



Tarleton
RESEARCH LABORATORY
ON EDUCATIONAL FACILITIES

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A member of The Texas A&M University System since 1917



Background

- In February 2008, through an agreement between Tarleton State University and Huckabee & Associates, Inc., the Tarleton Research Laboratory on Educational Facilities was established.

Mission Statement

- To provide research-based information and assessment services regarding educational facilities and their impact on student learning.



Vision Statement

- To be the leading source for educational facility research.



As we Progress...

- An advisory committee of 15 school district superintendents and 3 school board members has been appointed to provide guidance to the Laboratory's co-directors.

DO BUILDING CONDITIONS REALLY MAKE A DIFFERENCE IN STUDENT ACHIEVEMENT?

What every school
should know!



Why A Facilities Institute or Lab?

◎ Student Achievement

- Student morale, health, and academic achievement have been linked to facility quality. (Frazier, 1993)



Student Achievement

SES

Mobility

**Student
Conduct &
Attendance**

**Administrative
& Parental
Support**

**Teacher
Education,
Experience,
Pay...**

**School
Revenue**

**Class
Size**

**Building
Conditions**

Facilities Do Matter

- Building Age Matters
- Facilities impact attitudes & scores
- Design variables account for differences in achievement scores
- Students attitude scores are higher in renovated schools



Greatest Differences due to Cosmetics

⦿ Females In Mathematics

- 73.21-81.26
- **Difference of 8.04**

⦿ Males in English

- 70.71-77.00
- **Difference of 6.29**



Results

- Positive relationships between school building condition and student achievement.
- Differences in overall scores may vary but all were significant ($p > .05$).
- Differences in male and female passing percentages.
- Generally greater differences were seen for females in most areas

Research Suggests

*Building
Conditions DO
REALLY
Matter!*



Construction Expenditures

- 30 billion spent annually nationwide
- School construction expenditures are rising
- Districts are spending more and getting less for their investment.

Texas Leads In Construction

- Texas, Louisiana, Oklahoma, and Arkansas, accounted for 13.5 percent (\$2.8 billion) of the nation's construction expenses.
- Texas accounts for the majority of these regional expenditures.
- Region 9 is the second largest spending region in the United States
- In 2006, the Texas Comptroller of Public Accounts indicated that 415 schools statewide would need to be replaced by 2016 or 756 by 2026.

Current Construction Causes

- ① Construction may be needed to address
 - 1) increasing/decreasing enrollment
 - 2) out of date facilities
 - 3) facilities in poor condition
 - 4) curricular changes
- ② 4.5 million students educated annually in Texas.
- ③ Average annual growth=75,000 to 89,000 students

We Must Remember Our Goal

STUDENT ACHIEVEMENT



Student Achievement Matters!!!

- If Building Conditions REALLY Do Matter then school districts, policy makers, & citizens need **proof and money**.
- TRLEF intends to generate updated, state/local research designed to answer that call.



Addressing a Crumbling Infrastructure

- Texas has been ranked by the U.S. General Accounting Office (GAO) as the 5th neediest of all states for facilities construction.
- In order for Texas to meet their facilities needs they would have to increase facilities funding levels by \$248 per pupil per annum for 10 years (GAO Report – 2000).

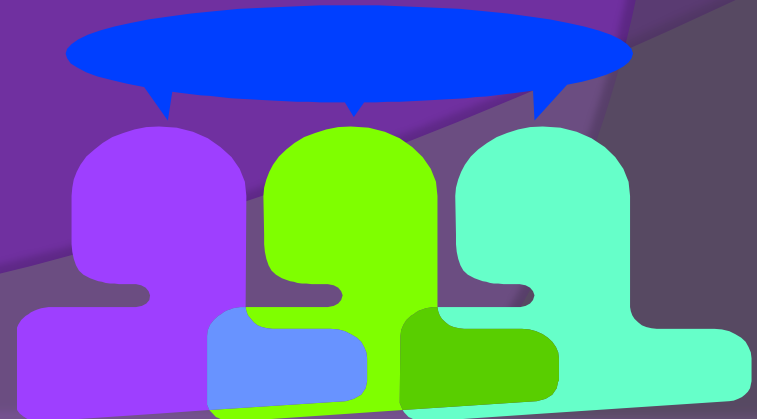
Changing Vision

- Community Based
- Bottom Up
- Capitalizing on new and existing alliances
- ***Conversations***



Transform Systems

- Community Owned
- Shared responsibility
- Public education is at risk



Reframing What We Know & Do

- Digital learning embraced as a superior talent
- Do not limit learning to one size fits all mass production
- Learn anywhere, anytime, any path, any pace
- Small networks and community involvement

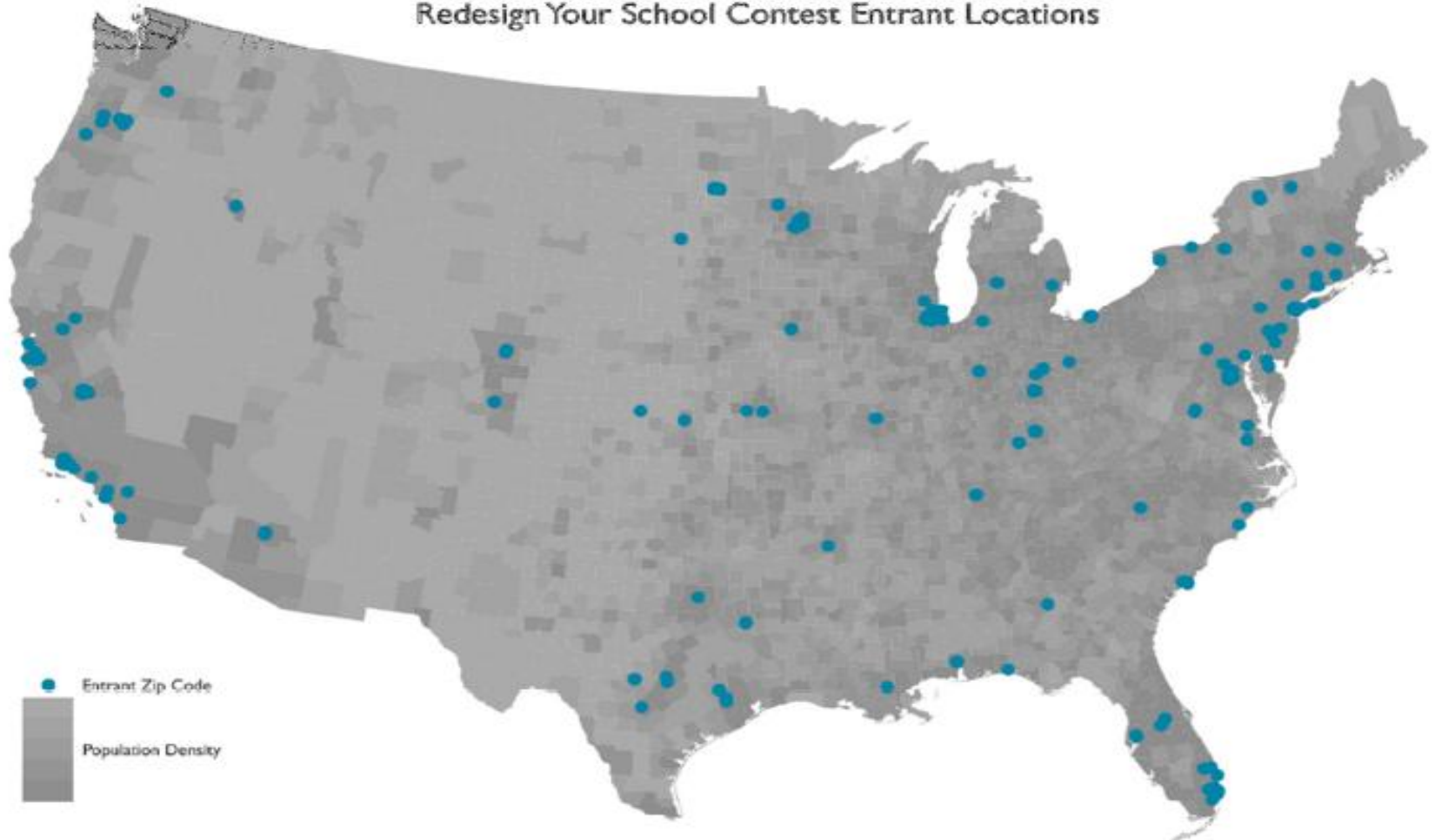
Reframing what
we do demands
we reshape how
we plan, think,
and act!

If you want to know what
students and teachers
need

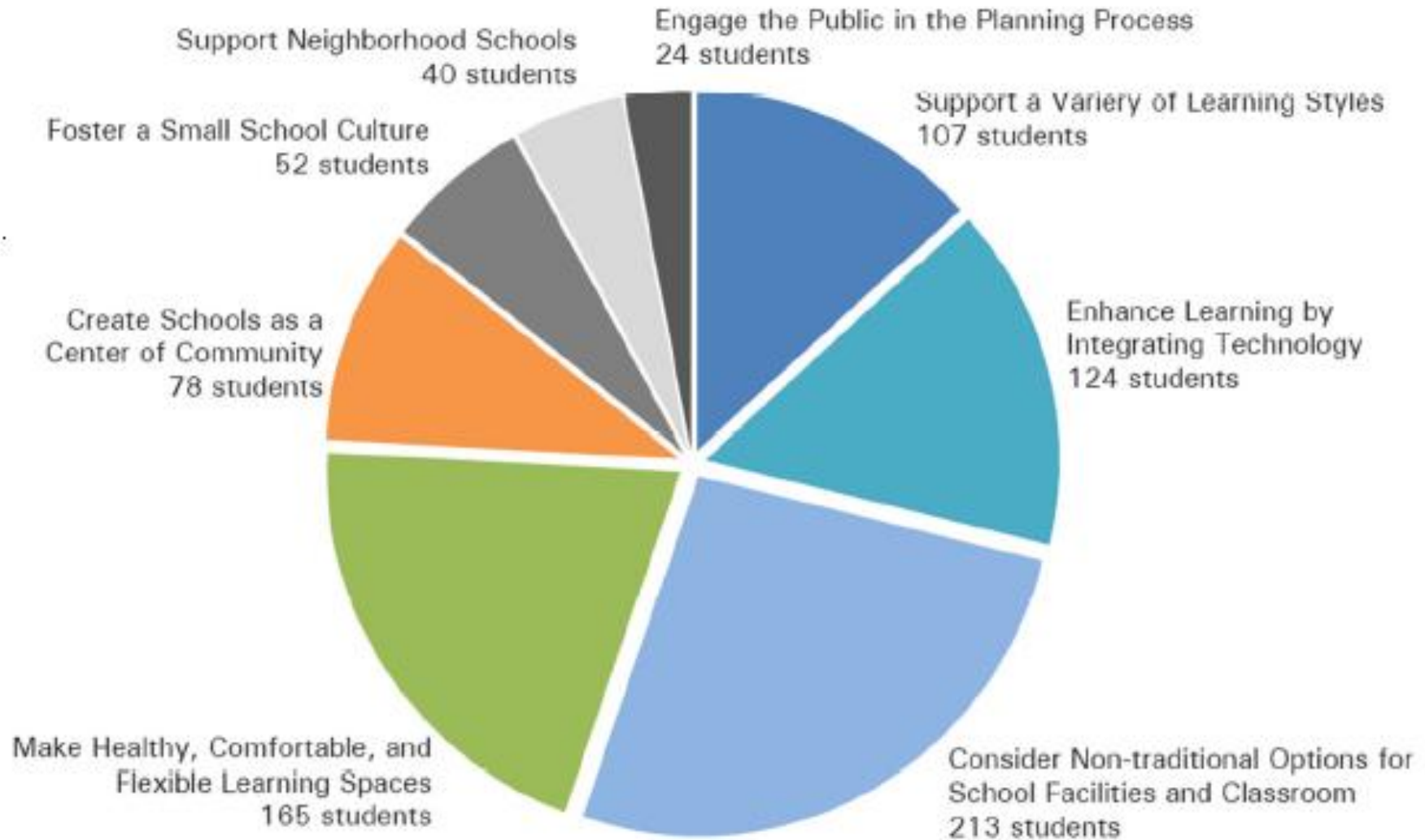
Just Ask and Listen

Redesign Your School Entrants

Redesign Your School Contest Entrant Locations



Primary Findings (National Summit Principles):



Core themes

- Create New Learning Opportunities
- Design for Variety and Flexibility
- Provide Comfortable and Social Spaces
- Integrate Technology
- Connect to the Outdoors



Create New Learning Environments

- Personal
- Individualized
- Hands on
- Real World
- Project Based
- Shapes



Design for Variety and Flexibility

- Colorful
- Studios
- Interactive
- Flexible
- One on One
- Exciting
- Active



Provide Comfortable & Social Spaces



- Relax
- Not Crowded
- Open Space
- Clean
- Glass
- Family
- Inviting
- Food



Integrate Technology

- ◉ Wireless
- ◉ SMART
- ◉ Computer
- ◉ Email
- ◉ Laptop
- ◉ Internet
- ◉ Smart board
- ◉ Wi-Fi
- ◉ Access
- ◉ Sustainable building technologies



Connect to the Outdoors

- Garden
- Plants
- Nature
- Light
- Outside
- Courtyard
- Access
- Outside-In
- Green Buildings



“If students are taught in a box, they will always think in a box..... [we are] reminded of Galileo, who always taught his students outside.”

- Sarah Gross and Josh Jones, students
- Lindsborg, KS

“No one wants to learn in sterile, boring, institutional facilities. Give us beauty, real-life projects, choice, opportunity, and ownership, and we’ll show you what we can do.”

- Mireya Avila, 16, H.S. Student
Santa Barbara, CA

Current Tools for Assessing A Facilities Instructional Effectiveness



Current Facility Assessments

- Do not address educational purposes
- Are void of educational perspectives
- Are based solely on engineering components
- Are unrelated to quality teaching and learning environments (QTLEs)

COMING SOON!

- Assessments of QTLEs
- Based on Educational Purpose
- Accumulated educational perspectives
- Based on research based design principles
- Go beyond economical & efficiency models

Effective Learning Environments Assessment (ELEA)

- ⦿ Examines how a facility fosters
 - peer interaction
 - Student-teacher relationships
 - School climate
 - Student satisfaction

School Climate

Social Interaction
Curriculum
Extracurricular
Participation
Facilities

Satisfaction

Facilities
Social
Interaction
Teacher/student
interaction
Extracurricular
Participation

Achievement

SES
LEP
Teacher Quality

21st century school design & beyond

```
graph TD; A[21st century school design & beyond] --> B[Students]; A --> C[Teachers]; A --> D[Parents]; B --> E[Culture]; C --> F[Instructional Effectiveness]; D --> G[Climate];
```

Students

Teachers

Parents

Culture

**Instructional
Effectiveness**

Climate

```
graph TD; Culture[Culture] --- Learning[Learning Signature]; Culture --- Personalization[Personalization]; Culture --- Collaboration[Collaboration];
```

Culture

**Learning
Signature**

Personalization

Collaboration

**Instructional
Effectiveness**

```
graph TD; A[Instructional Effectiveness] --- B[Environmental Conditions]; A --- C[Variable Learning Environments]; A --- D[Integrated Technology]
```

**Environmental
Conditions**

**Variable
Learning
Environments**

**Integrated
Technology**

```
graph TD; Climate[Climate] --- Community[Community Involvement]; Climate --- Relationships[Relationships]; Climate --- Ecology[Ecology];
```

Climate

**Community
Involvement**

Relationships

Ecology

Bringing You Data....

- Data is being collected from Texas public schools
- Parent, Student & Teacher perspectives included
- Initial data confirms the AAF study



Preliminary Results

- Student data indicated
 - Flexible and variable arrangements
 - Integrated technology
 - Connection to the outdoors
 - Social settings for cooperative & active learning

Future Research Priorities

- ⦿ Aligning the ELEA with 4 design variables determined to be best predictors of achievement
 - Movement & Circulation
 - Positive outdoor spaces/Lighting
 - Technology
 - Overall impression
- ⦿ Once aligned educational perspectives will be assessed

Research Purpose

- Given the direct relationship with bldg design and increased scores in vocabulary, reading comprehension, language arts, math & science
- ELEA will include educational perspectives capable of yielding design patterns directly related to increased student achievement.

We are here to help so.....

- Please contact us with questions, input or concerns by:
 - phone at 254-968-9765
 - e-mail at dorris@tarleton.edu
 - <http://www.tarleton.edu/facilitieslab>