



Gaurav Trivedi's Photography

From Tents to the Taj Mahal:

# Connecting Students, Teachers & the Learning Environment



CEFPI, Hawaii Department of Education and  
the Hawaii Institute of Public Affairs

**FACILITIES MATTER: THE CASE FOR 21ST CENTURY SCHOOLS**

creating places to *learn*

# Presenters



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Principal, Fanning Howey

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@GHMonberg on Twitter

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Project Executive

Principal, Fanning Howey

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@GKacan on Twitter

# Learning Objectives



1. Learn how the "Hierarchy of Needs" for the planning and design of school facilities relates to effective education and responsible school construction.
2. Learn to appropriately prioritize construction programs based on basic needs versus higher level needs.
3. Examine theories that support a project-based, collaborative approach to instruction.
4. See lessons learned and examples of "transcendent" schools from across the country.

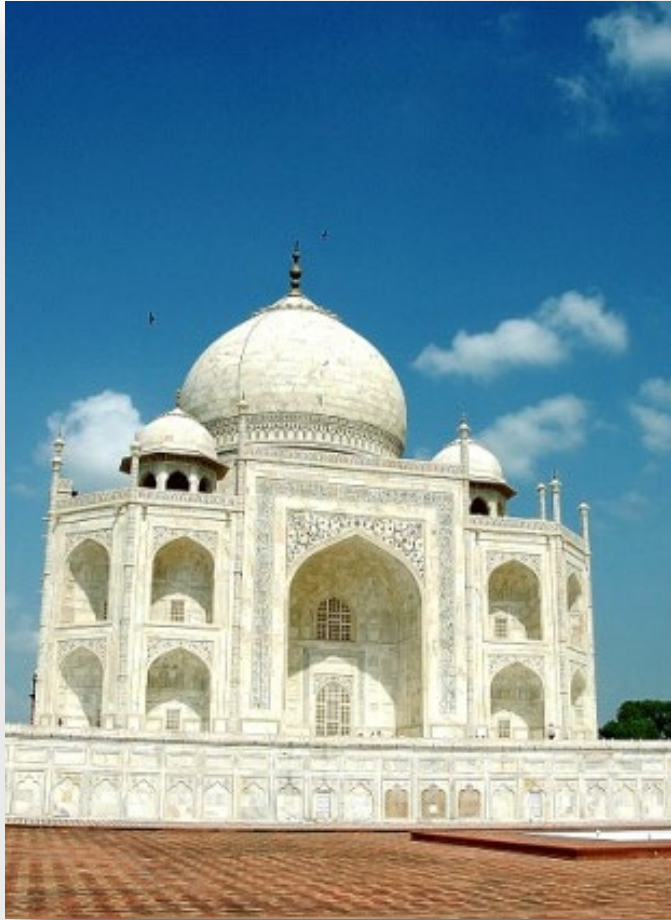
# What is a Taj Mahal School?



## Definition of the Taj Mahal

A UNSECO World Heritage Site in central India, in Agra on the Jumna River: built (1632-43) by the emperor Shah Jahan in memory of his beloved wife, Mumtaz Mahal; regarded as the finest example of Mogul architecture and one of the most universally praised works of architecture in human history.

# What is a Taj Mahal School?



## Definition of the Taj Mahal

A wasteful, bloated, overly expensive school design which architects and designers develop in order to satisfy their own egos and boost fees at the expense of students and tax payers.

See also: “We need a Chevy not a Cadillac Syndrome”; “Buildings don’t matter. Kids can learn in tents.”



Can you get great results  
teaching in a tent?

# Do school facilities matter to education?

How do you get from Haiti to Helsinki?

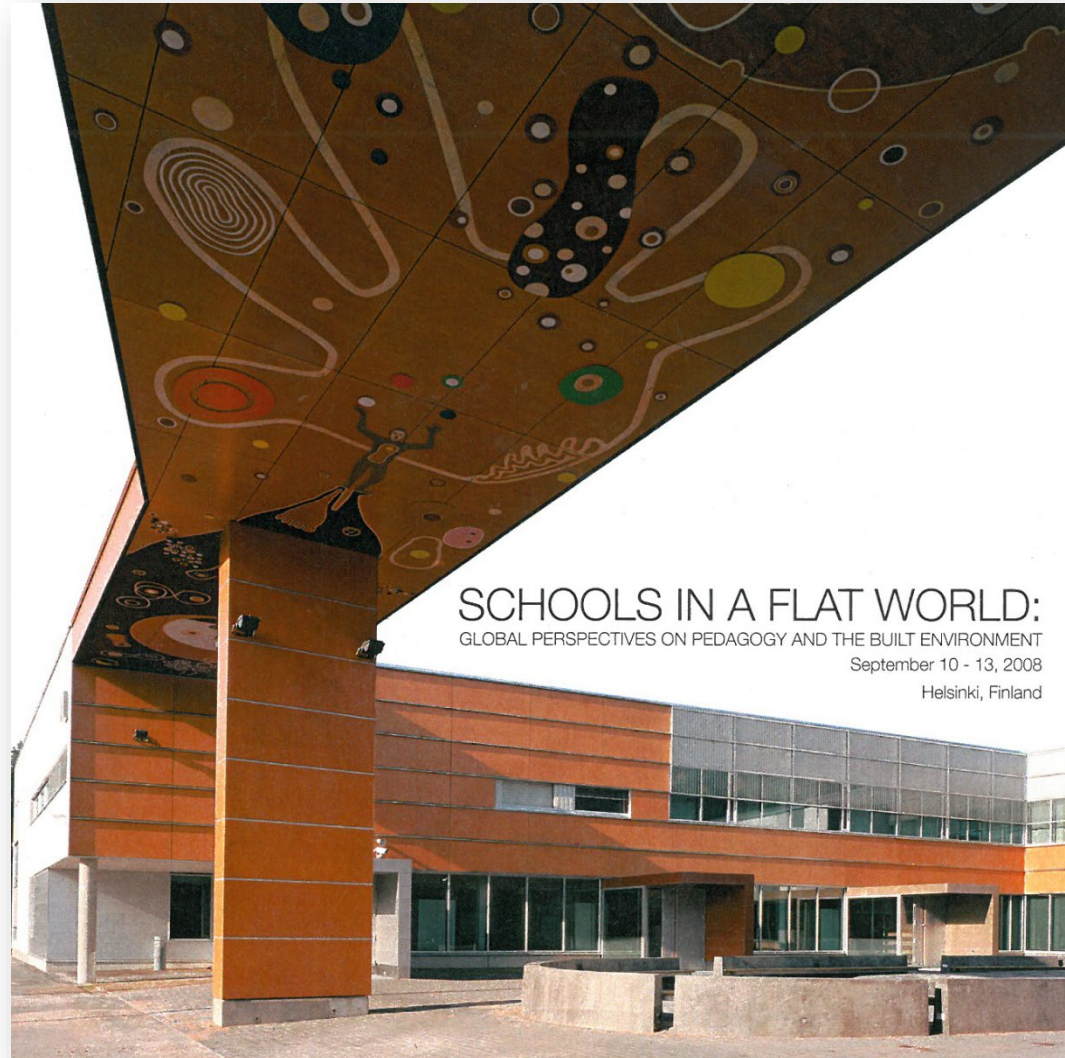


# Do school facilities matter to education?

AIA CAE

2008 Conference in  
Finland

“Schools in a Flat World:  
Global Perspectives on  
Pedagogy and the Built  
Environment”





# Do school facilities matter to education?

Hösmärinpuisto School  
And Day Care Center  
Espoo, Finland  
AIA CAE 2008 Conference  
in Finland  
“Schools in a Flat World:  
Global Perspectives on Pedagogy  
and the Built Environment”



# Facility needs for buildings and grounds.

Hösmäripuisto School  
And Day Care Center  
Espoo, Finland



# Do school facilities matter to education?

Punkinmäki

Comprehensive School

Helsinki, Finland

AIA CAE 2008 Conference  
in Finland

“Schools in a Flat World:  
Global Perspectives on Pedagogy  
and the Built Environment”



# Programmatic needs for pedagogical approach.

Punkinmäki  
Comprehensive School  
Helsinki, Finland



# Do school facilities matter to education?

Hiidenkivi

Comprehensive School

Helsinki, Finland

AIA CAE 2008 Conference  
in Finland

“Schools in a Flat World:  
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and the Built Environment”



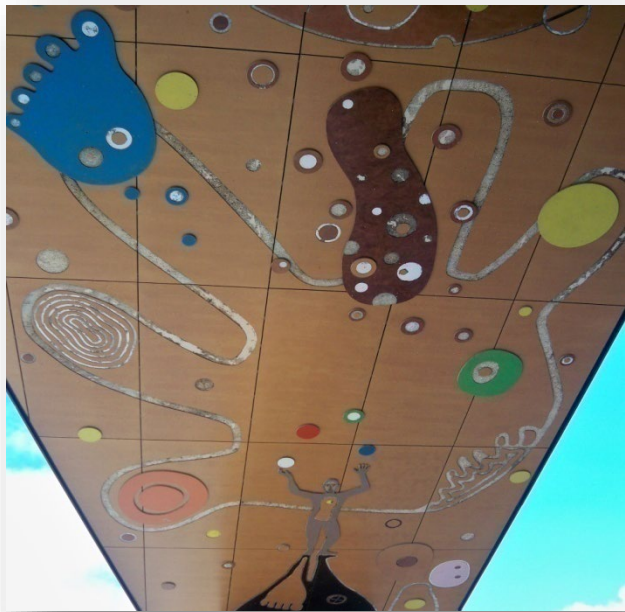
# The facility is student-centered.

Hiidenkivi Comprehensive  
School  
and  
Arabia Comprehensive School  
Helsinki, Finland



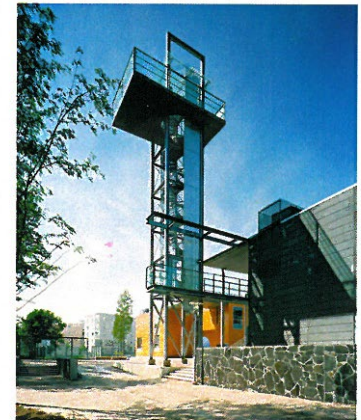
# Community values in public art work.

Hiidenkivi Comprehensive  
School  
and  
Arabia Comprehensive School  
Helsinki, Finland



# Do school facilities matter to education?

Aurinkolahti  
Comprehensive School  
Helsinki, Finland  
AIA CAE 2008 Conference  
in Finland  
“Schools in a Flat World:  
Global Perspectives on Pedagogy  
and the Built Environment”





# Building as an integrated teaching tool.

Aurinkolahti  
Comprehensive School  
Helsinki, Finland



# Do school facilities matter to education?



## Tallin, Estonia



# Do school facilities matter to education?



## Tallin, Estonia



# Do school facilities matter to education?

Tallin, Estonia



# Do school facilities matter to education?



Tallin, Estonia



# Do school facilities matter to education?



## Tallin, Estonia

10. septembril  
kell 15.20  
tutvustatakse aulas  
selle õppeaasta  
valikaineid



# Do school facilities matter to education?



Tallin, Estonia

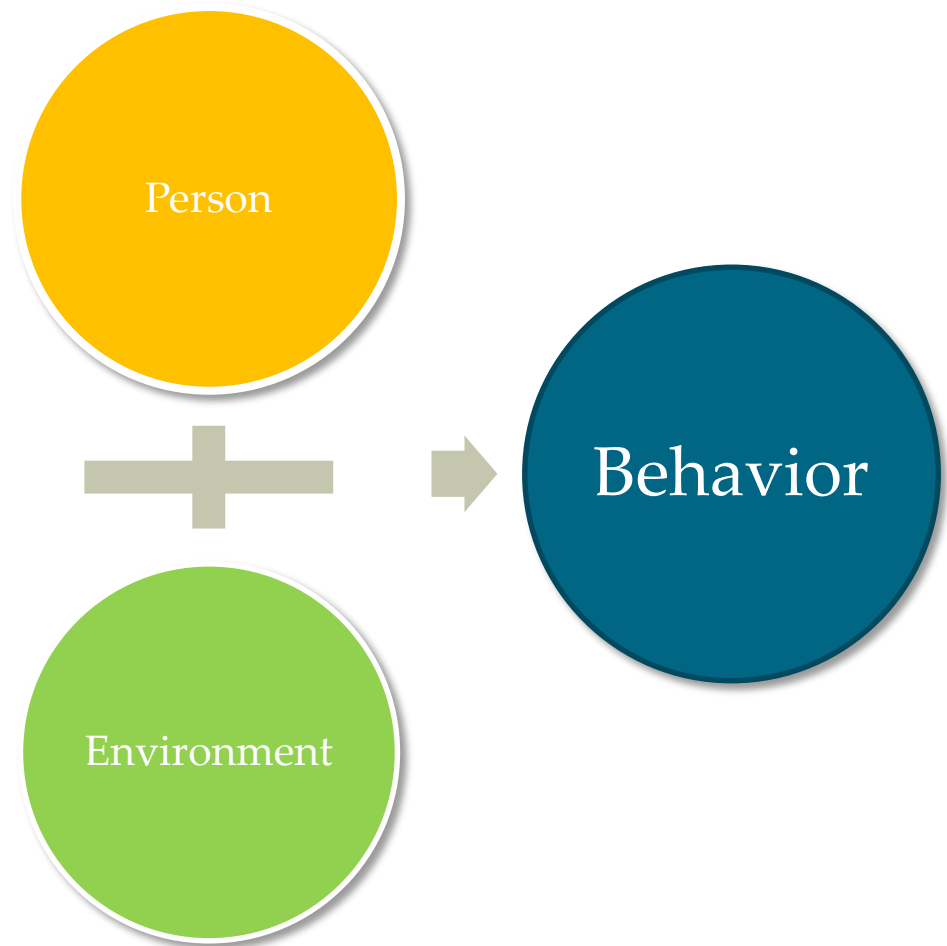


# Connecting Students, Teachers, and the Environment



$$B=f(PE)$$

~ KURT LEWIN (1935)





# Connecting Students, Teachers, and the Environment

## BEHAVIOR CHART $B=f(PE)$

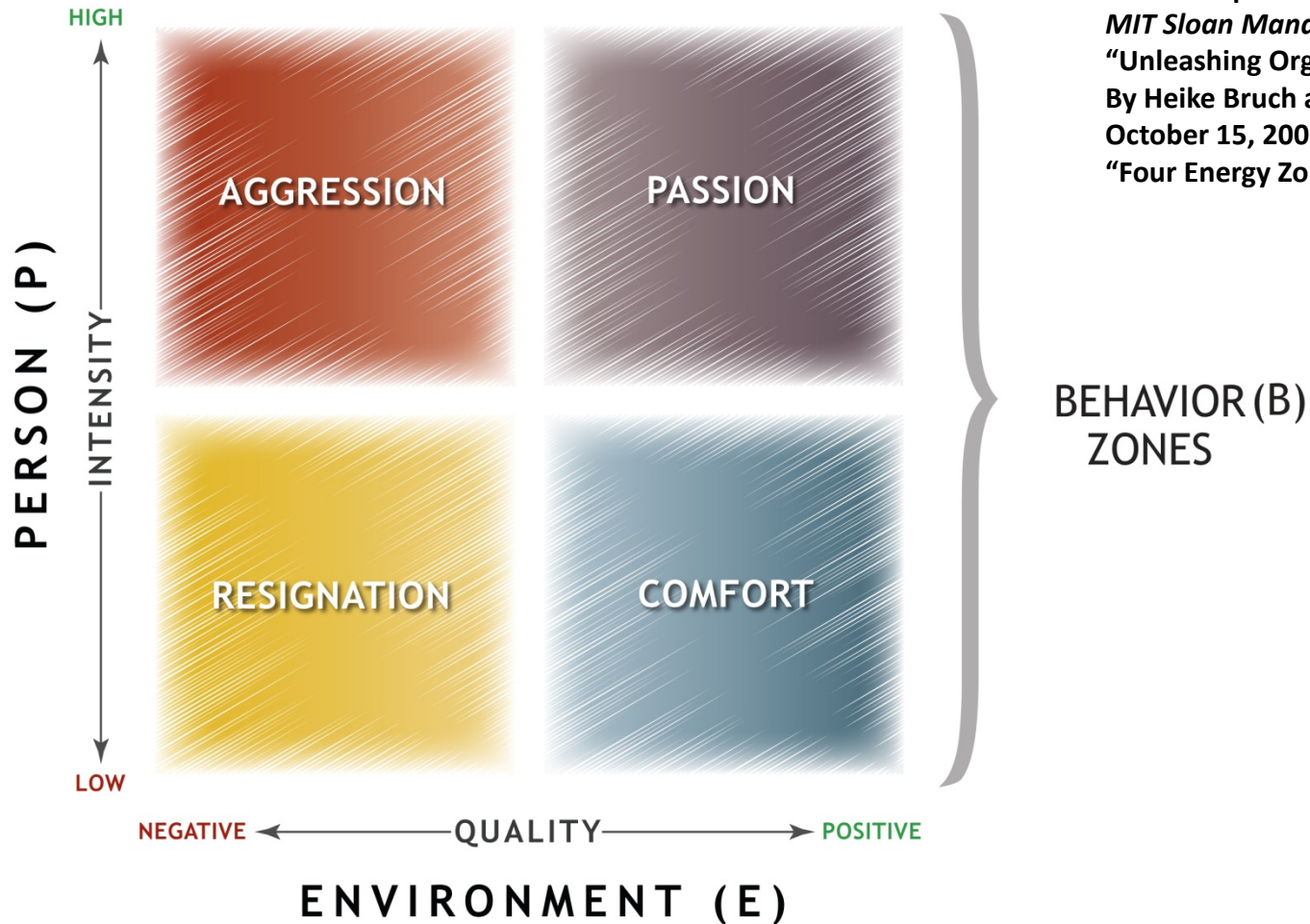


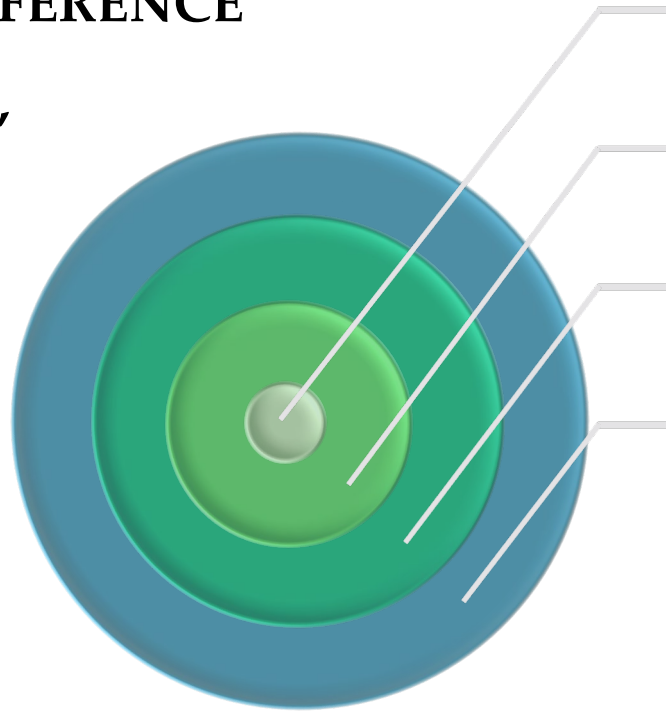
Chart Adapted From:  
*MIT Sloan Management Review*  
"Unleashing Organizational Energy"  
By Heike Bruch and Sumantra Ghoshal  
October 15, 2003  
"Four Energy Zones"

# Connecting Students, Teachers, and the Environment



**“AS OUR CIRCLE OF  
KNOWLEDGE EXPANDS, SO  
DOES THE CIRCUMFERENCE  
OF DARKNESS  
SURROUNDING IT.”**

**~ ALBERT EINSTEIN**



$I_i$   
 $B_i(t)$   
 $P_i(t)$   
 $S_i(t)$

Eric Hanushek  
*The Production of  
Education, Teacher  
Quality and Efficiency*  
February 1970

The vector of  
educational outputs  
is a function of the  
following factors  
over time.

$A_{it} = f(I_i, B_i(t), P_i(t), S_i(t))$   
where:

A = Educational  
outputs of the  $i^{\text{th}}$   
student at time t.

I = Innate Abilities

B = Family Inputs

P = Peer Influences

S = School Inputs

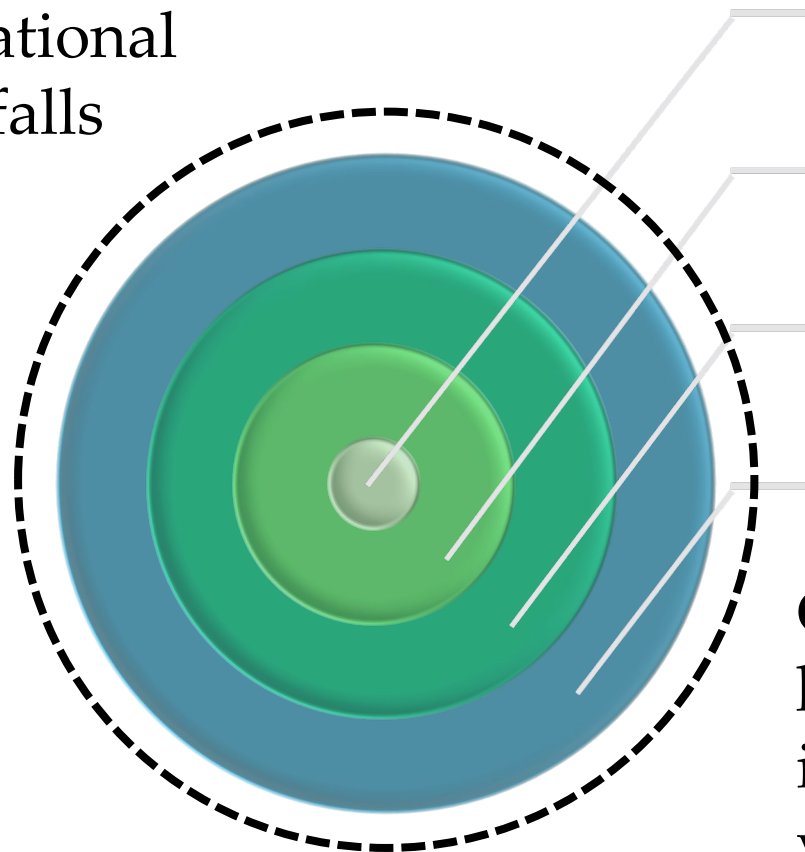
**EQUATION OF THE EDUCATIONAL PROCESS  
BY: ERIC HANUSHEK (FEB 1970)**

# Connecting Students, Teachers, and the Environment



What happens when a child's educational development falls short of expectations?

**Expectations**



$$I_i$$
$$B_i(t)$$
$$P_i(t)$$
$$S_i(t)$$

Can a school facility have a positive impact on these variables?

**\*MODIFIED EQUATION OF THE EDUCATIONAL PROCESS**

# Do school facilities matter to education?



## Léogâne, Haiti





Handwritten text on a chalkboard, likely a lesson plan or lecture notes, covering various topics in French grammar and literature. The text is organized into columns and includes headings such as "Le verbe", "Le pronom", "Le complément", and "Le sujet".

**Le verbe**  
Le verbe est le mot qui exprime l'action ou l'état.  
Il est le cœur de la phrase.  
Il est classé en deux groupes : le verbe conjugué et le verbe infinitif.

**Le pronom**  
Le pronom remplace un nom.  
Il est classé en deux groupes : le pronom personnel et le pronom possessif.

**Le complément**  
Le complément complète le verbe ou le nom.  
Il est classé en deux groupes : le complément d'objet et le complément circonstanciel.

**Le sujet**  
Le sujet est le mot ou le groupe de mots qui désigne la personne ou l'animal qui agit.  
Il est classé en deux groupes : le sujet simple et le sujet complexe.



















DE DARBONNE

01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	00













# Getting from Haiti to Helsinki

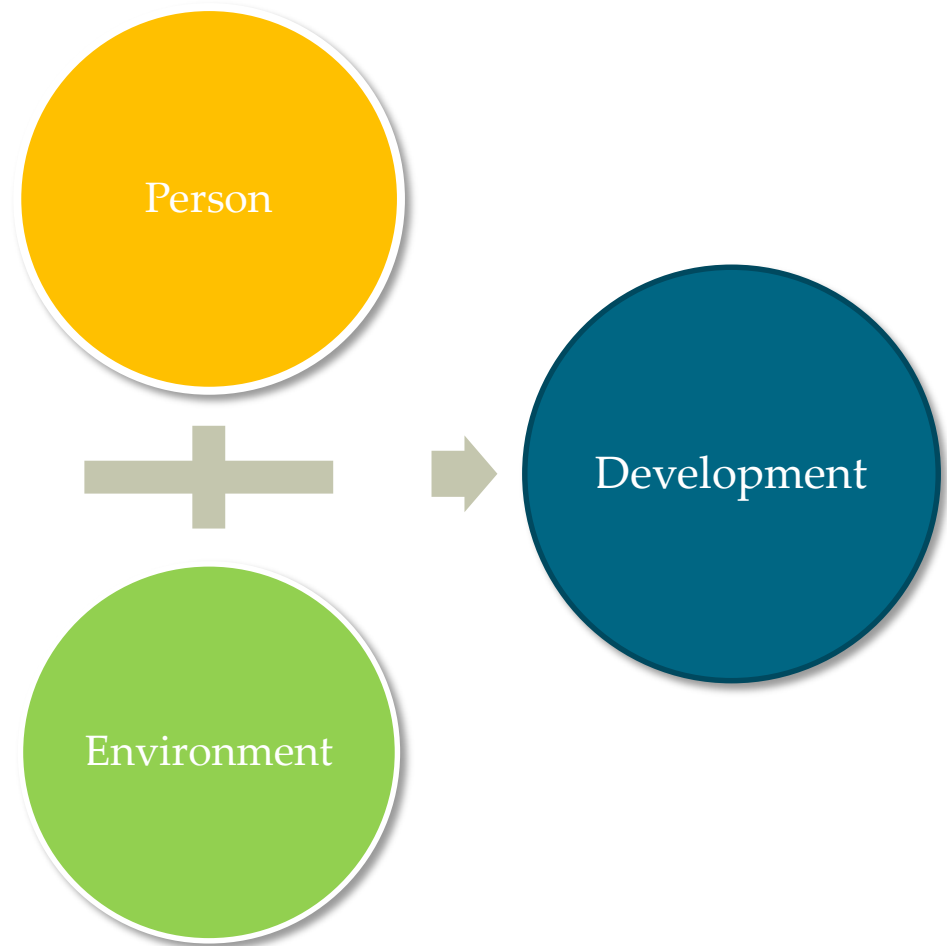


# Connecting Students, Teachers, and the Environment



$$D=f(PE)$$

~ URIE BRONFENBRENNER  
(1992)



# Connecting Students, Teachers, and the Environment

## DEVELOPMENT CHART $D=f(PE)$

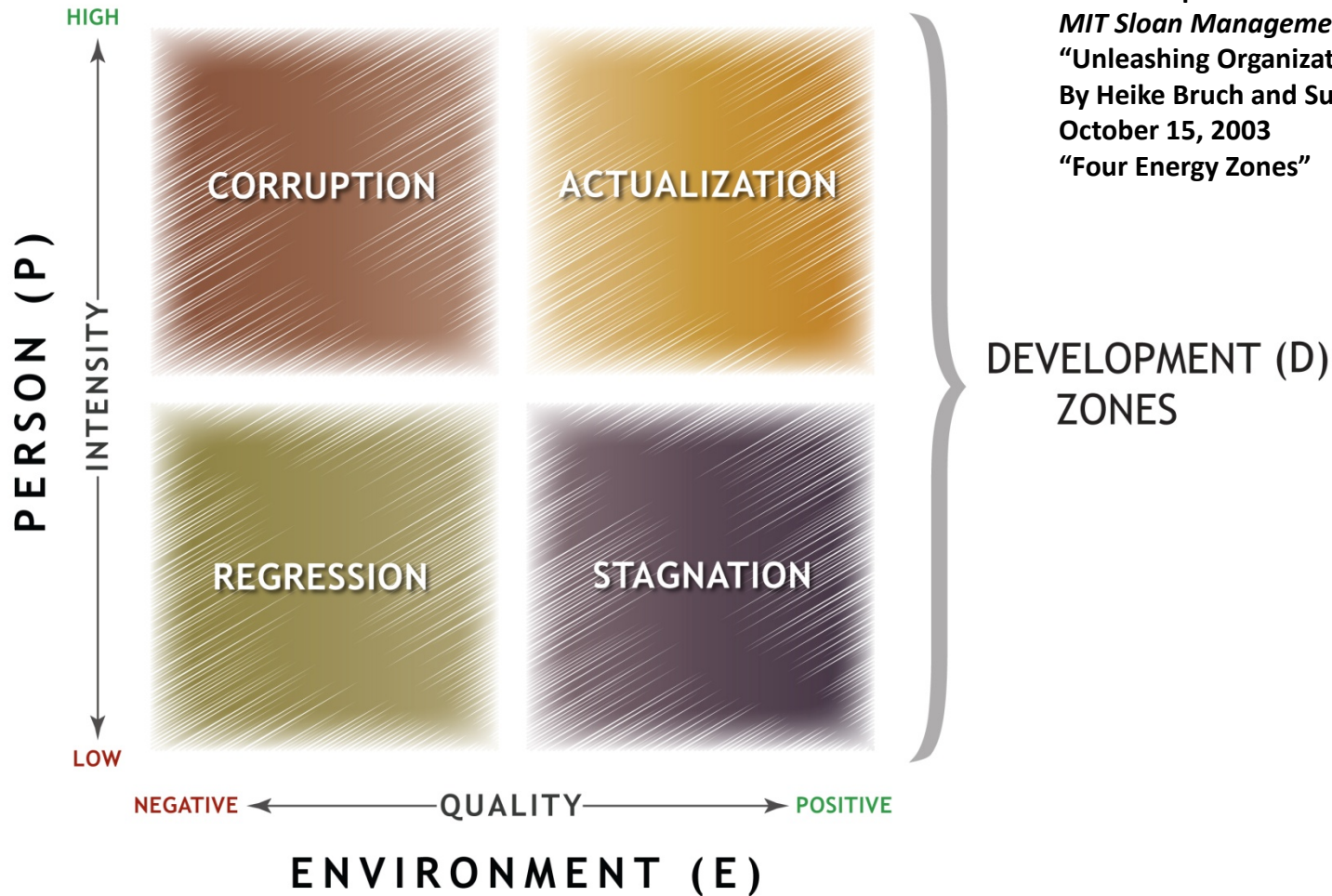


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# Connecting Students, Teachers, and the Environment

## DEVELOPMENT CHART $D=f(PE)$

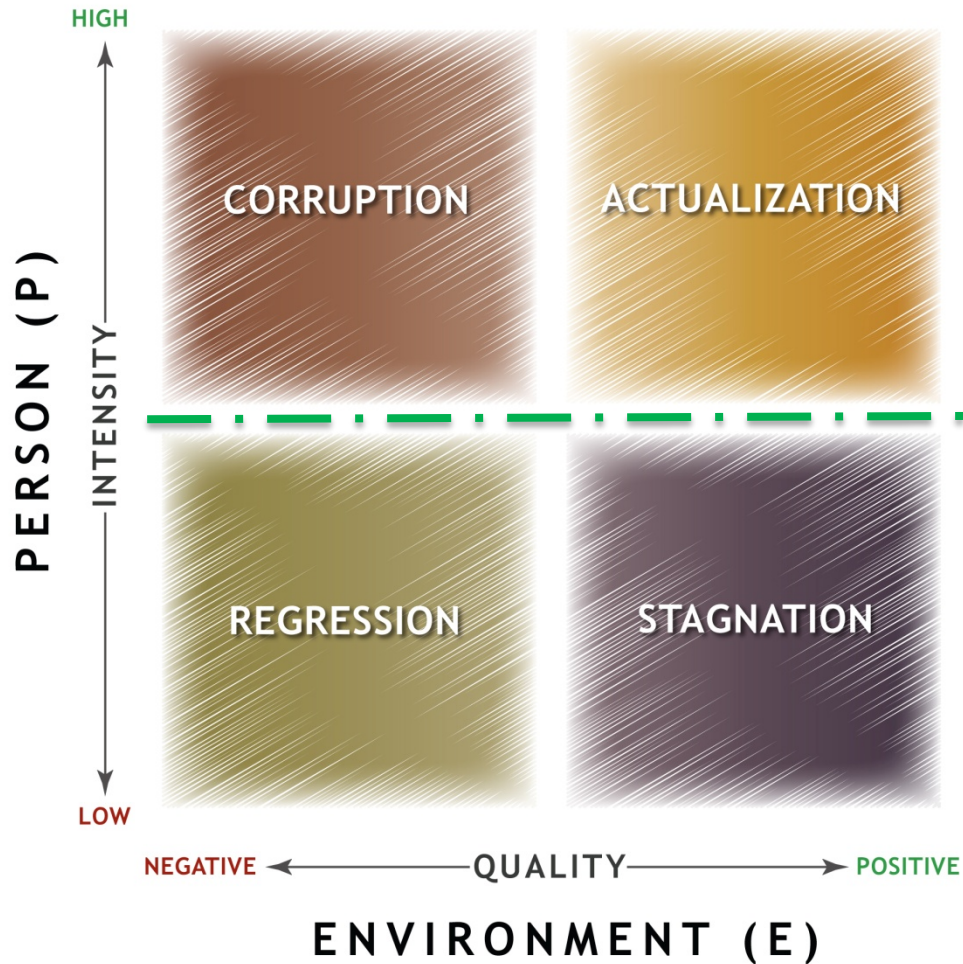


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**Axis of Engagement**

DEVELOPMENT (D)  
ZONES

# Connecting Students, Teachers, and the Environment

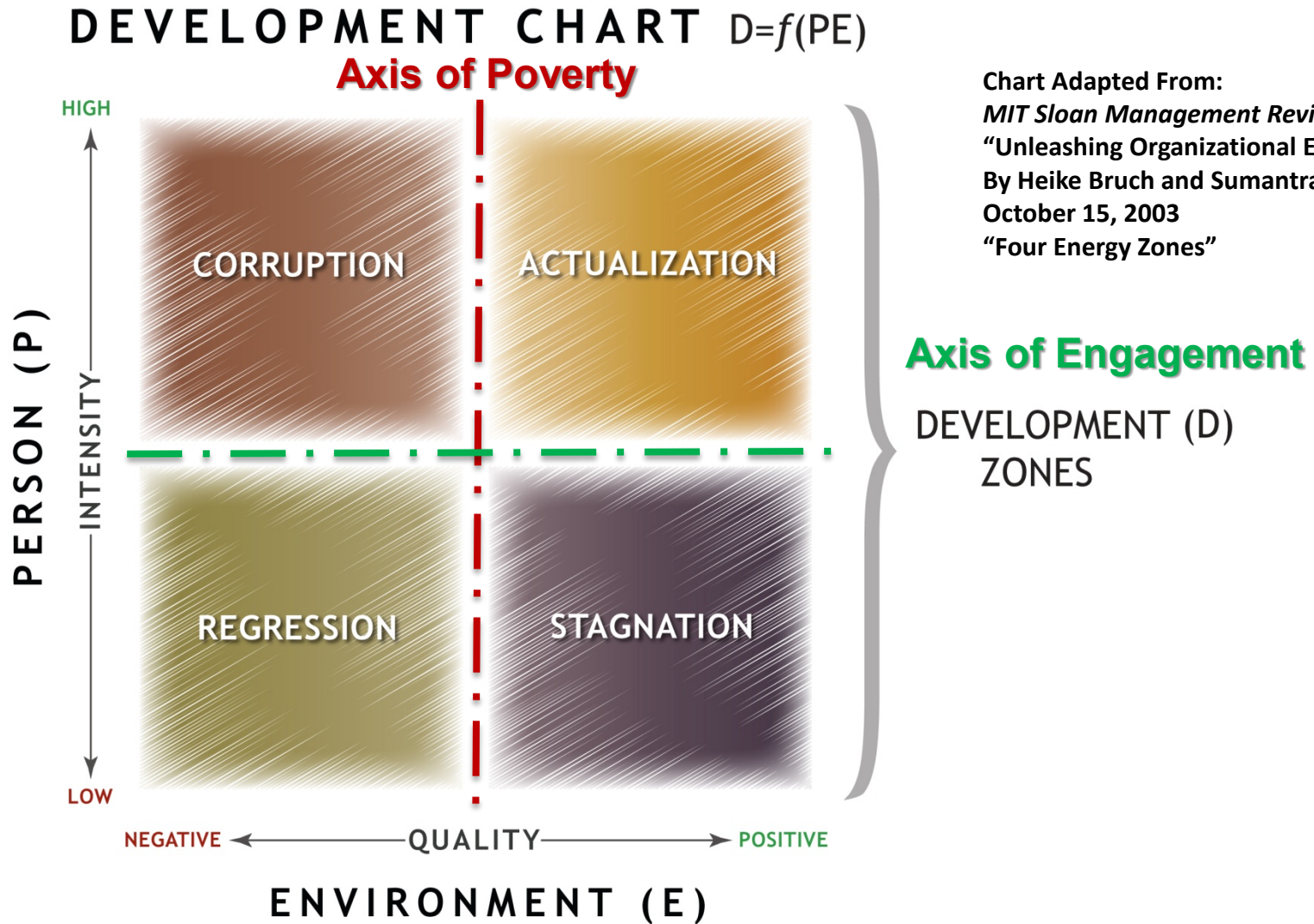


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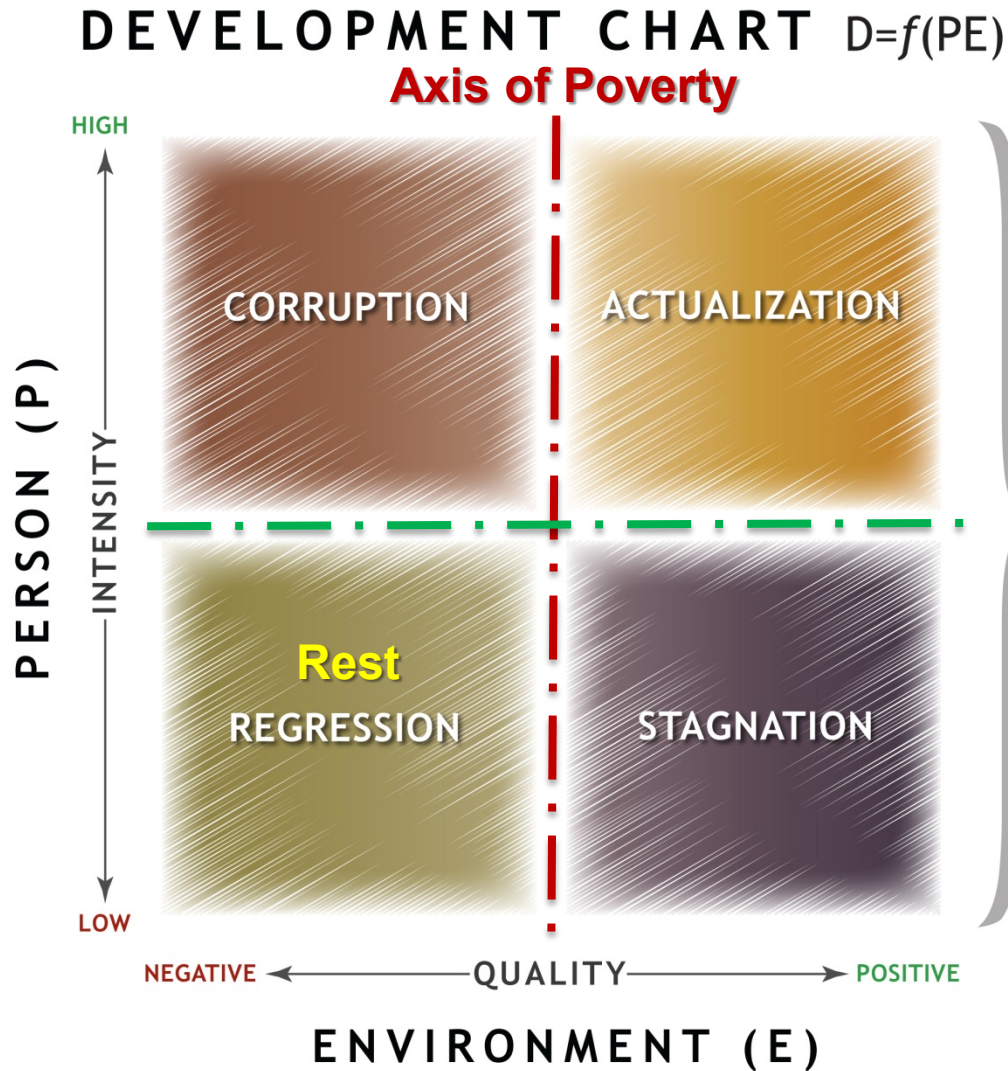


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**Axis of Engagement**

DEVELOPMENT (D)  
ZONES

**The Four "R's" of 21<sup>st</sup>  
Century Education**



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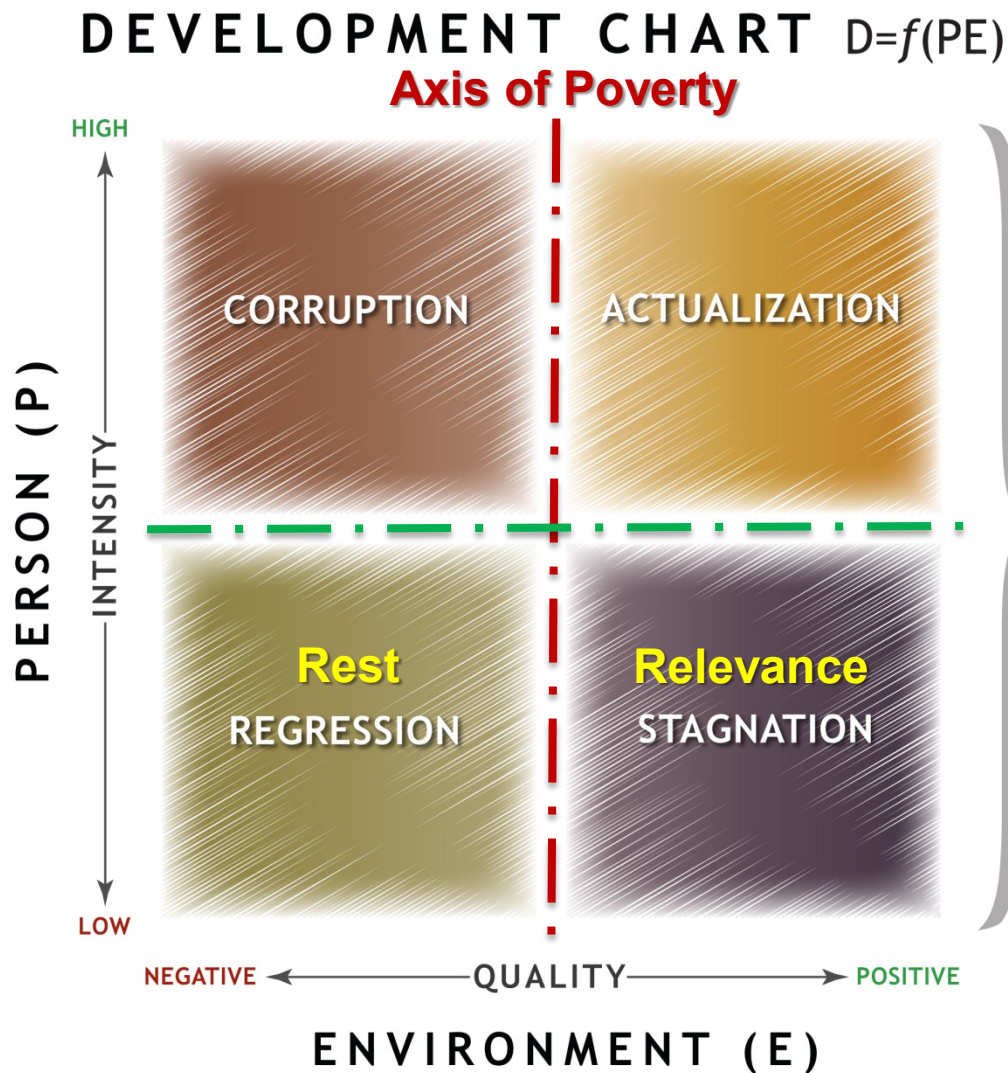


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**Axis of Engagement**

DEVELOPMENT (D)  
ZONES

**The Four "R's" of 21<sup>st</sup>  
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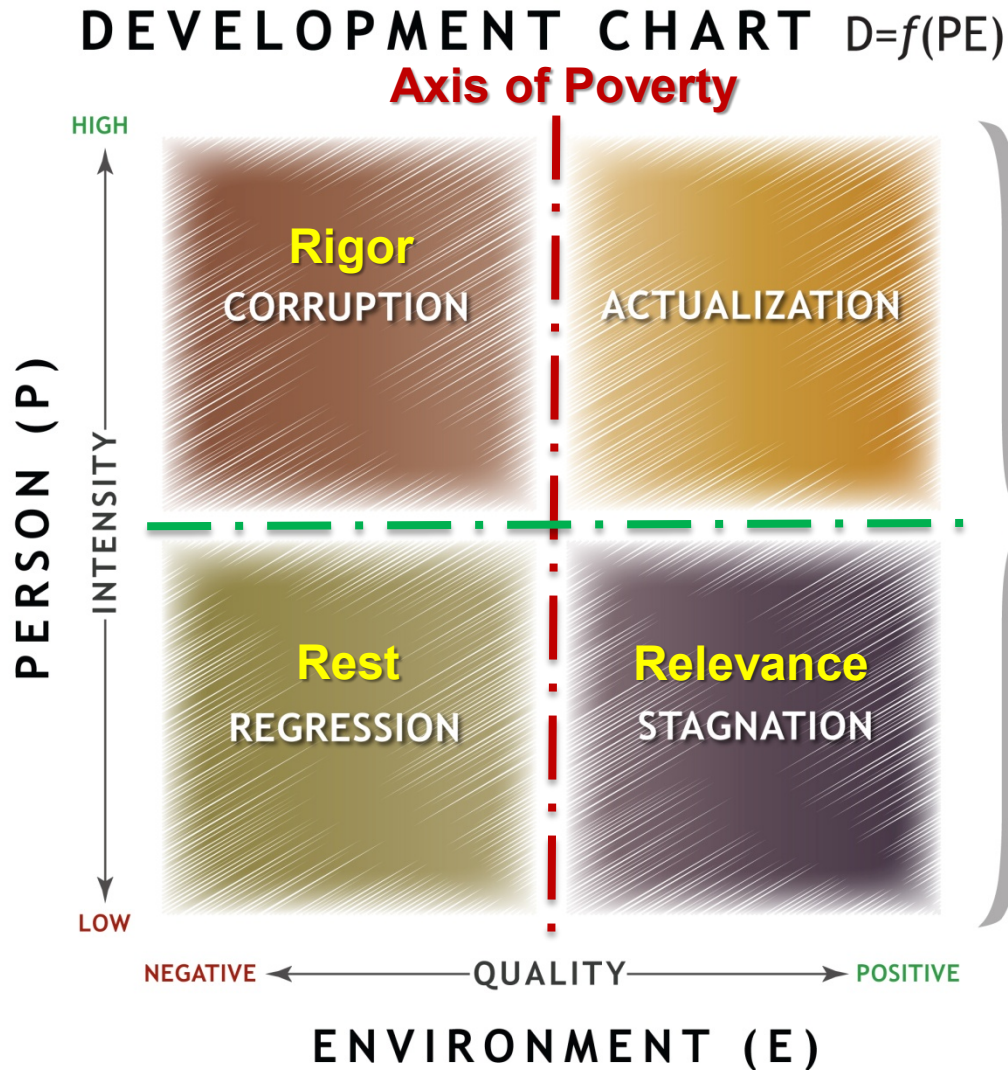


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**Axis of Engagement**

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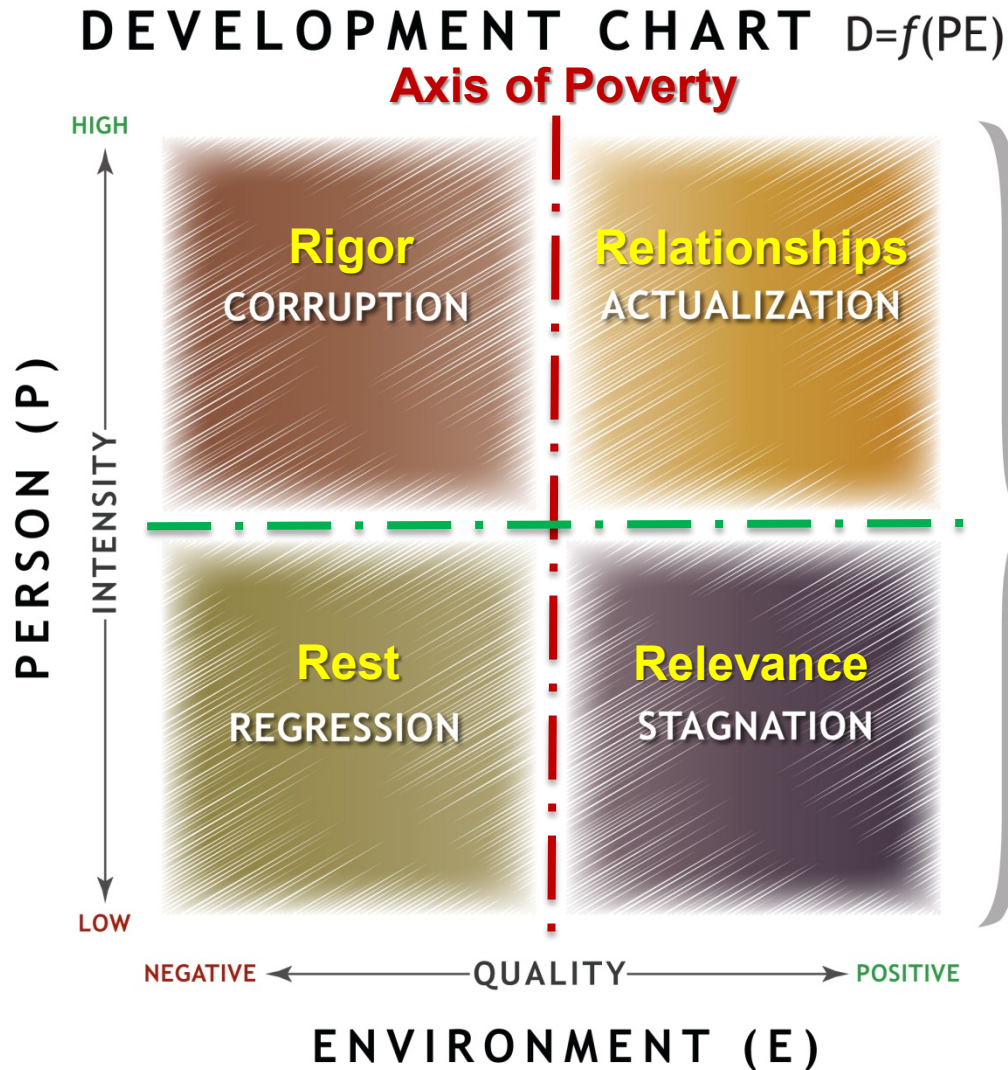


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**Axis of Engagement**

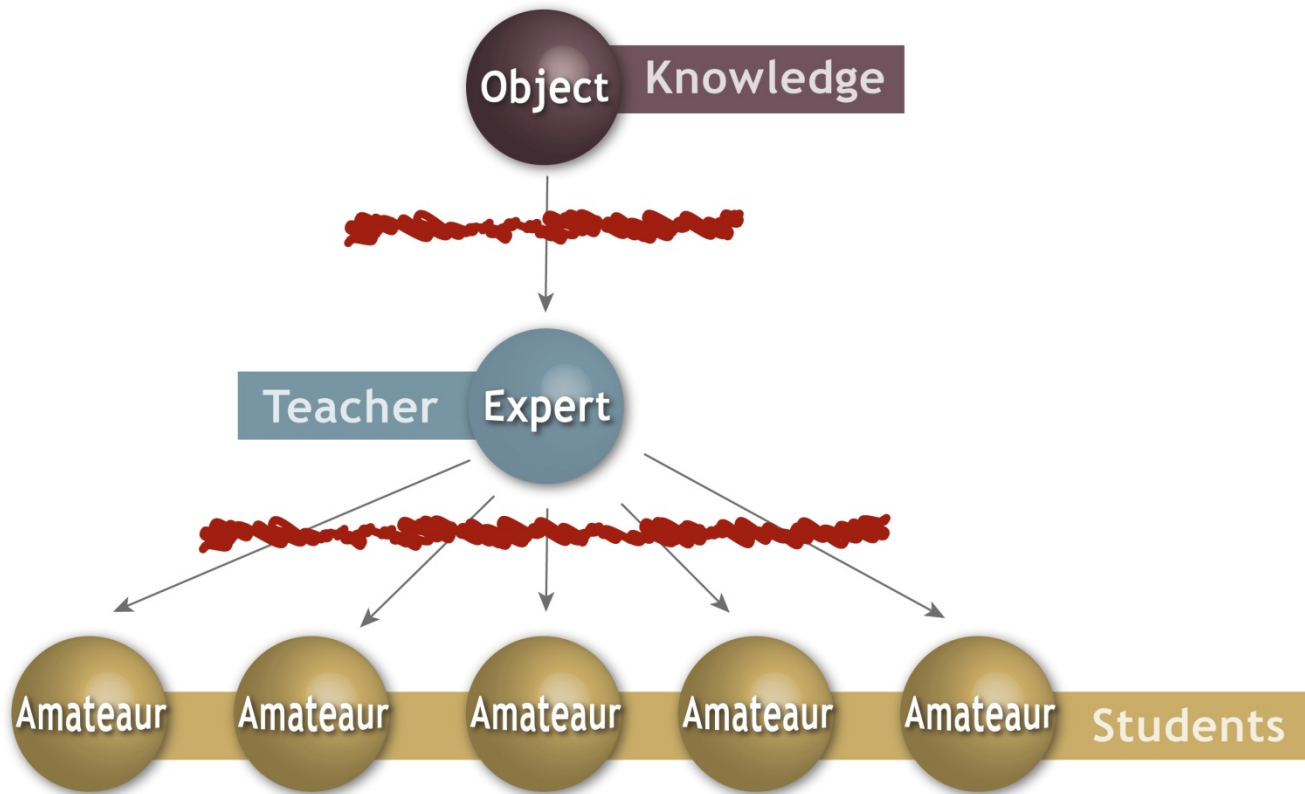
DEVELOPMENT (D)  
ZONES

**The Four "R's" of 21<sup>st</sup>  
Century Education**

# Connecting Students, Teachers, and the Environment



## The Objectivist Myth of Knowing

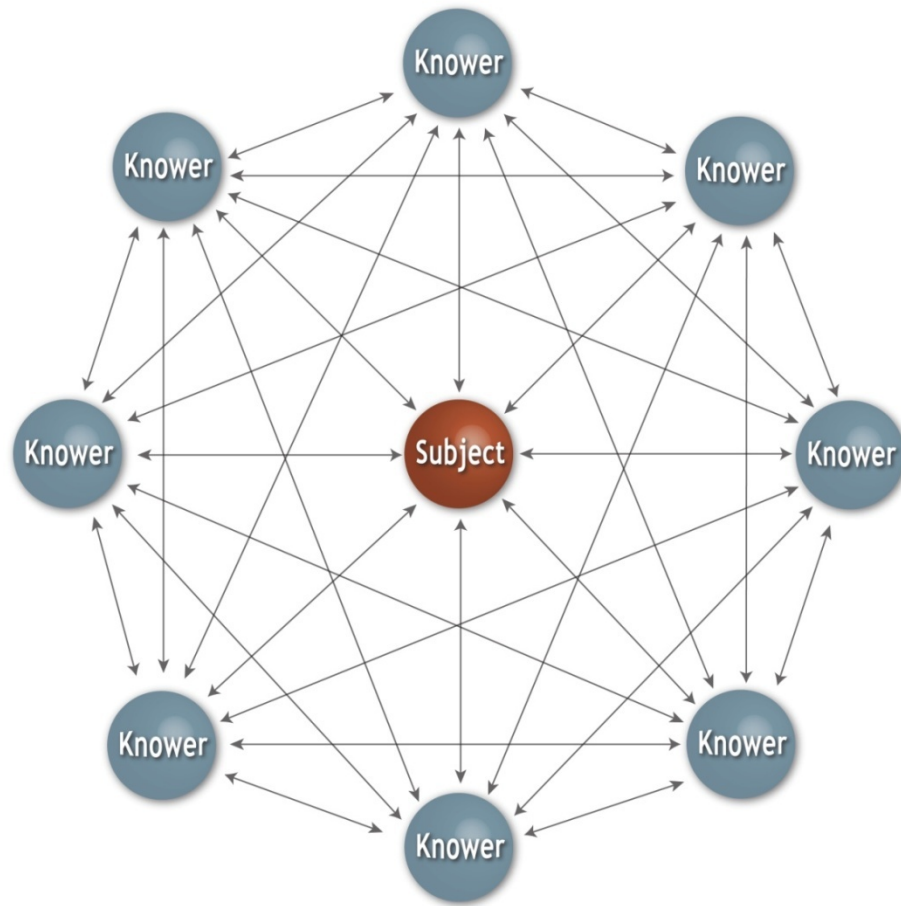


Information is filtered through a primary source.

Adapted from Parker Palmer's *The Courage to Teach*. 1998. Jossey-Bass Publishers

# Connecting Students, Teachers, and the Environment

The Community of Truth



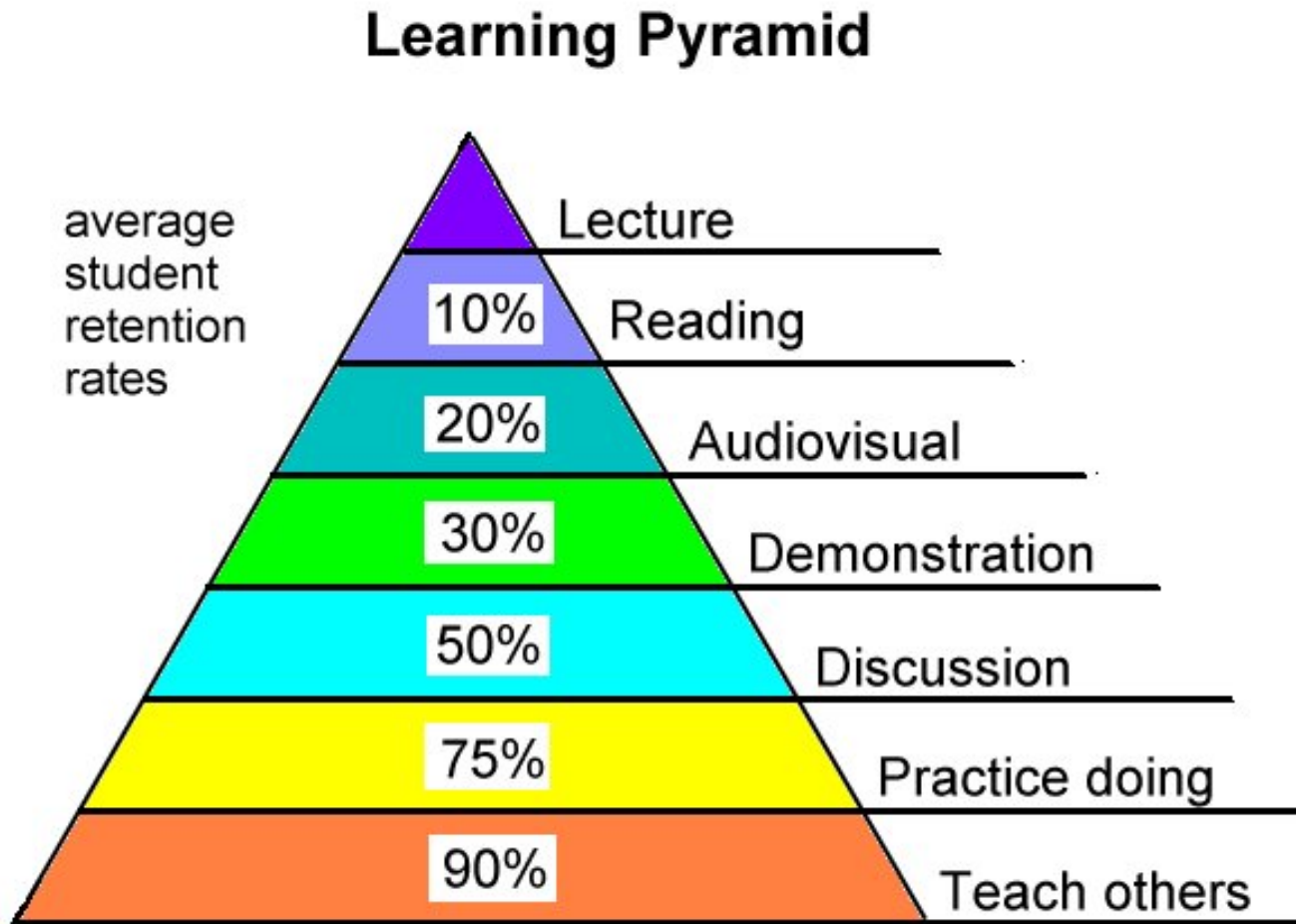
"Truth is an eternal conversation about things that matter, conducted with passion and discipline."

Adapted from Parker Palmer's *The Courage to Teach*. 1998. Jossey-Bass Publishers

# STUDENT-CENTERED NEEDS

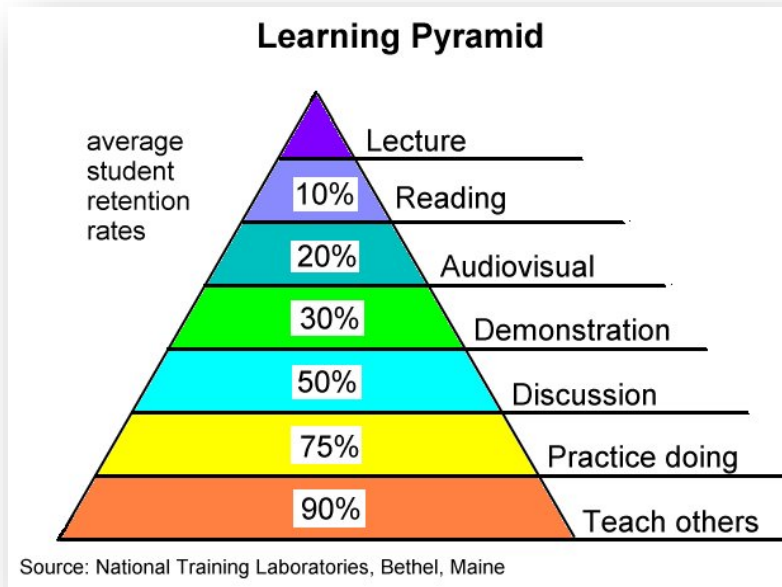


# Learning Pyramid



Source: National Training Laboratories, Bethel, Maine

# Learning Pyramid



- Myth or Hoax?
- Seems intuitively plausible
- There is no published study documenting these retention rates
- “The research reviewed here demonstrates that use of each of the methods identified by the pyramid resulted in retention, with none being consistently superior to the others and all being effective in certain contexts.”

~Dr. James P. Lalley and R. Miller  
(2007)

“The learning pyramid:  
Does it point teachers in the right direction?”  
*Education and Information Technologies* v128, n1, 64-79



# Hierarchy of Needs for 21st Century School Planning and Design

## Transcendence

Humanistic Model

Lighting  
the  
Fire

Flat World Model

Filling  
the  
Bucket

Deficit Model

Facility  
Actualization

Community Needs

Student-Centered Needs

Program Needs

Facility Needs

The distribution of resources regarding scope, schedule and budget should be weighted toward lower order needs. The achievement of higher order needs requires progressively fewer resources and offers a greater return on investment

Adapted from Abraham Maslow, 1943, *A Theory of Human Motivation*

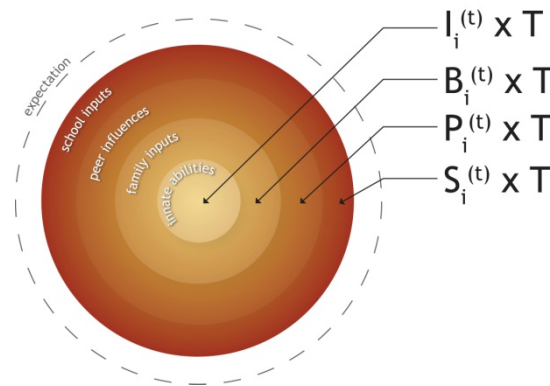
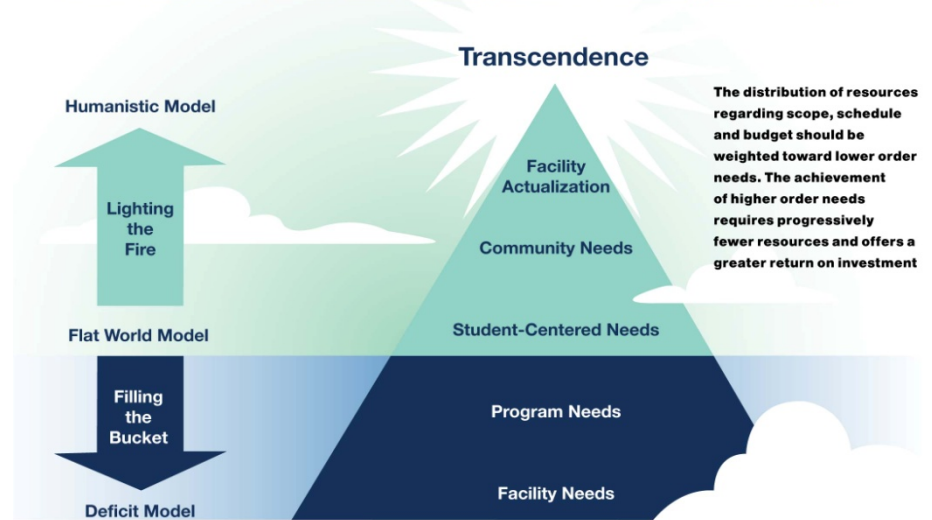
# Proposed Hierarchy of Needs for the Planning and Design of Educational Facilities



BEHAVIOR CHART  $B=f(PE)$



Hierarchy of Needs for 21st Century School Planning and Design



# Proposed Planning Method for Transcendent Schools

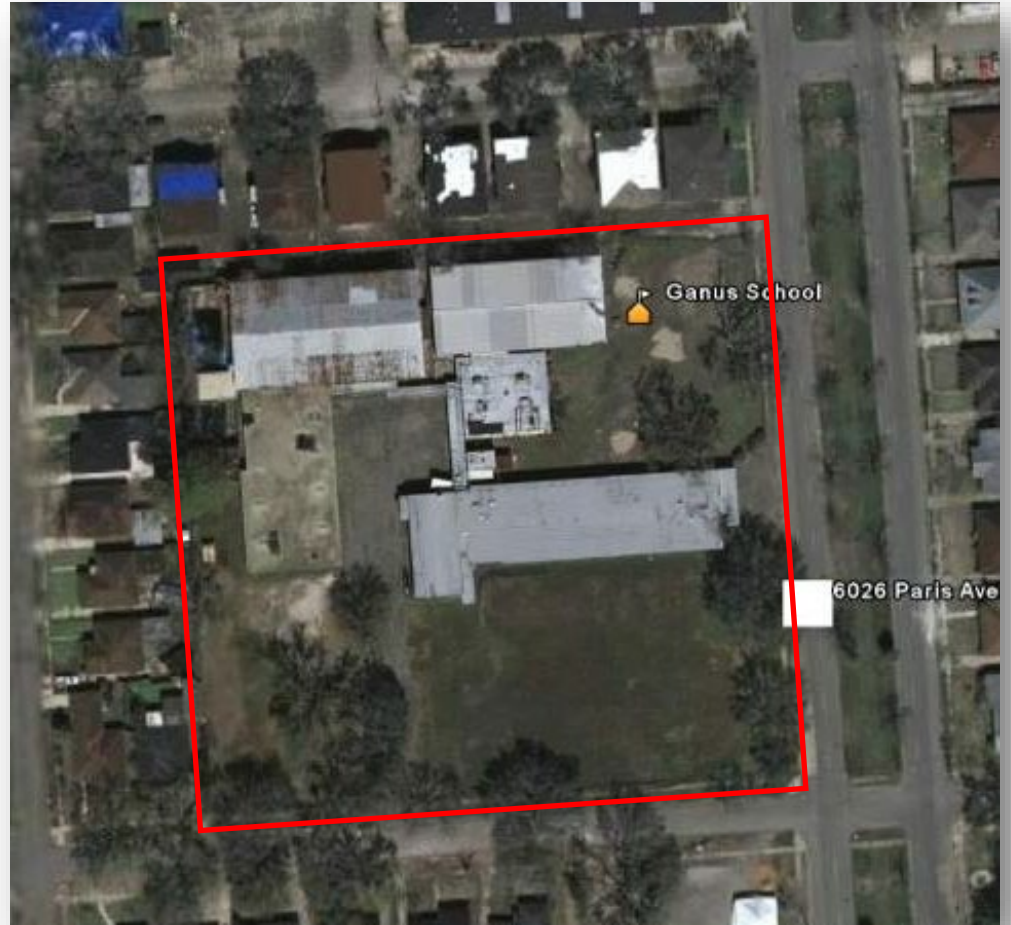


## Hierarchy of Needs

- **Greater Gentilly High School**
  - Facility Needs
- **Hammond ACC - Multimedia Broadcast Academy**
  - Program Needs
- **Zionsville High School - Multi-Disciplinary Instructional Center**
  - Student-Centered Needs
- **Browning High School**
  - Community Needs
- **V. Sue Cleveland High School**
  - Facility Actualization
- **Fort Huachuca**
  - Transcendence

# FACILITY NEEDS

## Lake Area High School



# FACILITY NEEDS

## Lake Area High School



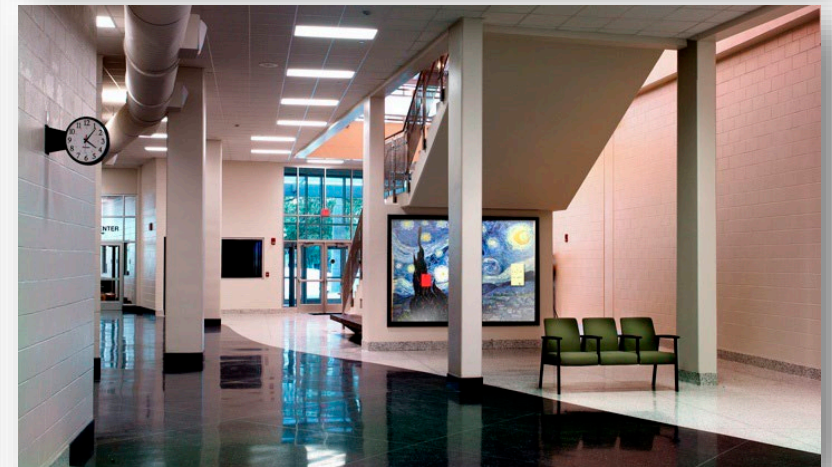
# FACILITY NEEDS

## Greater Gently High School



# FACILITY NEEDS

## Greater Gentilly High School



# PROGRAM NEEDS

## Hammond ACC Multimedia Broadcast Academy





# PROGRAM NEEDS

## Hammond ACC Multimedia Broadcast Academy



# Student-Centered Design

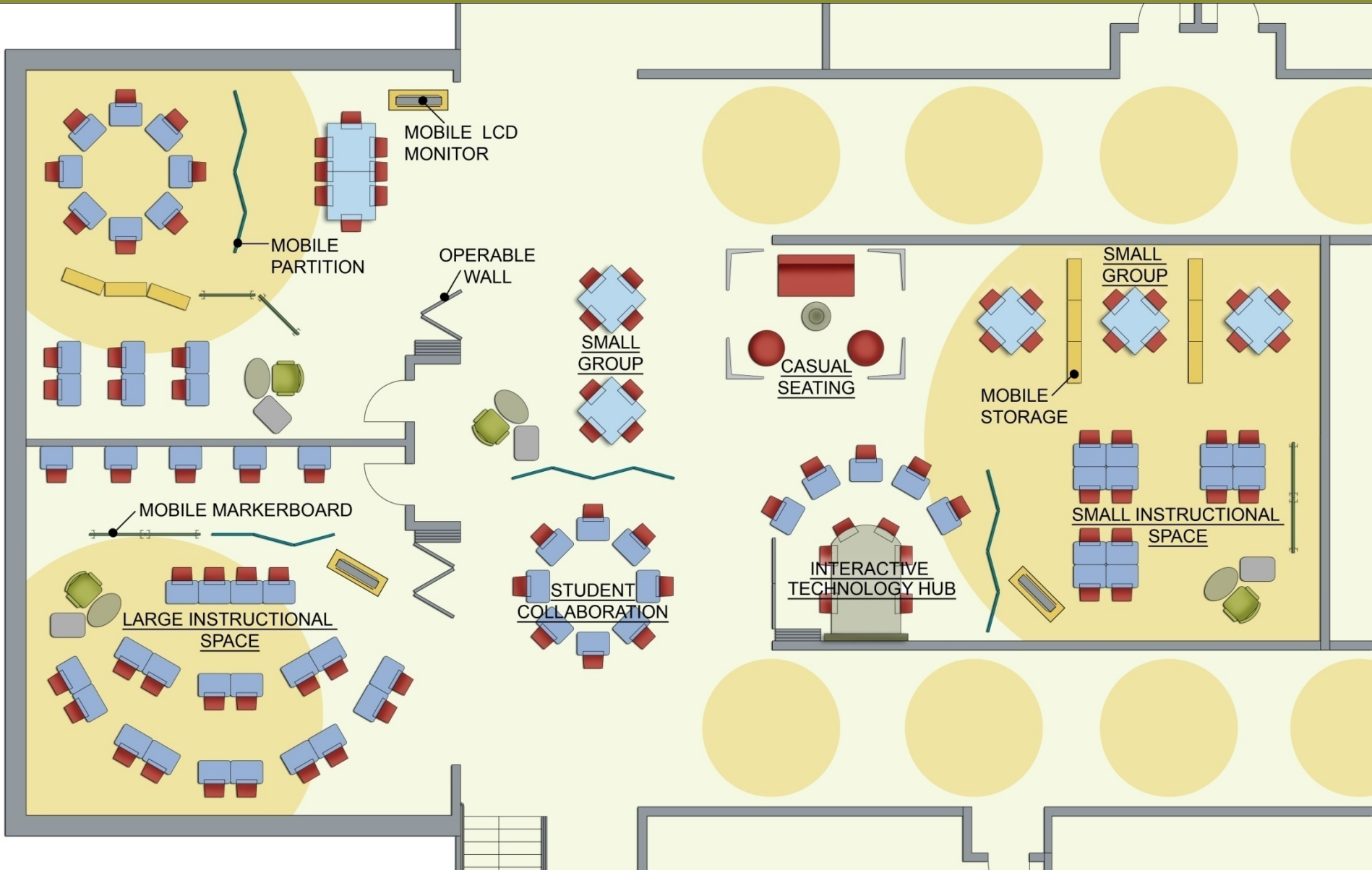


Which design features have the largest impact on student performance?

- Thermal Comfort
- Indoor Air Quality
- Visual Comfort/  
Lighting
- Acoustics

Dr. Lance Roberts  
University of Manitoba  
CEFPI 84<sup>th</sup> Annual Conference  
*Facility Conditions and Academic Achievement: Canadian Evidence*  
2007

# STUDENT CENTERED NEEDS



# STUDENT-CENTERED NEEDS

## Zionsville High School



# STUDENT-CENTERED NEEDS

## Zionsville High School



# COMMUNITY NEEDS

## Browning High School



# COMMUNITY NEEDS

## Browning High School



# FACILITY ACTUALIZATION

## V. Sue Cleveland High School





# FACILITY ACTUALIZATION

## V. Sue Cleveland High School



# FACILITY ACTUALIZATION

## V. Sue Cleveland High School



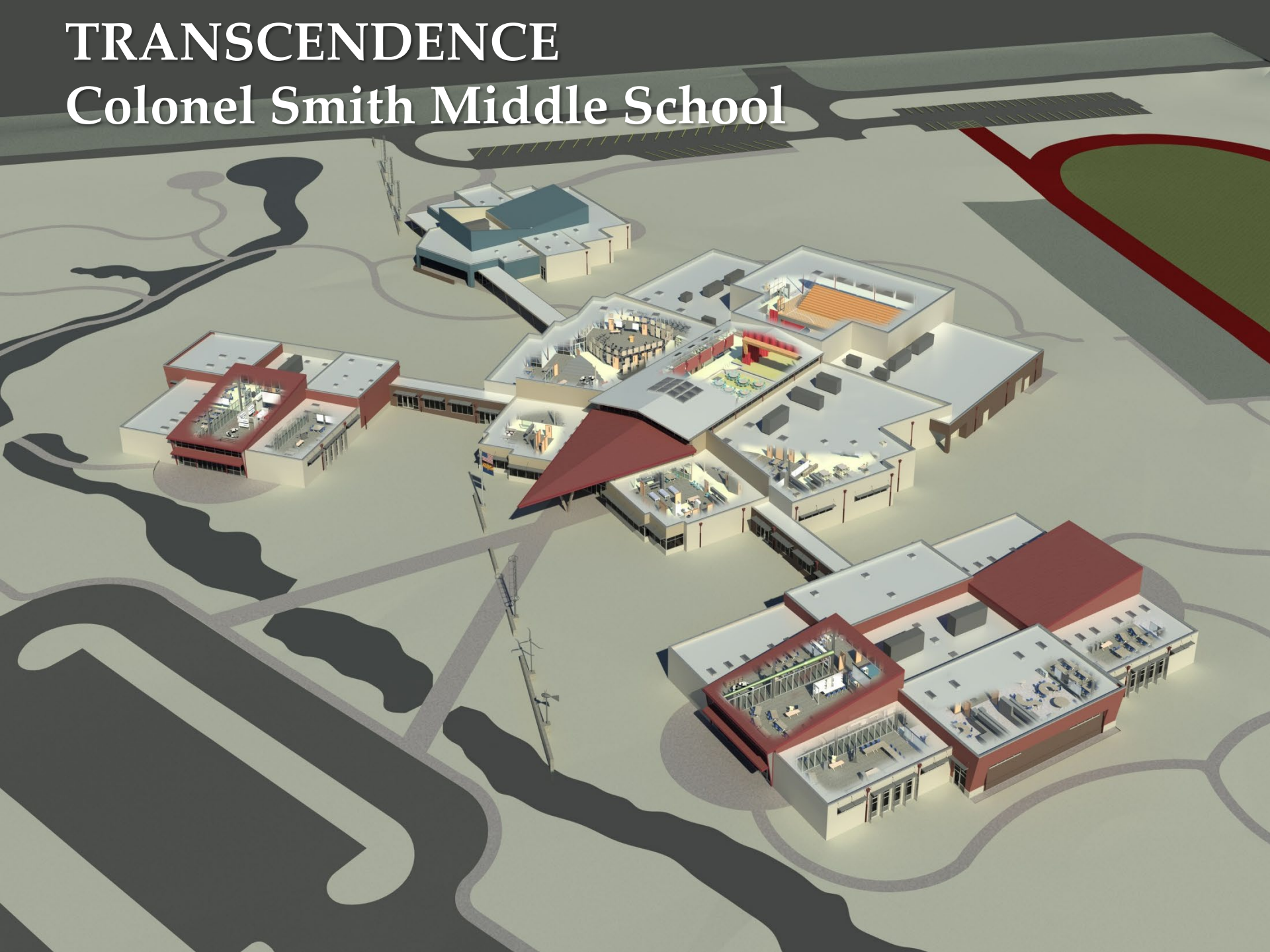
# TRANSCENDENCE

## Colonel Smith Middle School



# TRANSCENDENCE

## Colonel Smith Middle School



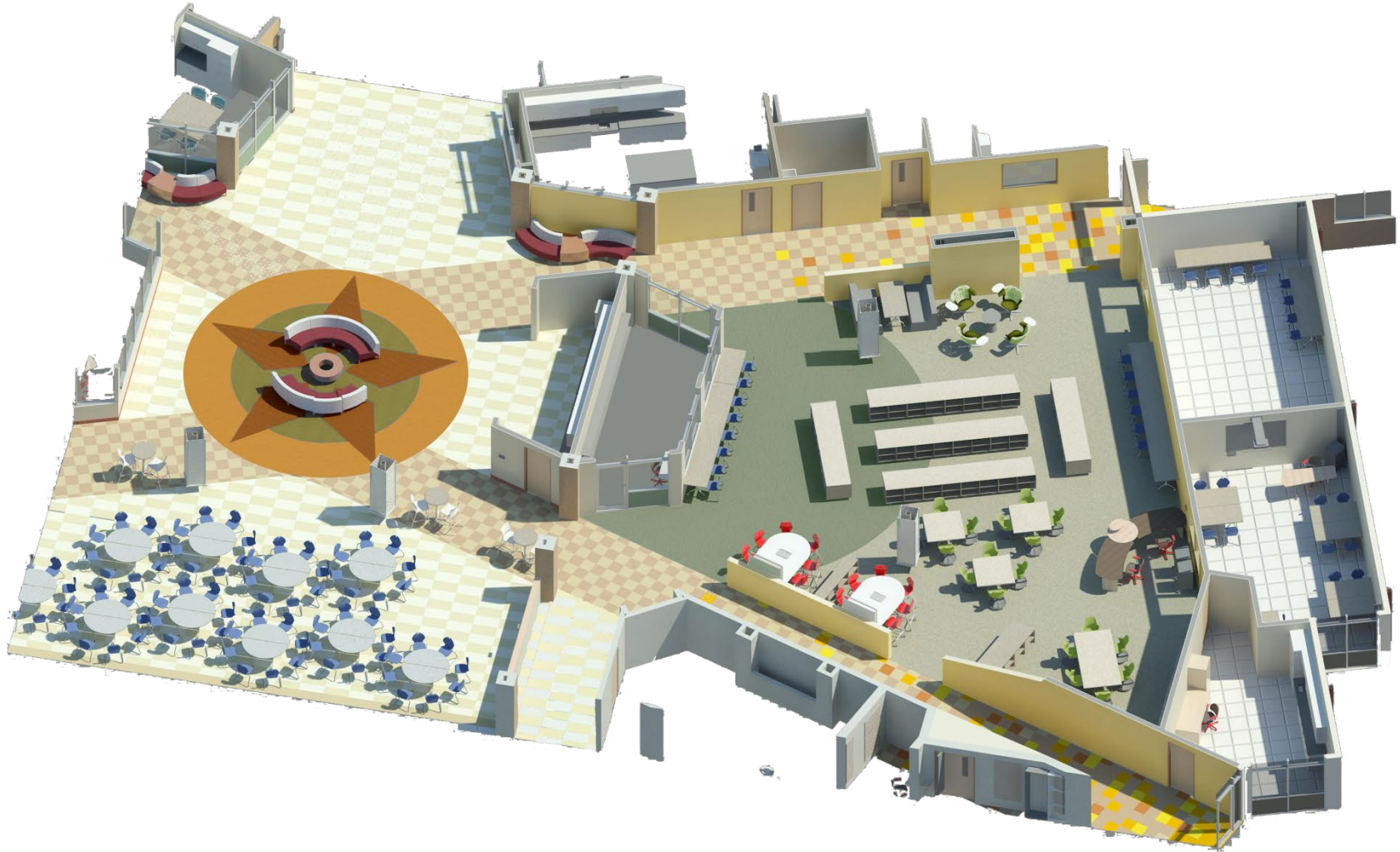
# TRANSCENDENCE

## Colonel Smith Middle School



# TRANSCENDENCE

## Colonel Smith Middle School



# TRANSCENDENCE

Use + Time = Inspire others to succeed

**Deficit Model**

**Flat World Model**

**Integrated Model**

**Transcendence**

**Transcendence**

Inspire others to  
Press for Success

**Integrated Model**

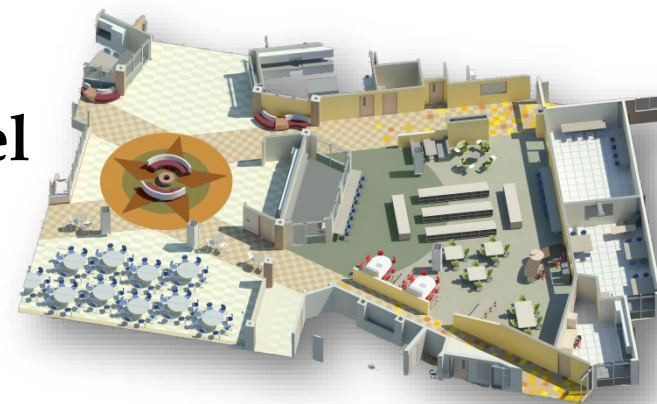
Transcendence Factor > 1

**Flat World**

Transcendence  
Factor = 1

**Deficit Model**

Transcendence  
Factor < 1





Q&A