Examine applied technologies in action to measure education space performance

Session CN041

SCUP 2019 Pacific Regional Conference
Boulder, Colorado
Agenda

➔ Post Occupancy Evaluation: Quantitative vs. Qualitative
➔ Technology Toolkit
➔ The Data
➔ Trends
➔ Creating Your Own POE
Learning Objectives

1. Participants will gain insight into the process of capturing and analyzing environmental and behavior data and how it directly translates to the design, operations, maintenance of educational facilities.

2. Participants will discover the methodology and process of collecting quantitative data for post-occupancy evaluation of areas ranging from classrooms and offices, entire buildings and campus-wide resources.

3. Participants will learn how to think about critical issues, information collected, and success metrics.

4. Participants will learn about new processes and technology tools to create their own DIY post-occupancy evaluation survey.
Jesse Garcia

12 years at Herman Miller

Leads workplace strategy consulting for the Western US and Canada

Adjunct faculty at Texas Woman’s University - College of Business

Dallas, Texas
Janice Fournier

13 years with UW IT, Academic Experience Design & Delivery

Leads research on user needs of students, faculty, and staff

Designs and evaluates innovative technology solutions to improve users' experience
Plamena Milusheva

Over 10 years of investigating the relationship between design and technology

Leads research efforts on engaging with new tools and technologies and developing new design processes

Builds physical and digital prototypes to test ideas

Seattle, WA
Post Occupancy Evaluation
Quantitative vs. Qualitative
QUANTITATIVE Post Occupancy Evaluation

Uses measurable data to formulate facts and uncover patterns

Methods: Tests, any standardized measurement

Tools: Embedded sensors, stand-alone measuring devices, data analysis software, spreadsheets, graphing programs
QUALITATIVE Post Occupancy Evaluation

Uses reported data to understand trends in experience, behavior, or opinion

Methods: Interviews, focus groups, observations, artifact analysis (videos, drawings), surveys

Tools: Pen and paper, web and app-based survey tools, conversation, open-ended questions
Choosing Methods

Methods follow from question(s)

Seek breadth and depth

We need both qualitative and quantitative information to create a full picture of how spaces are used
Meet Live OS

Live OS is a system of cloud-connected furnishings, app, and dashboard.
Meet Live OS

Cloud Infrastructure

Secure Cellular Gateway

Live Furniture
Fixed Height
Height Adjustable

Table 1
Table 2
Table 3
Table 4
Table 5
Individual Experience

People keep in touch with their ergonomic plans with email updates on their progress.
Organizational Insights
With anonymized data on how people are engaging with and moving in their chairs, organizations get a more holistic view of how the workplace is affecting employee wellness.
LMN Architects
PODDs
Post Occupancy
Data Devices
controller unit
provides connection to the server for data uploading and defines each network cluster

drone unit
collects data from sensors and sends it along network cluster to controller for upload

note:
in the current design all units are the same and their role is defined in software during setup
<table>
<thead>
<tr>
<th><strong>SCOUT</strong></th>
<th><strong>SCOUT</strong></th>
<th><strong>SCOUT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FOOD</strong></td>
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<td><strong>FOOD</strong></td>
</tr>
<tr>
<td>Pagliacci Pizza, Husky Den</td>
<td>MGH Commons</td>
<td>Sony Lavaller Mic</td>
</tr>
<tr>
<td><strong>STUDY</strong></td>
<td><strong>TECH</strong></td>
<td><strong>STUDY</strong></td>
</tr>
<tr>
<td><strong>TECH</strong></td>
<td><strong>STUDY</strong></td>
<td><strong>TECH</strong></td>
</tr>
</tbody>
</table>

### Pagliacci Pizza, Husky Den
- **Today's Open Periods:** Morning, Afternoon, Evening
- **Type:** Food Court
- **Description:** Serving Seattle's best pizza since 1979. Pagliacci is one of 8 pizzerias names Best in America by Bon Appetit. Pagliacci uses the highest quality local ingredients whenever possible and is a leader in green restaurant practices and sustainability.
- **Hours:**
  - Monday: 7 AM - MIDNIGHT
  - Tuesday: 7 AM - MIDNIGHT
  - Wednesday: 7 AM - MIDNIGHT
  - Thursday: 7 AM - MIDNIGHT
  - Friday: 7 AM - 9 PM
  - Saturday: 7 AM - 9 PM
  - Sunday: CLOSED
- **Contact:**
  - View website
  - (206) 221-1943

### MGH Commons
- **Resources:**
  - Open Space
  - Chatter
  - Natural lighting
  - Available in building
- **Hours:**
  - Monday: 7 AM - MIDNIGHT
  - Tuesday: 7 AM - MIDNIGHT
  - Wednesday: 7 AM - MIDNIGHT
  - Thursday: 7 AM - MIDNIGHT
  - Friday: 7 AM - 9 PM
  - Saturday: 7 AM - 9 PM
  - Sunday: CLOSED

### Sony Lavaller Mic
- **Brand:** Sony
- **Details:** Wireless Microphone System
- **Availability:** 5
- **Features:**
  - Download user manual
- **Funding:** This item is funded by Student Technology Fee
Activity (5 mins)

Turn to your neighbor and discuss:

How might you use one of these tools at your institution?
The Data
<table>
<thead>
<tr>
<th>Category</th>
<th>Total Seats: 369</th>
<th>Individual Seats: 289</th>
<th>Group Seats: 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. seats</td>
<td>24% or 89</td>
<td>28% or 81</td>
<td>16% or 12.8</td>
</tr>
<tr>
<td>Max. seats</td>
<td>40% or 147</td>
<td>46% or 134</td>
<td>41% or 33</td>
</tr>
<tr>
<td>Seats not in use</td>
<td>60% or 222 seats</td>
<td>54% or 155 seats</td>
<td>59% or 47 seats</td>
</tr>
</tbody>
</table>

All Seats by Category
Average & Maximum Seats in Use
How Many People Might the Space Support?

<table>
<thead>
<tr>
<th>Usage</th>
<th># Seats</th>
<th>Scenario A</th>
<th></th>
<th>Scenario B</th>
<th></th>
<th>Scenario C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ratio</td>
<td># People Supported</td>
<td>Ratio</td>
<td># People Supported</td>
<td>Ratio</td>
<td># People Supported</td>
</tr>
<tr>
<td>&lt;20%</td>
<td>142</td>
<td>2:1</td>
<td>284</td>
<td>3:1</td>
<td>426</td>
<td>3:1</td>
<td>426</td>
</tr>
<tr>
<td>20-39%</td>
<td>126</td>
<td>2:1</td>
<td>252</td>
<td>2:1</td>
<td>252</td>
<td>2:1</td>
<td>252</td>
</tr>
<tr>
<td>40-59%</td>
<td>20</td>
<td>1:1</td>
<td>20</td>
<td>1:1</td>
<td>20</td>
<td>1.5:1</td>
<td>30</td>
</tr>
<tr>
<td>60-79%</td>
<td>1</td>
<td>1:1</td>
<td>1</td>
<td>1:1</td>
<td>1</td>
<td>1:1</td>
<td>1</td>
</tr>
<tr>
<td>80-100%</td>
<td></td>
<td>1:1</td>
<td>0</td>
<td>1:1</td>
<td>0</td>
<td>1:1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>289</strong></td>
<td></td>
<td><strong>557</strong></td>
<td></td>
<td><strong>699</strong></td>
<td></td>
</tr>
<tr>
<td># of Dedicated Spaces</td>
<td>21</td>
<td>7%</td>
<td>21</td>
<td>7%</td>
<td>1</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td># of Shared Spaces</td>
<td>268</td>
<td>93%</td>
<td>268</td>
<td>93%</td>
<td>288</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Wellness Data – Preferred Heights

Wide variety of preferred desk height at both sitting and standing

Allows for “Unique to Each” work accommodation
Setting up a testing process

What do we want to learn?

How do we design the experiment?

Space 3: large, sparsely inhabited student work space with cross ventilation
Space 2: medium conference room with no exterior window or door access
Space 1: medium, densely inhabited office with one-sided ventilation
Engaging with the data

Are there noticeable patterns?

Are there noticeable anomalies?
Engaging with the data

Real time vs. historic data

Layering information
Use of Scout App, Winter Quarter

[Chart showing audience overview with metrics for Sessions, Users, New Users, Sessions, Number of Sessions per User, Pageviews, Pages/Session, New Visitor, Returning Visitor, with data from Jan 7, 2019 to Mar 20, 2019]
Where do students go in the app?

Pageviews provide data on the most popular searches:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Page</th>
<th>Pageviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>/seattle/</td>
<td>528</td>
</tr>
<tr>
<td>2</td>
<td>/seattle/study/</td>
<td>402</td>
</tr>
<tr>
<td>3</td>
<td>/seattle/study/filter/</td>
<td>138</td>
</tr>
<tr>
<td>4</td>
<td>/seattle/tech/</td>
<td>88</td>
</tr>
<tr>
<td>5</td>
<td>/seattle/food/</td>
<td>79</td>
</tr>
<tr>
<td>6</td>
<td>/seattle/food/?open_now=true</td>
<td>52</td>
</tr>
<tr>
<td>7</td>
<td>/seattle/food/1178/</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>/seattle/food/1273/</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>/seattle/food/1296/</td>
<td>24</td>
</tr>
<tr>
<td>10</td>
<td>/seattle/study/?building0=Qdgaard+Undergraduate+Library+(OUGL)</td>
<td>23</td>
</tr>
</tbody>
</table>
Trends

What does the data mean?
U.S. Space Utilization Study Trends

Based on Core Hours (5 Busiest Hours Daily)

- Opportunity for sharing workstations + private offices
- Opportunity for increase in unassigned workstations + private offices
- Opportunity for smaller enclosed meeting areas
- Opportunity for more purposeful open meeting spaces

- Assigned Workstations
  - 40% Average Time Used
- Assigned Offices
  - 67% Of the offices were used so little, they could be mobility programs or sharing
  - 7% Of the offices were used more than 60% of the time

- Enclosed meeting rooms are used twice as often as open meeting spaces

Tips for Successful Open Meeting Spaces
- Location
- Feeling of visual & acoustical privacy

Average Room Size: 8 seats
Average Meeting Size: 3 Seats
How do we get to a more informed AEC industry?

Having more ownership of the tools we need to understand our designs

Learning how to ask the right questions of our buildings

Engaging directly with information about our buildings

Not being afraid to learn that our assumptions were not quite right

Incorporating what we learn into our design process
<table>
<thead>
<tr>
<th>What do students want in a study space?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space type: Computer lab, Study room, Outdoor</td>
</tr>
<tr>
<td>Reservable</td>
</tr>
<tr>
<td>Resources: Outlets, Computers, Whiteboards, Display</td>
</tr>
<tr>
<td>Noise level: Silent, Low hum</td>
</tr>
<tr>
<td>Natural light</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. /seattle/study/?building0=Odegaard+Undergraduate+Library+(OUGL)</td>
</tr>
<tr>
<td>2. /seattle/study/?type0=computer_lab</td>
</tr>
<tr>
<td>3. /seattle/study/?type0=study_room</td>
</tr>
<tr>
<td>4. /seattle/study/?resources0=has_outlets&amp;noise0=silent&amp;noise1=quiet</td>
</tr>
<tr>
<td>5. /seattle/study/?resources0=has_whiteboards&amp;type0=study_room</td>
</tr>
<tr>
<td>6. /seattle/study/?noise0=silent</td>
</tr>
<tr>
<td>7. /seattle/study/?resources0=has_whiteboards&amp;resources1=has_outlets&amp;type0=study_room&amp;type1=conference</td>
</tr>
<tr>
<td>8. /seattle/study/?type0=study_room&amp;noise0=silent&amp;capacity0=2</td>
</tr>
<tr>
<td>9. /seattle/study/?resources0=has_outlets</td>
</tr>
<tr>
<td>10. /seattle/study/?resources0=has_outlets&amp;noise0=silent&amp;lighting0=has_natural_light</td>
</tr>
</tbody>
</table>
Creating your own POE
Questions to Consider

What is it you want to understand?

What data would contribute to your understanding?

What methods could you use to systematically gather this data?

How will you analyze the data?

What are the implications of your findings?
Questions for Discussion

What data are you collecting currently?

What data would you like to collect? What would you want to understand better?

How would you go about implementing a data collection protocol?
Session CN041
Examine applied technologies in action to measure education space performance

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