Space Planning Like Google and Harvard

CEFPI Annual Conference 2014

presenter:
Monte Hunter
Monte Hunter AIA

- 30+ K12 planning and design programs
- Published in multiple magazines for facility metrics
- Multiple convention and conference metrics presentations
- CEFPI member for 23 years
- President of AE firm for 27 years
- Lives in Austin
<table>
<thead>
<tr>
<th>What do these have in common?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
</tr>
<tr>
<td>Ford</td>
</tr>
<tr>
<td>Google</td>
</tr>
<tr>
<td>Harvard</td>
</tr>
<tr>
<td>Honeywell</td>
</tr>
<tr>
<td>Major League Baseball</td>
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<td>McDonalds</td>
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<td>US Census</td>
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</table>

Predictive Analytics
Discussion Items

- What is predictive analytics (PA)?
- Space planning with PA
- USA school space trends
- Other uses of PA in facility planning
- Wrap up
PA Process

data collection

analysis & trends

metrics & modeling
Data & Validity

- 200+ USA school districts
- Districts with 500 – 200,000 enrollment
- District level correlation 95+
- Campus level correlation 80+
- Validated by PhD from University of Texas
H1N1 Vaccinations

- Collect data from clinics
- Weeks to collect & analyze
- Flu already spread
- Often too late

Google Flu Trends

- Analysis of flu search data
- Uses data to predict areas of need
- Real time results
- Improves in-time vaccine delivery
• Predictive analytics
• Student achievement
• Attendance
• Efficiency
• Teacher recruitment
Discussion Items

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Space Planning Components

- programming
- space planning with PA
- assessment
- collaboration
- master planning
- design
What PA can do

- Space guidance . . . district & campus level
- Space to be consistent with peers
- Space for emerging trends
- Results in days
- Conceptual scope before public events
- Collective practice of many districts & planners
SF per Student Metrics

- Regional peers
- If consistent with peers
- Scalable metric
- Not one-size-fits-all
Total SqFt Metrics

- If consistent with peers
- Macro benchmark
- Multiple benchmarks
- Justifies need
Campus Space Metric

- Wish list prioritization
- Facility equity
- Emerging programs
- Campus modifiers
- Justify space changes

### SF above or below peers

<table>
<thead>
<tr>
<th>School</th>
<th>SF Deficit</th>
</tr>
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<tbody>
<tr>
<td>Midland HS</td>
<td>-30%</td>
</tr>
<tr>
<td>Lee HS</td>
<td>-12%</td>
</tr>
<tr>
<td>Midland Fr</td>
<td>-10%</td>
</tr>
<tr>
<td>Lee Fr</td>
<td>-7%</td>
</tr>
<tr>
<td>San Jacinto JH</td>
<td>-6%</td>
</tr>
<tr>
<td>Goddard JH</td>
<td>-3%</td>
</tr>
<tr>
<td>Alamo JH</td>
<td>-2%</td>
</tr>
<tr>
<td>Abell JH</td>
<td>0%</td>
</tr>
<tr>
<td>Washington ES</td>
<td>-11%</td>
</tr>
<tr>
<td>Travis ES</td>
<td>-22%</td>
</tr>
<tr>
<td>South ES</td>
<td>-18%</td>
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<tr>
<td>Scharbauer ES</td>
<td>-14%</td>
</tr>
<tr>
<td>Santa Rita ES</td>
<td>-25%</td>
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<tr>
<td>Rusk ES</td>
<td>-11%</td>
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<tr>
<td>Pease ES</td>
<td>-14%</td>
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<tr>
<td>Parker ES</td>
<td>-10%</td>
</tr>
<tr>
<td>Milam ES</td>
<td>-4%</td>
</tr>
<tr>
<td>Long ES</td>
<td>-11%</td>
</tr>
<tr>
<td>Lamar ES</td>
<td>-10%</td>
</tr>
<tr>
<td>Jones ES</td>
<td>-16%</td>
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<tr>
<td>Houston ES</td>
<td>-11%</td>
</tr>
<tr>
<td>Henderson ES</td>
<td>-10%</td>
</tr>
<tr>
<td>Greathouse ES</td>
<td>-23%</td>
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<tr>
<td>Fannin ES</td>
<td>-11%</td>
</tr>
<tr>
<td>Emerson ES</td>
<td>-2%</td>
</tr>
<tr>
<td>DeZavala ES</td>
<td>7%</td>
</tr>
<tr>
<td>Crockett ES</td>
<td>1%</td>
</tr>
<tr>
<td>Carver C</td>
<td>3%</td>
</tr>
<tr>
<td>Bush ES</td>
<td>12%</td>
</tr>
<tr>
<td>Burnet ES</td>
<td>12%</td>
</tr>
<tr>
<td>Bowie ES</td>
<td>10%</td>
</tr>
<tr>
<td>Bonham ES</td>
<td>40%</td>
</tr>
</tbody>
</table>

54,700 SF deficit (secondary)

137,000 SF deficit (elementary)
Campus SF Mapping - 2021

- PA & GIS
- Areas of need
- Identify trends
- Urban trend

% above peers
% below peers
0-50% scale
Space Modeling

- Projects district SF
- Consistent with peers
- Tracks progress
- Demonstrates fiscal control
- Justifies needs
Space Modeling

- Urban district
- Needs SF to keep up with peers
- Demonstrates fiscal control
- Justifies new SF
Results in Days

- Prior data collection & analysis
- Early scope definition
- Not a public event
Collective Practice of Many
96% funding success rate
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District SF vs USA Peers

work in progress
not urban adjusted
Emerging trends typically fall in this range.
Urban Factor

- USA urban vs all districts
- Statistical trend lines
- In 75K district = 8 elem schools

urban districts
9 sf/student more

50K  75K  100K  125K

TOTAL SF

ENROLLMENT

USA Urban  USA All
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Who uses space efficiency in sustainability efforts?
5% improvement in space efficiency for a high school

Heat and cool 16 houses

Save 90 pickups of construction waste

450,000 SF high school
2,000 sf house
4 lbs of waste per sf
Capital Cost Projections

- Model renovation cost
- Model new space cost
- Cost to defer
- Patent pending

RENOVATION COST PROJECTIONS

- 2013: $28,751,847
- 2014: $31,028,640
- 2015: $33,429,587
- 2016: $35,960,591
- 2017: $38,627,813
- 2018: $41,437,689

CAPITAL IMPROVEMENT PROJECTIONS

- 2013: $44,991,847
- 2014: $47,837,040
- 2015: $50,826,281
- 2016: $53,966,169
- 2017: $57,263,587
- 2018: $60,725,715
Facility M&O Modeling

- Models impact of facility expansion
- Efficiency targets
- Helps avoid mothballing new schools
- Excellent ROI
USA vs State Trends

USA vs State Trends graph comparing SF per student and campus enrollment for elementary and secondary categories. The graph includes data for Texas and the USA, showing a downward trend as enrollment increases.
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PA Benefits

- Peer-based guidance
- Collective practice of many
- Results in days
- Scope before public process
- Objective justification
- Facility equity
- Sustainability
- Funding success rate
PA is often resisted
Until . . .

a citizen asks about over-building
remember . . .

Apple
Ford
Google
Harvard
Honeywell
Major League Baseball
McDonalds
US Census
Questions?

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