Show Me the Data

The Power of Data in Driving Education Change

Presented by

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Education Equals Economics

Michael & Susan Dell Foundation
Why Are We Here?

• At Michael & Susan Dell Foundation, we use metrics-based methodologies and analysis to identify where our resources can produce both immediate results and long-term systemic changes in education.

• We have developed a very effective partnership with E³ Alliance to do this in Central Texas.

• We want others to be a part of it – not just here but around the state and country!
Webinar Goals

• Share our excitement with funders and influencers about supporting education systems change based on objective data
• Raise understanding of the power of the Texas Education Research Centers
• Demonstrate real-world applications of ERC data analysis to drive systems change in education
E³ Alliance is a Catalyst For Educational Change in Central Texas

Mission

E³ Alliance uses **objective data** and focused **community collaboration** to align our education systems so all students succeed and lead Central Texas to **economic prosperity**

E³ serves as the Central Texas regional P-16 Council

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What We Don’t Do

• Run school programs
• Provide direct services
• Write curriculum
• Make decisions that school boards or leaders make for their districts

Instead, we are a catalyst for positive change in education

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E³ Alliance Model for Change

Using Information to Change Practice

- TRACK 1: Data Evaluation & Research
- TRACK 2: Community Engagement
- TRACK 3: Systemic Alignment

Regional Strategic Plan

Building Community Will for Change

- Improved Student Outcomes
- Economic Prosperity
E³ Alliance Model for Change

**TRACK 1**
Data Evaluation & Research

**TRACK 2**
Community Engagement

**TRACK 3**
Common Agenda
- Changed Practices
- Systems Change

- Improved Student Outcomes
- Economic Prosperity

**Bridging disconnects;**
**Overcoming barriers;**
**Aligning resources and practices**
Systemic Alignment

**Common Agenda**
- Data Insights
  - Research issue
  - Recruit stakeholders
  - Convene community
  - Build community will
  - Set targets

- Informed Decisions
  - Share measures
  - Cultivate resources through collaboration
  - Identify innovation & promise
  - Align practices

- Shared Commitment
  - Institutional commitment
  - Build policy support for proven strategies
  - Scale Successes

**Changed Practices**

- Evaluate progress
- Renew Commitment

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Driving Systems Change through Action Research – What Does that Mean?

- Making readily available aggregate data more accessible & understandable
Central Texas Income Distribution by School District *10 Years Ago*
District Income Levels *Last Year*
Driving Systems Change through Action Research – What Does That Mean?

- Making readily available aggregate data more accessible & understandable
- Trending data over time
Achievement Gaps Among 8th Graders Persist

8th Grade Reading TAKS Scores, Central Texas, 2003 Through 2011

8th Grade Math TAKS Scores, Central Texas, 2003-2011

Source: E³ Alliance analysis of TEA district-level TAKS data

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Driving Systems Change through Action Research – What Does that Mean?

- Making readily available aggregate data more accessible & understandable
- Trending data over time
- Explaining complex or obfuscated data
  - White Papers: how to interpret drop outs
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- Predictive early warning analysis for better decision making
  - Impact of 8th grade math on college readiness
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  - White Papers: how to interpret drop outs
  - Predictive early warning analysis for better decision making
  - Impact of 8\textsuperscript{th} grade math on college readiness
- (When necessary) original research
  - Most comprehensive study on student readiness for kindergarten in the state
Driving Systems Change through Action Research – What Does that Mean?

- Longitudinal research using individual student records
- Answer questions such as:
  - Understand true student mobility patterns across schools and districts to lower impact
  - Compare long term outcomes of current, former, and never ELL students
  - Compare various high school course taking patterns to college & workforce success

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Texas Legislature authorized three Education Research Centers (ERCs) in 2006 to conduct research that benefits education in Texas.

- Powerful warehouse of student data from TEA, THECB, Workforce Commission, other sources, maintained in a highly secure environment.
- Enables researchers to follow Texas students from pre-k through college and into the Texas workforce.
- Accessed by researchers through proposal to Joint Advisory Board.

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Benefits of ERC’s

• Linked data sets going back to 1994 allow long term trend analysis and student tracking
• Contains all 5M students in the state – can answer questions no district or institution ever could
• One of the first sources of student data along the entire pipeline in the country
• Brought over $11M in funded research to the state of Texas; $6.5M in queue
OK, BUT HOW DOES IT WORK IN REAL LIFE?
Show Me the Data Example 1:

IMPROVING OUTCOMES FOR ENGLISH LANGUAGE LEARNERS (ELLs)

Regional collaboration is enabling policy and curricular changes within and across districts
English Language Learners (ELL)

- ELLs are students who are learning English as an additional language and who, once successful, are excluded from the ELL group.
- Over 120 languages are spoken in Texas schools.
- 91% speak Spanish.
- 831,904 ELL students are in Texas public schools (2010-11)
  - Texas has more ELLs than 28 states have students.

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Central Texas ELL Population is Growing 7 Times Faster than the Texas Student Population

Population Growth Rate, from 2000 to 2010

Texas Students: 21%
CTX Students
CTX Low Income Students
CTX ELLs

Source: E³ Alliance analysis of AEIS data from Texas Education Agency

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CTX ELL District Programs Vary

ELL Student Enrollment by District Program, 2008-09

Source: Self-reported district data to the Central Texas English Language Learners Collaborative, 2009

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Special Education Services Lowest for ELLs in Bilingual Programs

Special Education Participation by ELL Program, 2010-11

Source: E³ Alliance analysis of 2010-11 PEIMS data from UT Educational Resource Center

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Estimating Growth in Student Learning

✓ **Student Growth Percentile (SGP)** allows us to locate schools with promising practices of “growing” students—not just meeting the minimum standard.

✓ The only student growth model we have found that addresses all problems with existing methods.

Think of the pediatric growth charts for height and weight.
ELL Outcomes Systemic Alignment

**DATA INSIGHTS**
- Assemble ELL Collaborative
- Identify ELL practices across region
- Measure academic growth for ELL & non-ELL students

**Common Agenda**

**Changed Practices**
- Define research-based rubric for high performing schools for ELLs
- Correlate ELL student programs with SpEd referrals
- Bright Spots qualitative analysis

**INFORMED DECISIONS**

**SHARED COMMITMENT**
- PD to apply English Language Proficiency Standards across ALL classrooms
- Apply ELL best practices at scale
- Change policies to support ELL teaching and interventions

**Systems Change**

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The Bottom Line

• Practices for one of our most vulnerable student populations – ELLs – are all over the map
• Measuring value added growth is more useful to finding school and population improvement than passing rates
• Identifying “bright spots” allows us to find and scale effective practices
• Regional collaboration is enabling policy & curricular changes within and across districts
The Bottom Line

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Show Me the Data Example 2:

STUDENT ATTENDANCE

Using objective data on student attendance patterns, districts and community are collaborating to increase attendance regionally, and providing answers that others can leverage.
Background

• Central Texas superintendents chose increased attendance as #1 way community and funders could assist districts:
  1. “Triple Bottom Line” benefit:
     • Students can learn when in class
     • Teachers have more time to teach
     • Increased revenue to districts
  2. Unlike teacher quality or staffing, communities can directly and positively impact student attendance

• E3 Alliance spearheading regional approach to increase attendance

• Required much better data to drive logic model and approach
Vicious or Virtuous Cycle?

Student Absences

Establish w/ E3 Data

? ?

Poor Academic Achievement

Existing Research

Low income Shorter lifespan Unhealthy behavior

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Half of Central Texas Students Miss Six or More Class Days per Year

Percentage of Students

- 5 or Fewer Missed Days
- 6 or More Missed Days

Source: E3 Alliance analysis of PEIMS data at UT Education Research Center.

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But Account for 85% of all Absences

Percentage of Students

5
or Fewer
Missed Days

6
or More
Missed Days

Percentage of Absences

85%
of Absences

15%

Source: E3 Alliance analysis of PEIMS data at UT Education Research Center.

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High School Students Miss More than Two Weeks

Days Absent in Central Texas in 2009-10

<table>
<thead>
<tr>
<th>School Level</th>
<th>Average Days Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>6.6</td>
</tr>
<tr>
<td>Middle School</td>
<td>7.4</td>
</tr>
<tr>
<td>High School</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Source: E3 Alliance analysis of PEIMS data at UT Education Research Center.

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Retained Students had Four Times More Absences

Absences for First Time 9th Graders in 2006-07

- Retained in 9th: 24 Absences
- Promoted to 10th: 6 Absences

Source: E3 Alliance analysis of PEIMS data at UT Education Research Center.
Only 17% of Retained Freshmen Passed TAKS Math

TAKS Math Passing Rate

- Retained in 9th: 17%
- Promoted to 10th: 74%

57-point difference

Source: E3 Alliance analysis of PEIMS data at UT Education Research Center.

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Students Retained in 9th Grade 10x More Likely to Drop Out

Percentage of Cohort that Dropped Out

Source: E3 Alliance analysis of PEIMS data at UT Education Research Center.
Summary of Findings

• Central Texas attendance is worse than the state average
• It’s not just a few students; ½ of students are absent far too often
• Attendance much worse in transition to high school
• Poor attendance maps directly to poor academic outcomes – test scores, retention, dropping out
Changing Communities and Systems

Illness, Poor Health

Health-Related:
• Acute Illness
• Chronic Illness
• Mental
• Behavioral

Socially Related:
• Skipping out
• Work conflict
• Caregiving

Student Absences

Systemic allocation of health resources

Poor Academic Achievement

Low income, Shorter lifespan, Unhealthy behavior
Poor Health Outcomes

“3 Days = $34 Million!!”

Targeted messaging to 7th-10th graders

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Attendance Systemic Alignment

**DATA INSIGHTS**
- Identify attendance patterns and leverage points
- Compare district & community efforts
- Identify community partners
- Set regional target for improvement

**Common Agenda**

**Changed Practices**
- $ & in-kind resources for campaign
- Common reporting on reason codes
- Map community resources to areas of need

**INFORMED DECISIONS**

**SHARED COMMITMENT**
- Broad awareness of financial & student impacts of attendance
- Intervene directly with target population
- Attendance increased ~3 days/student

**Systems Change**

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Show Me the Data Example 3:

SCIENCE, TECHNOLOGY, ENGINEERING & MATH (STEM) PIPELINE

Using data insights to craft a common agenda allowed different sectors to come together change systems parameters and triple the number of STEM-prepared students

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Fastest Growing PS-Degree-Required Occupations in Central Texas

Highest Demand Jobs Requiring Post Secondary Education through 2015

- **Nurses**
  - Expected New Jobs Added by 2015: 4,000
  - Average Hourly Wage: $25.00

- **Engineering/Comp Sci**
  - Expected New Jobs Added by 2015: 1,500
  - Average Hourly Wage: $15.00

- **Teachers**
  - Expected New Jobs Added by 2015: 1,000
  - Average Hourly Wage: $10.00

Source: Texas Workforce Commission, Interviews with Higher Ed Departments

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Leaks in the STEM Pipeline

Increase the Flow by Fixing the leaks!
Analyzed Assets to Work With

2007-08 Project Lead the Way (PLTW) Enrollment
1493 Students

PLTW: Nationally accredited, sequenced secondary engineering / technology courses utilizing project-based learning

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The Blueprint for the STEM Pipeline

- **MIDDLE SCHOOL**
  - Increased Student Outreach
  - OOS Activities/Robotics
  - PLTW course expansion

- **HIGH SCHOOL**
  - College credit for HS classes
  - Work-based learning opportunities
  - Engineering fairs
  - STEM teacher training
  - New innovative classes

- **COLLEGE**
  - Work-based learning opportunities
  - Industry Advisors for programs & OOS activities

- **INDUSTRY**

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Longitudinal tracking of student course-taking and outcomes

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Articulated College Credit

- Research shows students who have just one college credit in HS twice as likely to go on to higher education
- Articulated credit for PLTW?
- Toured engineering deans and faculty through HS classes
- Used models from other states
  - First articulated academic credit for HS engineering classes in history of Texas
Enrollment Change in 4 Years

2007-08 PLTW Enrollment: 1493 Students

2011-12 PLTW Enrollment: 4891 Students!

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PLTW Students Out Score their Peers

Grade 11 Math TAKS Results – Matched Cohorts of Students with Similar 8th Grade Scores who Took or Did Not Take Sequenced PLTW Courses

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Long-Term Results: Diversified, Expanded and Improved STEM Pipeline

- Increased participation of low income students by 40%
- Doubled the number of Hispanic students
- Tripled the number of women
- Increased college enrollment for PLTW students
- **More than tripled enrollment** to Texas State’s Ingram School of Engineering

- Continuing to track students through STEM degree success and career entry
- Working to expand higher ed capacity

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STEM Pipeline Systemic Alignment

**Data Insights**
- Identify pipeline leaks
- Determine regional assets
- Create STEM collaborative
- Set targets

**Common Agenda**

**Changed Practices**
- Cultivate resources
- Engage students in STEM early
- Expand STEM programming based on regional assets
- Articulated college credit

**Informed Decisions**

**Shared Commitment**
- 300+% change in STEM Pipeline Enrollment
- Integrate business experience into high school
- Increase higher education STEM capacity
- Statewide HS to college articulation

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The Bottom Line

- Catalyzing existing elements and players can generate great results. Simply:
  - Bringing the right people to the table
  - Making decisions based on objective data
  - Working across sectors and systems
  - Not taking “no” for an answer

- Doing what’s best for students is in the best interest of our economic future!
- Cross-sector systems change is most likely to be effective & sustainable
The “Bottom Bottom” Line

- Detailed analysis tied to real need enables better policy within and across districts for our highest need populations
- Understanding leverage points helps communities and leaders allocate resources & outreach cost effectively
- Using data insights to craft a common agenda allows different sectors to come together to deliver on systems change

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• We hope you’ve seen the power of leveraging objective data to drive:
  – Improved policy
  – Better decision-making
  – Systems change
We’re investing in this because it’s the only real example we’ve seen of a backbone organization using action research to enable change - at scale - across sectors
But why Invest in E3 Alliance?

1. This is a model that can be replicated and leveraged across the state and country
2. And is already having statewide impact today
3. It helps strengthen the ERC data access platform in Texas and as a model for other states
4. This region’s massive demographic shift is a harbinger for the rest of the country – solving it in Central Texas provides a model for other regions

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But why Invest in E3 Alliance?

With added investment, E3 plans to:

– Undertake qualitative research on practices linked to success of ELL’s
– Build out a comparative program evaluation model
– Expand student growth studies to other populations, schools & regions across the state
– Study allied health pathways into and through college
– Identify common metrics for predicting and measuring post-secondary success

We need your help!

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Opportunities Going Forward?

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The conclusions of this research do not necessarily reflect the opinions or official position of the Texas Education Agency, the Texas Higher Education Coordinating Board, or the State of Texas.