
<td>5</td>
<td>Nebraska</td>
<td>88.9%</td>
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National Comparison
1996-2016: SAT/ACT Performance By Socioeconomic Status

% Above "Passing" on SAT/ACT

- Non Economically Disadvantaged
  - 6.1 point rise
  - 31% increase

- All Students In Texas
  - 1.8 point rise
  - 45% increase

- Economically Disadvantaged
1996-2017: Rise In Student Poverty Rates in Texas

Selected Student Demographics over Time

- % Economically Disadvantaged
- % English Language Learner

1996 Econ Dis. %
SAT/ACT Performance Among Certain Student-Populations
1996 - 2016

% Above "Passing" on SAT/ACT

- White Students
- All Students In Texas
- Hispanic Students
- African American Students


0.0% 5.0% 10.0% 15.0% 20.0% 25.0% 30.0% 35.0%
College Enrollment Rates

Enrollment in Public & Private TX Institutions of Higher Education by Year of HS Graduation

<table>
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<tr>
<th>Year</th>
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<th>High School Graduates in Two-Year College</th>
<th>High School Graduates in Four-Year College</th>
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<td>53.3%</td>
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<tr>
<td>2014</td>
<td>50.6%</td>
<td>29.4%</td>
<td>21.2%</td>
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</table>
How Does Texas Compare to Other States?
4th Grade Math NAEP

- Texas rank vs other states (right)
- Average of all students over time (below)
- Texas student-groups over time (below right)

* Rank of states only, excludes DC, Dept of Def, and territories
### 8th Grade Math NAEP

- Texas rank vs other states (right)
- Average of all students over time (below)
- Texas student-groups over time (below right)

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#### Math Grade 8 - Average Score

**Graphs showing trends and comparisons for different states and demographics over time.**

1/23/2018
4th Grade Reading NAEP

- Texas rank vs other states (right)
- Average of all students over time (below)
- Texas student-groups over time (below right)

<table>
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**8th Grade Reading NAEP**

- Texas rank vs other states (right)
- Average of all students over time (below)
- Texas student-groups over time (below right)

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**Reading Grade 8 - Average Score**

- Texas-White
- US-White
- Texas-Hispanic
- US-Hispanic
- Texas-Black
- US-Black

1/23/2018
NAEP State Rankings - 2015
Absolute vs Demographically Adjusted

See:
http://educationnext.org/how-do-states-really-stack-up-on-the-2015-naep/
NAEP State Rankings - 2013
Absolute vs Demographically Adjusted

See:

2013 Per Pupil Spending
Per US Census

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<td>New York</td>
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<tr>
<td>Texas</td>
<td>$8,299</td>
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How do we differentiate performance within Texas?

- HB22 will allow for clear differentiation, but won’t be initially available for campuses until August 2018.
- In the meantime, it is possible to analyze Student Achievement relative to Poverty to see performance outliers.
Elementary Campus “Performance”

% of Students Meeting Grade Level on the STAAR

% of Students Eligible for Free/Reduce Lunch

2015-2016 School Year
District “Performance”

% of Students Meeting Grade Level on the STAAR vs. % of Students Eligible for Free/Reduce Lunch

2015-2016 School Year
The relationship between funding and performance: limitations

• Campus level funding information is imprecise in Texas because of different approaches to time & effort allocations in managerial accounting.
  • Example to Consider: IT Services

• District level financial information is highly accurate, and allows for comparisons.
District "Performance" Relative to Per Student Funding for Below Average Taxation Districts & Above Average Student Poverty Districts*

State, Local and Federal Revenue per Student (All Funds) for the 2015-2016 School Year

Academic Performance for only those districts and charters with:
1) maintenance and operations (M&O) local property tax rates at or below the state average of $1.0812 per $100 of taxable property valuation (which includes all charters, funded at that average), and
2) population of economically disadvantaged students higher than state average of 59%

382 districts & charters featured
What do district budgets tell us?

Texas financial accounting system tracks spending by functional area. Examples:

- Instruction
- Curriculum/Staff Development
- School Administration
- General Administration
- Plant Maintenance/Operations
- Data Processing Services

Despite much study, no clear relationship seems to exist between total dollars spent in these functional budget categories and student outcomes.
What do district budgets tell us?

It’s not as simple as total dollars in a budget functional area. Instead, it’s programmatic choices & execution quality of that spending that matter the most.

- It appears that the programmatic choices made by districts and the quality of execution of those choices at the campus level – with a special focus on quality instruction – drive outcomes far more than macro-level budgetary decisions.
- Consider: The difference between total spent on staff development vs the content & approach of the staff development pursued.
What are some promising practices worth exploring?

- Comprehensive Teacher Quality & Placement Initiatives
- Focused Instructional Leadership Initiatives
- Quality Early Learning Programs
- Certain Integrated, Coherent Instructional Materials (Blended & Traditional)
- Increased Summer Learning Opportunities
- School Systems transforming into Systems of Great Schools:
  - Certain School Models (Primarily High School)
  - Intentional School Launch Practices
  - Proven Operator Replications
Teacher Quality

- Teachers are the most important in-school factor impacting student outcomes. Teachers are also the biggest budget driver in Texas.
- Teaching represents $28B per year of spending in Texas, roughly 48% of all K12 spending.
- Increases in funding that are applied to teaching can do some combination of:
  - Increase the number of teachers
  - Increase pay for all
  - Increase pay for some
- Districts respond to funding changes differently given local context
  - But those responses are built around certain default system behaviors. Can finance system components change those behaviors?
District Funding Responses: Teacher Quality

• Increasing the number of teachers: class size reduction
  • Consider effect-size research*: 0.21

* Note these effect sizes are not typically based on random control trials, and subject to some caution on interpretation.

See: https://visible-learning.org/hattie-ranking-influences-effect-sizes-learning-achievement/
District Funding Responses: Teacher Quality

• Increasing pay for all

• Consider the default salary schedule:

Sample District Salary Schedule:

<table>
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<tr>
<th>Step</th>
<th>YRS EXP</th>
<th>12M STEP RATE</th>
<th>10.5M STEP RATE</th>
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District Funding Responses: Teacher Quality

- Increasing pay for some
  - Connecting school funding changes to teacher quality would require compensation systems based on something beyond just years of experience
Early Learning

- 90% of brain development occurs before age 5
- TEA data shows that of students eligible for Pre-K in Texas, those who participated in Pre-K in 1999 are persisting in college at 6.8% higher rates than those who were eligible and did not
- Districts respond to funding changes differently given local context
  - But those responses are built around certain default system behaviors.
  - Current funding formulas include a high school allotment on top of full ADA funding for high school students. By comparison, PreK has only a half ADA allocation, and no extra allotment.
Coherent Curriculum

• Quality instructional materials & approaches are incredibly impactful
• Random control trial results:

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<th>Curriculum comparisons</th>
<th>RCT Effect size</th>
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<td>Most effective preschool curricula</td>
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• Districts are provided IMA for materials, but the content/quality of those materials is unlinked to any systemic incentives.
• A new state law sets up an Instructional Materials Portal, to list materials and information about their quality. It should go live in 2019.
Summer Learning

• Typical days of instruction in Texas is roughly 180. Most Asian nations have 220+ days of instruction.
  - Consider effect-size research: Summer Vacation -0.02
• State law recently changed instructional requirements to be based upon minutes, but funding is still based on daily attendance that is effectively capped at that instructional minute floor.
• Districts respond to funding changes differently given local context
  - But those responses are built around certain default system behaviors
  - Adding (or reducing) instructional days is not linked to any differences in funding formulas, but those changes are linked to differences in local costs.
A System of Great Schools

• Given the necessity to focus on execution quality as opposed to broad programs, it is very useful to think of a “whole school approach” as the unit of change:
  • An individual school (or network of like-schools) can control (among many other factors):
    • Instructional Materials
    • Instructional Leadership & Teacher Quality
    • Summer Learning Opportunities
  • and can influence other important factors – like peer effects from students – through a comprehensive approach to school culture

• Tiered accountability (A-F) is a precondition to identifying, and then replicating, high performers

• Districts could respond to funding incentives based around schools as the unit of change:
  • Consider recently adopted SB1882 that encourages whole school-level partnerships. Does this or something similar create finance system incentives to replicate “A” campuses?