

HOW DO YOU MEASURE UP?

NEW WAYS TO EVALUATE PROJECT SUCCESS



“One of the dirty secrets of government is actually that we don’t know whether what we’re doing works a lot of the time.”

*Rory Gallagher, Director, Britain’s Behavioral Insights Team
Freakonomics Radio: “Big Returns from Thinking Small”*

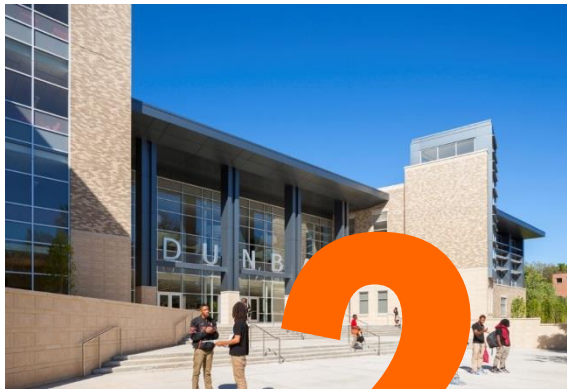


Impact

STEPS TOWARD THIS GOAL



1



2



3



4...

IEQ IN SCHOOLS

STUDY



DISTRICT OF COLUMBIA PUBLIC SCHOOLS

IEQ STUDY

4

NON-MODERNIZED

2 elementary schools

1 middle school

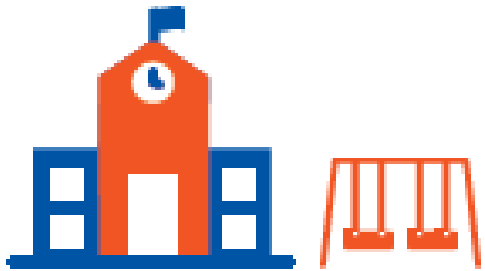
1 elementary + middle school

5

MODERNIZED

3 elementary schools

2 middle schools



Elementary Schools



Middle Schools



FLOORING GROUP

PERKINS —
EASTMAN



DISTRICT OF COLUMBIA
PUBLIC SCHOOLS

METHODOLOGY





Occupant
Surveys

On-site
Measurements

Archival Data

OCCUPANT SURVEYS

Think about the temperature in your classroom.



12. Describe how it usually feels in your classroom. [circle one]

Warm



Cold



13. How does the temperature in your classroom usually make you feel? [circle one]

Good



Bad



OCCUPANT SURVEYS



BAD NOISE LEVELS

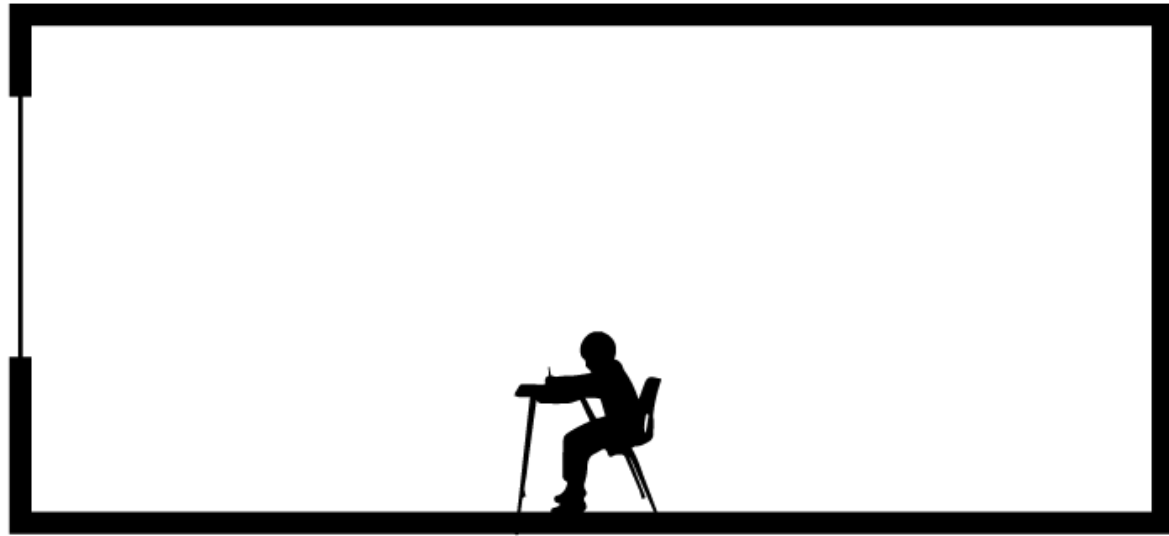
I can not
pay attention.

GOOD DAYLIGHTING

The daylight in my
classroom makes me
feel ready to learn
because I feel active
getting light.



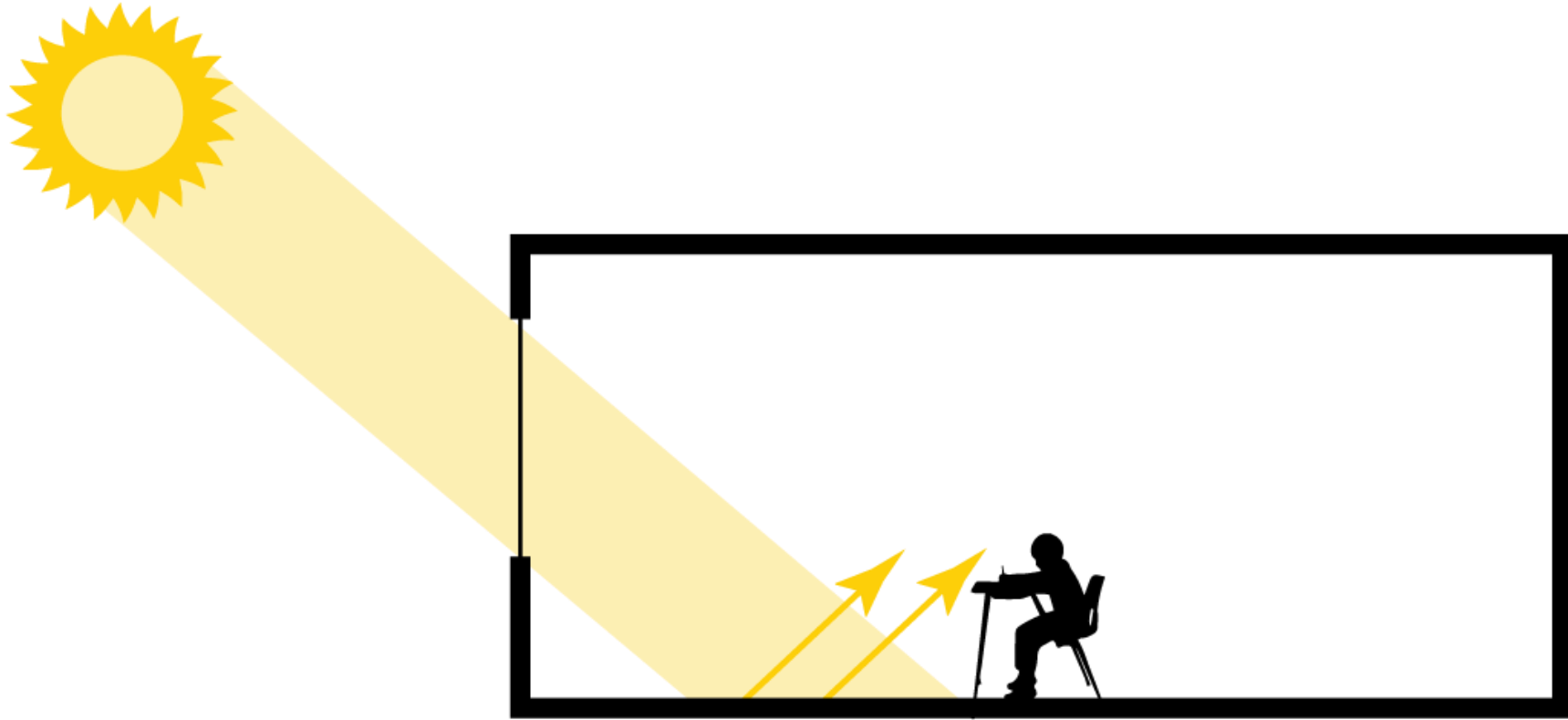
ON-SITE MEASUREMENTS



ON-SITE MEASUREMENTS

DAYLIGHT

- Distribution
- Glare



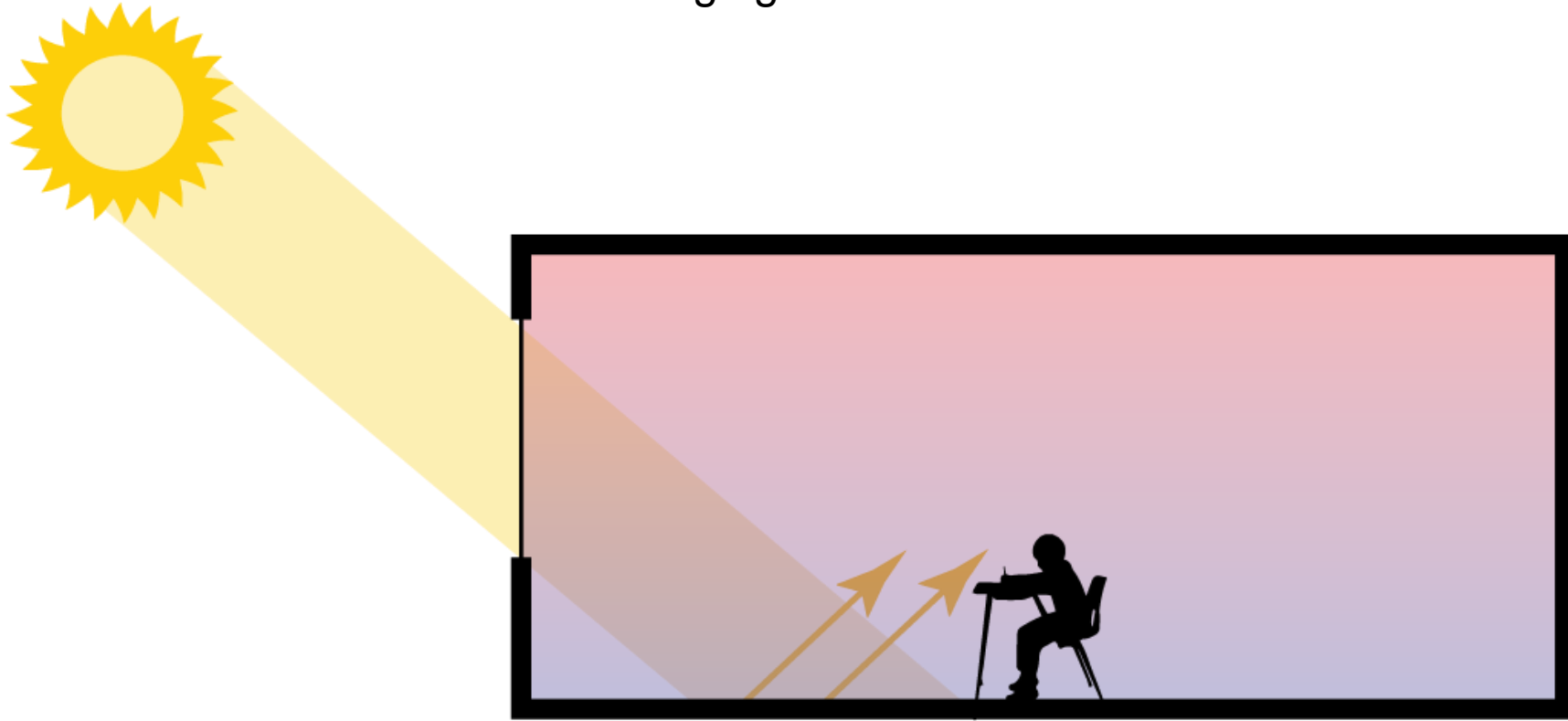
ON-SITE MEASUREMENTS

DAYLIGHT

- Distribution
- Glare

THERMAL COMFORT

- Air Temperature
- Humidity
- Thermal Imaging



ON-SITE MEASUREMENTS

DAYLIGHT

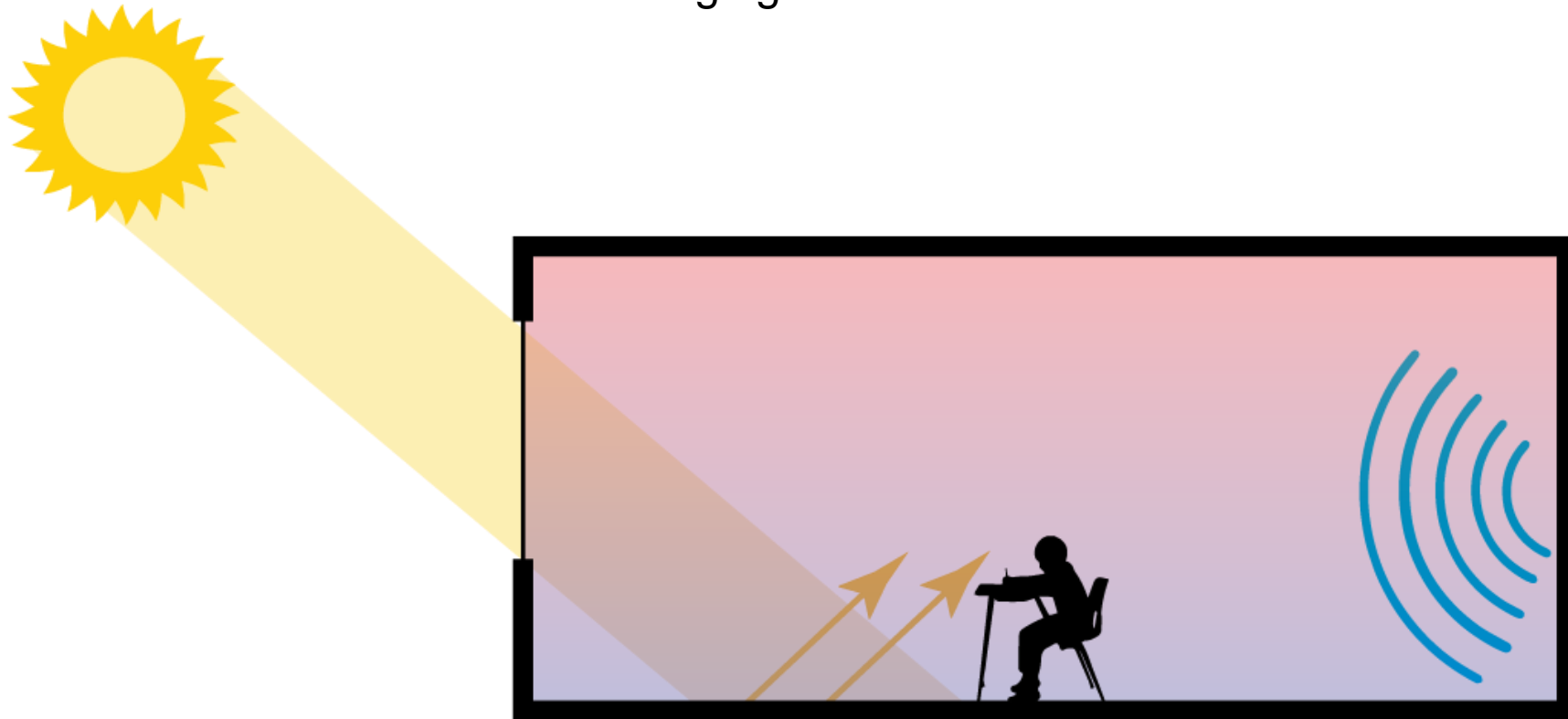
- Distribution
- Glare

THERMAL COMFORT

- Air Temperature
- Humidity
- Thermal Imaging

ACOUSTICS

- Ambient Noise



ON-SITE MEASUREMENTS

DAYLIGHT

- Distribution
- Glare

THERMAL COMFORT

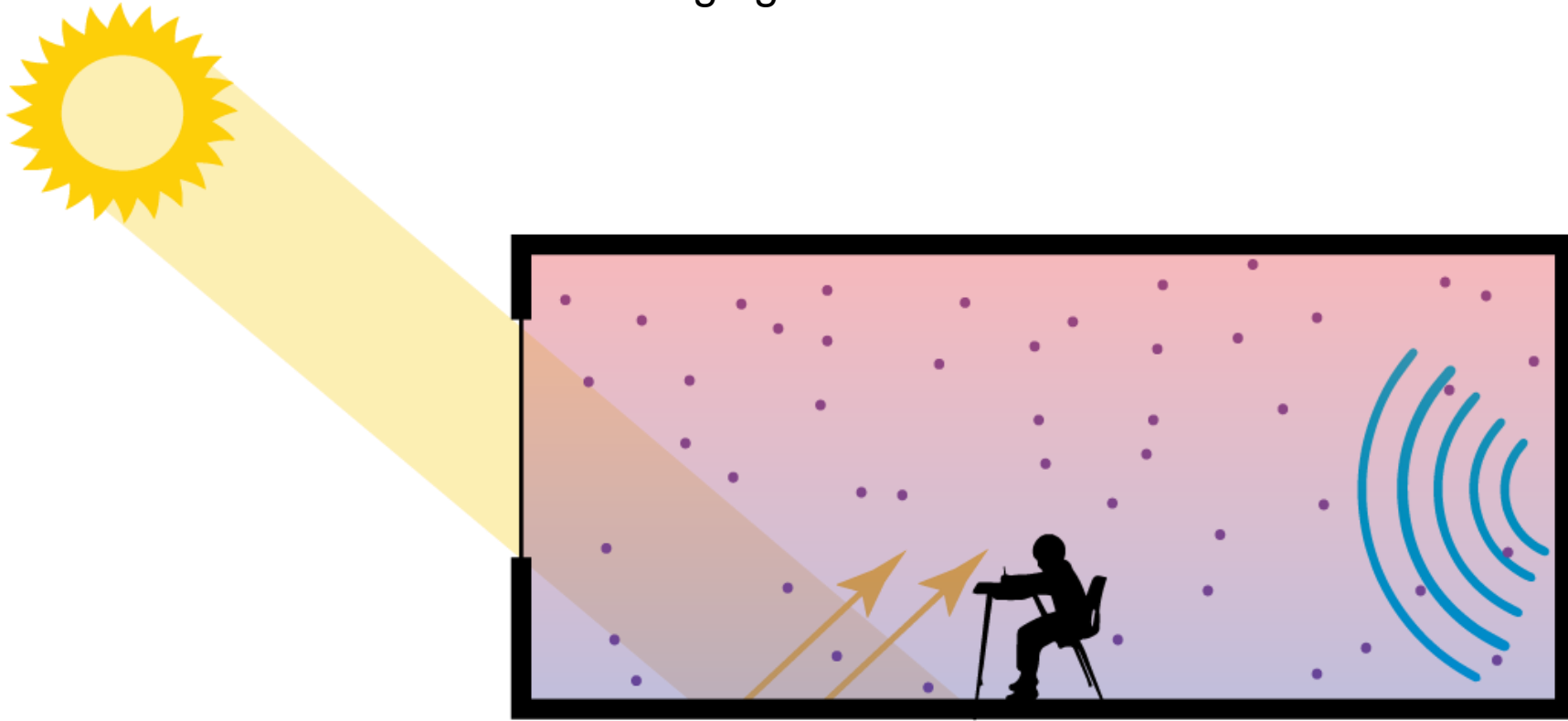
- Air Temperature
- Humidity
- Thermal Imaging

ACOUSTICS

- Ambient Noise

AIR QUALITY

- CO₂
- VOCs



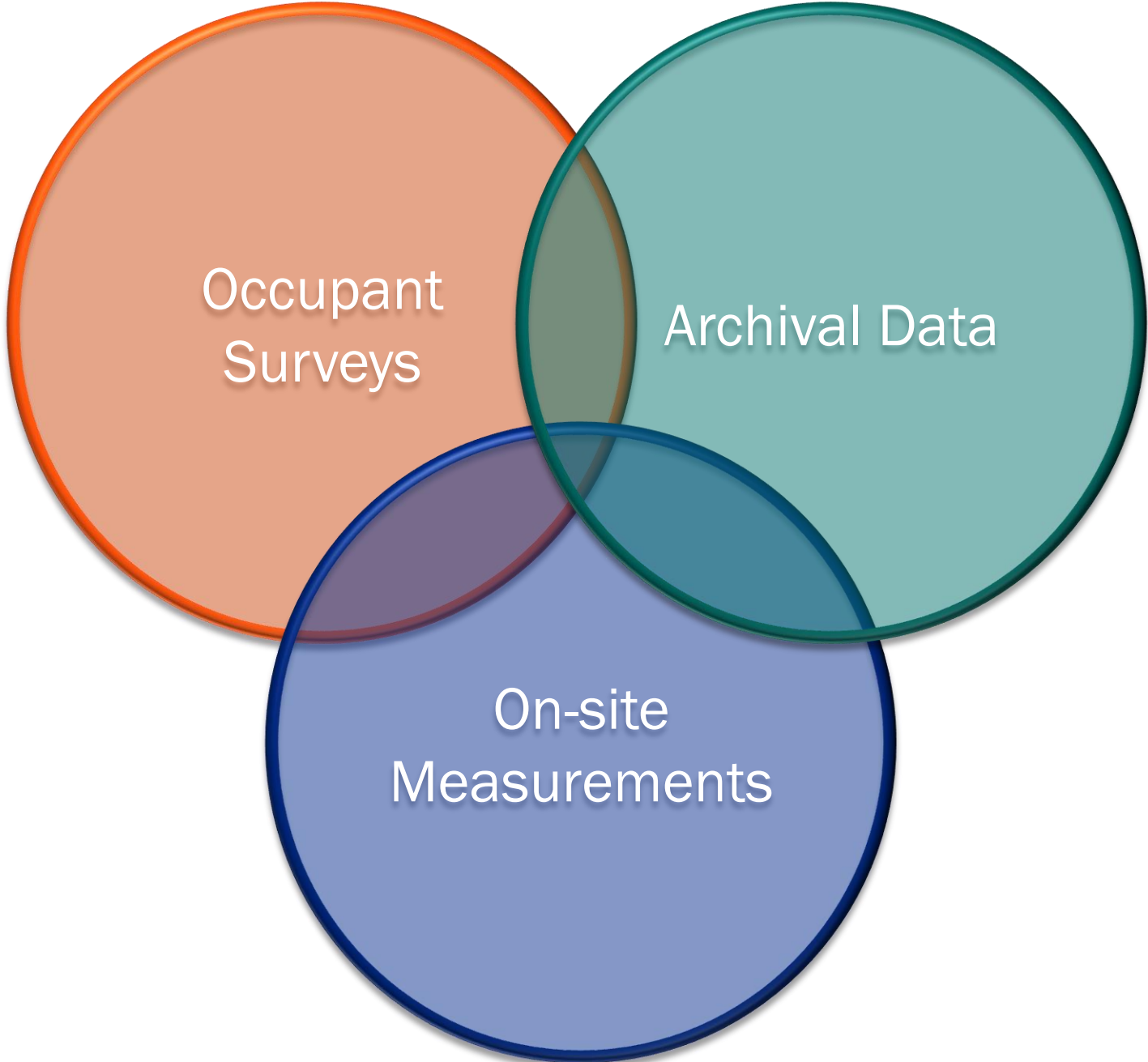
ON-SITE MEASUREMENTS



ARCHIVAL DATA

- Student Attendance
- Boundary Rates
- Enrollment Rates
- Nurse Visits
- Faculty retention
- Crime incidents





Occupant
Surveys

Archival Data

On-site
Measurements

IEQ IN SCHOOLS FINDINGS



STUDENTS ARE...



25% more proud
to go to school in a
modernized building

AND

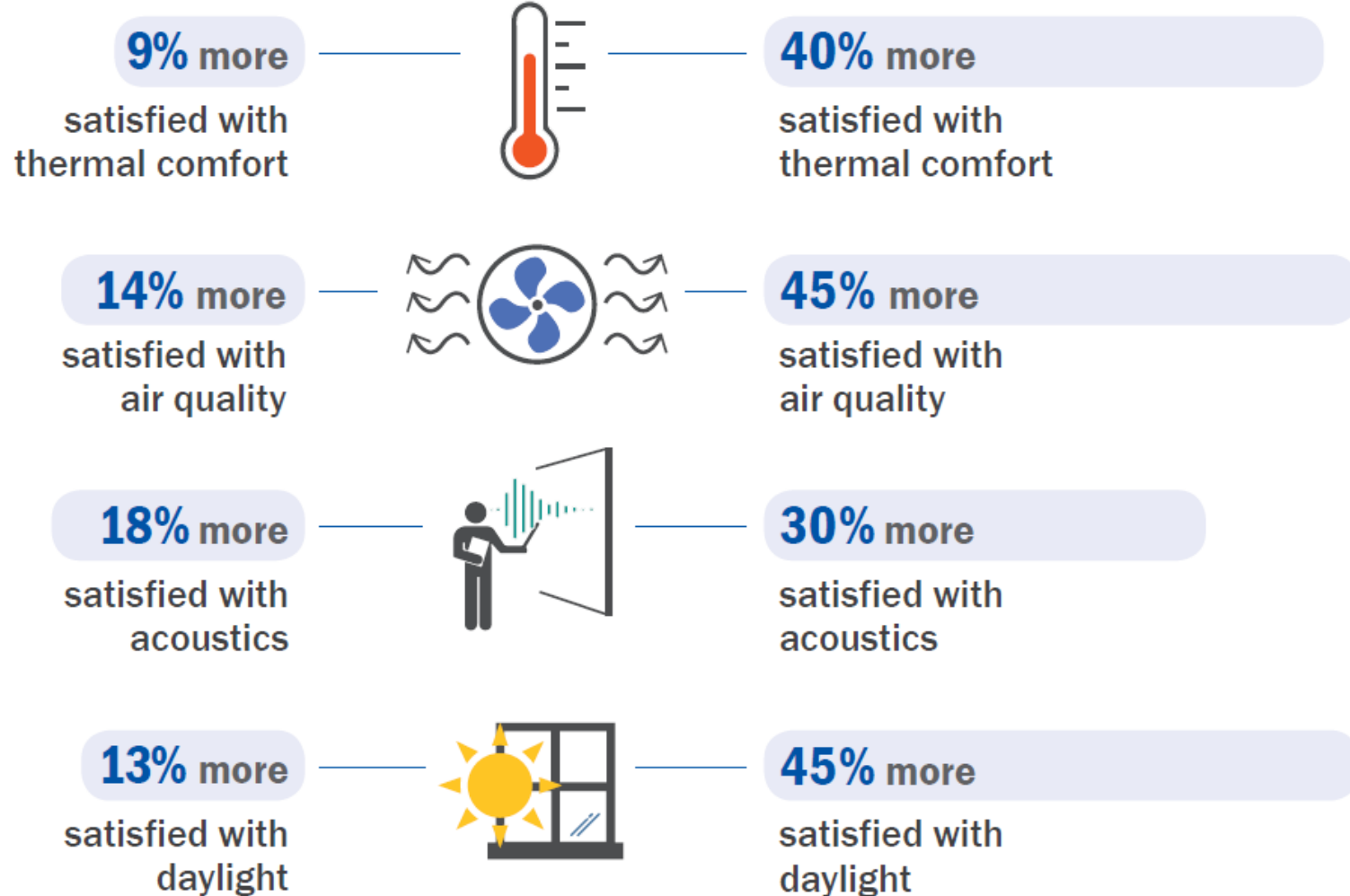


16% happier,
18% calmer,
17% healthier, and
16% more ready to learn
in modernized
school classrooms

IN MODERNIZED SCHOOLS

STUDENTS ARE...

FACULTY ARE...



DAYLIGHT

47%

Higher Faculty Satisfaction in MODERNIZED Buildings

GLARE IMAGING

Non-Modernized

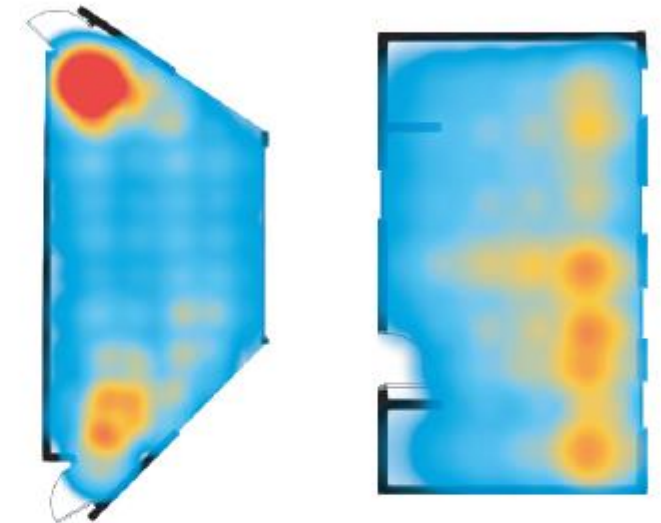


Modernized

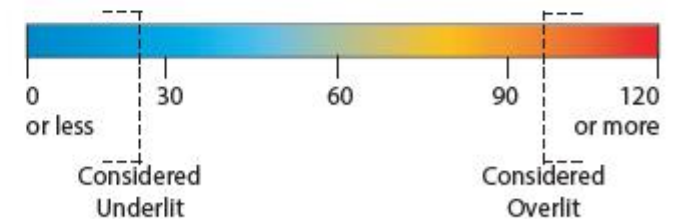


DAYLIGHT DISTRIBUTION

Non-Modernized vs Modernized



Foot Candles



* white areas in diagrams read as above 120 footcandles*

ACOUSTICS

AMBIENT NOISE

↓ **11%**

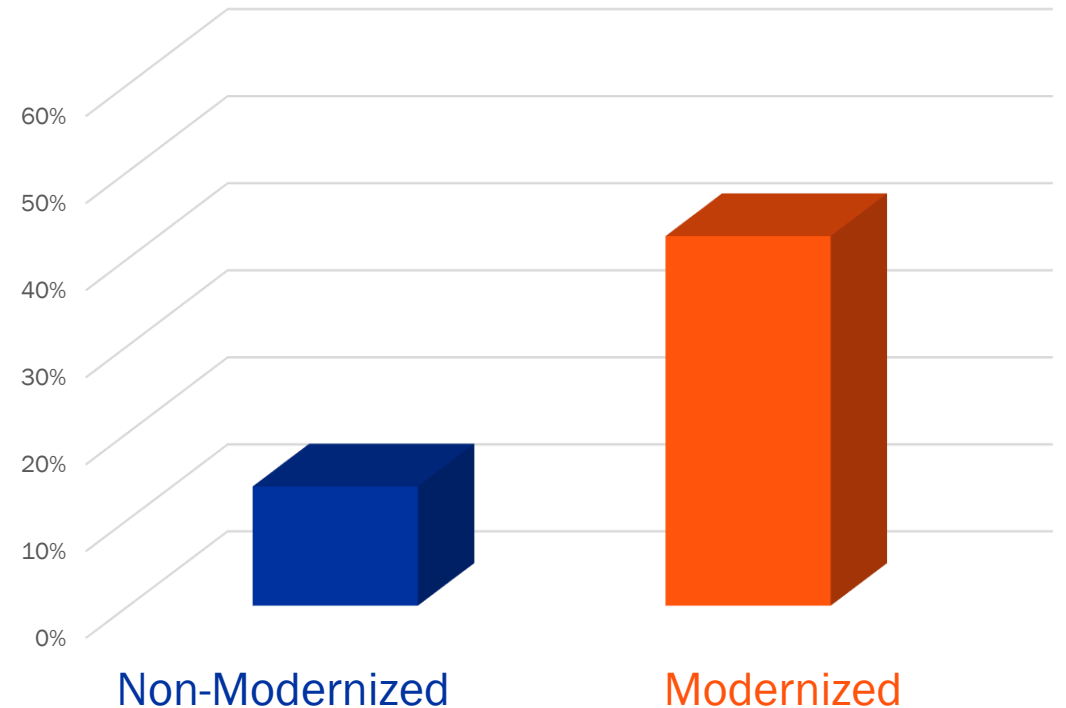
In Modernized Schools

ACOUSTIC SATISFACTION

↑ **29%**

In Modernized Schools

Faculty Satisfaction



AIR QUALITY

PEAK CO2 LEVELS

↓ 41%

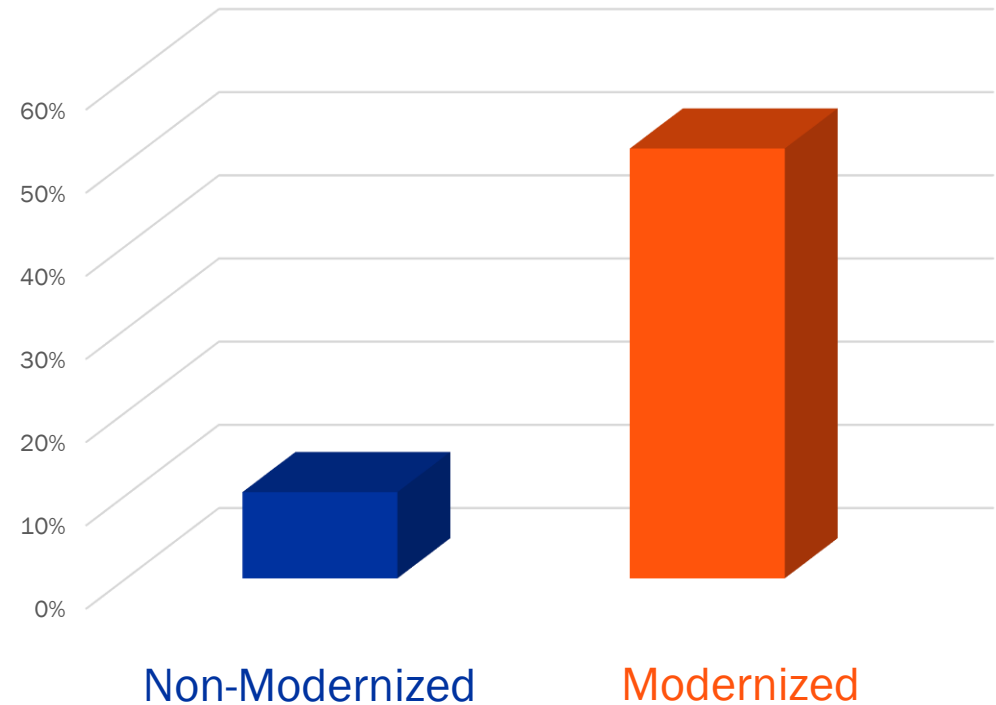
In Modernized Schools

with

↑ 41%

Faculty Satisfaction

Faculty Satisfaction



THERMAL COMFORT

NON-MODERNIZED SCHOOLS

42%

Time in the Comfort Zone

MODERNIZED SCHOOLS

84%

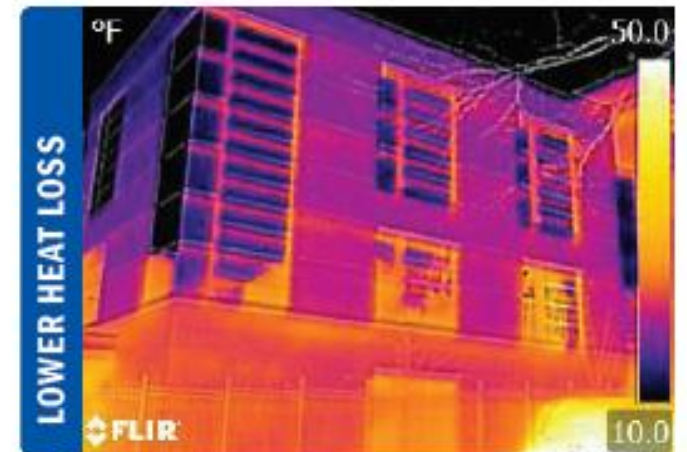
Time in the Comfort Zone

THERMAL IMAGING

Non- Modernized



Modernized



ARCHIVAL DATA

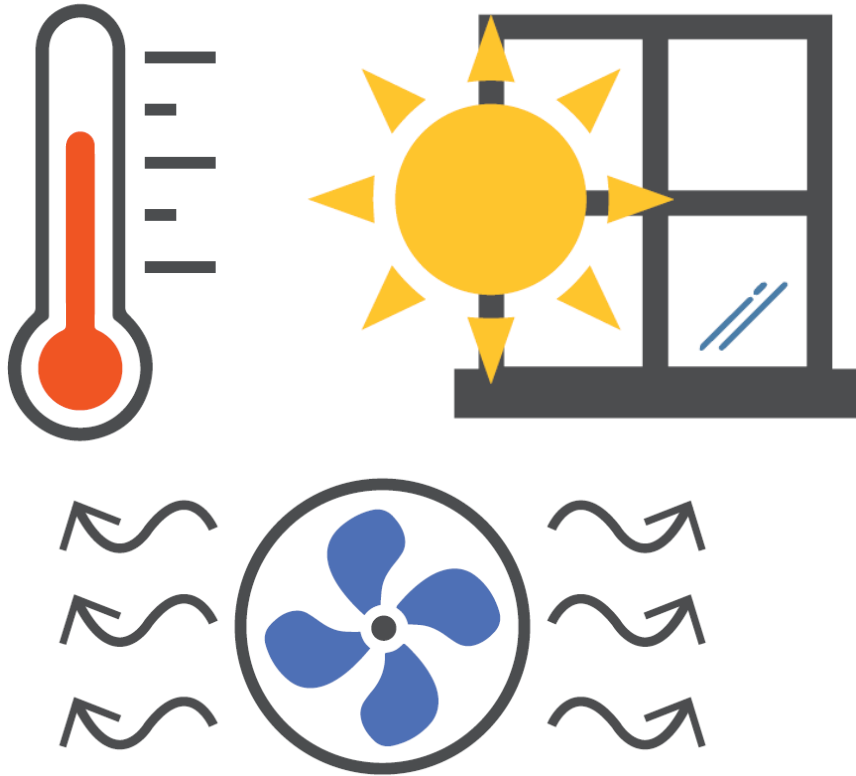
MODERNIZED SCHOOLS outperformed the **NON-MODERNIZED SCHOOLS** around:

- Student attendance
- Boundary rate
- Enrollment
- School nurse visits per student
- Faculty retention rates



CORRELATIONS

ONSITE AND SURVEY



Improved Thermal Comfort,
Air Quality,
and Daylight

Faculty Satisfaction

CORRELATIONS

ON SITE AND ARCHIVAL



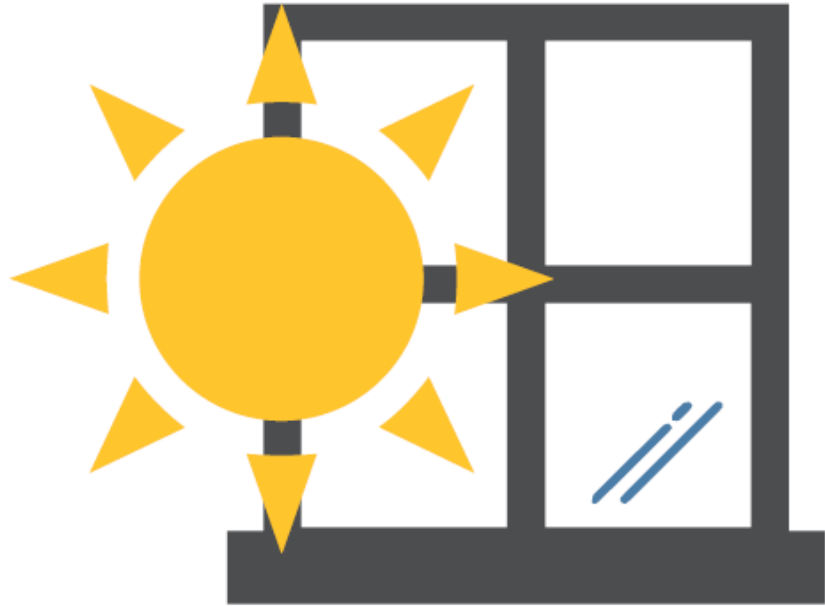
Thermal Comfort



Better student attendance,
enrollment,
and fewer nurse visits

CORRELATIONS

ON SITE AND ARCHIVAL



Daylight



Improved Boundary rate,
Less Crime,
and Higher Enrollment Rates

CONCLUSIONS

- Modernized vs Non-Modernized
- Acoustics
- Daylight
- School Performance Indicators



DOWNLOAD THE STUDY AT

http://www.perkinseastman.com/white_papers

**BUILDING DESIGN
+ CONSTRUCTION**

Modernizing schools is paying off in creating better learning and teaching environments

A new paper reports on a recent study of nine schools in Washington DC that gauged occupants' perceptions.

[K-12 SCHOOLS](#) | NOVEMBER 05, 2018 | JOHN CAULFIELD, SENIOR EDITOR

