



THE AMERICAN INSTITUTE  
OF ARCHITECTS

Committee on Architecture for Education

**21st Century Learning Environments,  
everyone's talking about it...  
but what is it really?**





THE AMERICAN INSTITUTE  
OF ARCHITECTS

Committee on Architecture for Education

**Moderator Steve Flanagan, AIA, LEED AP**

Principal, LPA Inc.

AIA Committee on Architecture for Education  
Higher Education Subcommittee Chairman

150+ Educational & Corporate Projects

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This webinar will demonstrate how 21st Century Learning is taking place through case studies of new creative and invigorating learn work environments. These case studies are not hypothetical unachievable futuristic ideals, but rather recently designed and implemented environments that will transform how today's leader's work and how tomorrow's leaders will learn.

## **Learning Objectives**

### **Attendees will learn:**

1. How a K12 school and a college can transform an office building
2. How to renovate outdated facilities into state-of-the-art technology driven environments
3. How professionals want to work
4. How companies can attract and keep top talent
5. Why design really does matter and how it can improve your bottom line.



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## Accessing Audio and Handout

For audio, please listen through your computer or refer to your registration confirmation to listen by phone.

The handout of this presentation is located on the CAE website at:  
[www.aia.org/cae](http://www.aia.org/cae) on the webinar resources page



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## **Reporting Continuing Education Credit**

**The continuing education survey link will be:**

Posted in the GoToWebinar “questions” box at the end of this webinar.

Shown in the final slides of this webinar, and emailed to attendees 60 minutes following the webinar.

All attendees at your site will submit for credit by completing the webinar survey and report form. Tuesday, December 2 at 11:59 pm Eastern.



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## Panelists



K12 Environments

Kate Mraw, CID



Higher Education Environments

Dan Rentsch, RA



Corporate Environments

Natalie Zweig, IIDA



Educational Environments

Dr. Lennie Scott-Webber



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Committee on Architecture for Education

**Panelist Dr. Lennie Scott-Webber**

Steelcase Education  
Director of Educational Environments

Research Informs Design

[lscottwe@steelcase.com](mailto:lscottwe@steelcase.com)



K12

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# discovery | brain science

cognitive  
neuroscience helps  
us understand how  
the brain learns



FOCUS



DIFFUSE

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discovery | brain science

cognitive  
neuroscience is  
making discoveries  
daily about how the  
brain learns



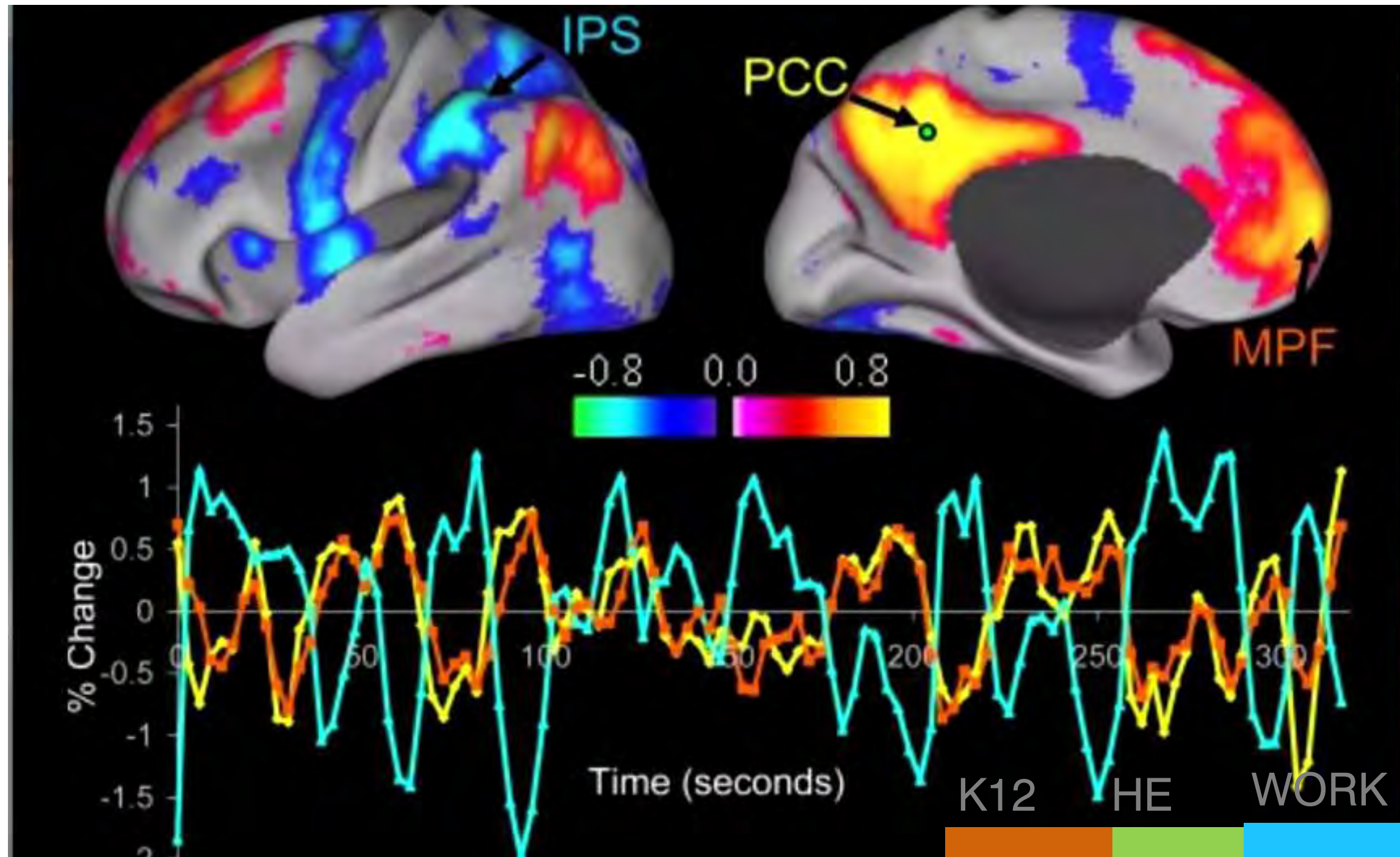
dr. terry sejnowski / salk institute  
ANFA

K12

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every brain is  
unique; we each  
process information  
in different ways



discovery | human-centered / design thinking

a human-centered /  
design thinking  
research protocol is  
used



# 'PLANET A' DIFFERENCES - PEDAGOGY

## ELEMENTARY / MIDDLE / SECONDARY

PEDAGOGY – CHILD LEARNING THEORIES

BRAIN SCIENCE – MULTIPLE PHYSIOLOGICAL & DEVELOPMENTAL CHANGES; CIRCADIA RHYTHM EFFECTS; AGE COHORT 5 TO 11/12

ELEMENTARY SCHOOLS WITH TEACHER OWNED SPACES ALL DAY

EDUCATORS CERTIFIED IN EDUCATION THEORY AND PRACTICES

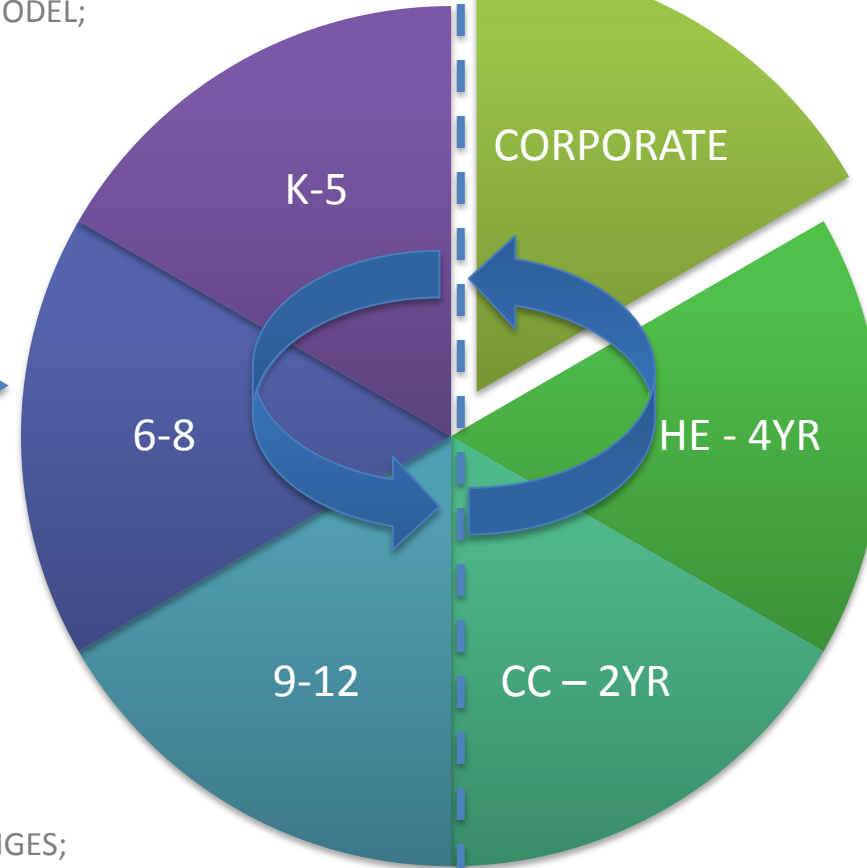
CHILD ERGONOMICS; DIFFERENT FUNDING MODEL / MANAGEMENT MODEL;  
CONTENT DELIVERY

PEDAGOGY – CHILD LEARNING THEORIES

BRAIN SCIENCE – MULTIPLE PHYSIOLOGICAL & DEVELOPMENTAL CHANGES; CIRCADIA RHYTHM EFFECTS; AGE COHORT 12 TO 15

MIDDLE SCHOOLS WITH VARIATION IN OWNED / SCHEDULED PLACES; EDUCATORS MAY BE CERTIFIED IN EDUCATION THEORY AND PRACTICES

VARIABLE BETWEEN CHILD AND 'ADULT' ERGONOMICS; DIFFERENT FUNDING MODEL / MANAGEMENT MODEL;  
CONTENT DELIVERY METHODS



PEDAGOGY – CHILD LEARNING THEORIES

BRAIN SCIENCE – MULTIPLE DEVELOPMENTAL AND HORMONAL CHANGES; CIRCADIA RHYTHM EFFECTS; AGE COHORT 16 TO 18

HIGH SCHOOLS WITH SCHEDULED PLACES FOR SPECIFIC DISCIPLINES; MORE CONTENT SPECIFIC EDUCATORS; MAY HAVE EDUCATION THEORY AND PRACTICES  
MORE ADULT-LIK ERGONOMICS; DIFFERENT FUNDING MODEL / MANAGEMENT MODEL; CONTENT DELIVERY MODELS

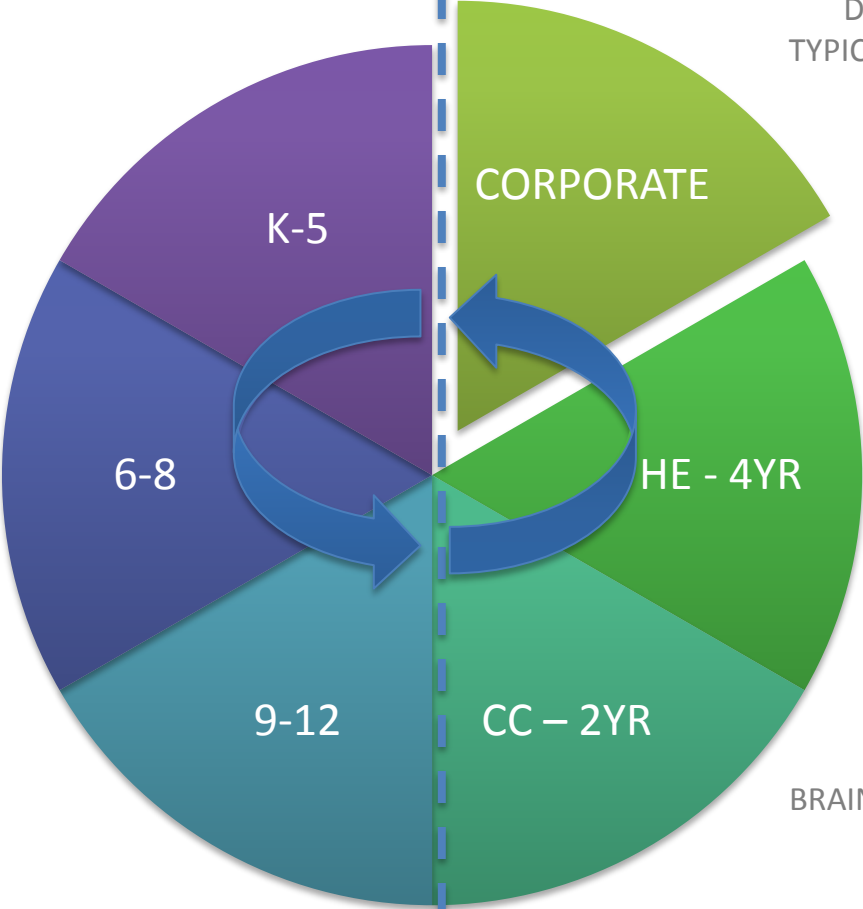


discovery | steelcase  
research

FORMAL LEARNING PLACES

K12

‘PLANET B’ DIFFERENCES - ANDRAGOGY  
POST-SECONDARY / CORPORATE



ANDRAGOGY – ADULT LEARNING THEORIES  
BRAIN SCIENCE – REASONING CAPABILITIES;  
AGE COHORT 24+  
CAREER FOCUSED; TRAINING MODULES FOR CAREER GROWTH; FOCUSED  
DISCIPLINES; CONTENT ‘TRAINERS’; JUST-IN-TIME, OR TIME ON TASK;  
TYPICAL NON-RESIDENT TO SITE / LEARNING CENTER; RESIDENT FOR THE  
TIMEFRAME; ADULT ERGONOMICS; FUNDING MODEL IS BUSINESS  
DRIVEN; POTENTIAL EDUCATION THEORY; CONTENT EXPERTS;  
SCHEDULED PLACES

ANDRAGOGY – ADULT LEARNING THEORIES  
BRAIN SCIENCE – DIRECT TRANSFER FROM HIGH SCHOOL  
FRONTAL LOBE OPEN; ‘MATURE STUDENTS’ REASONING IS  
CAPABLE; LIFE EXPERIENCE SHARED; AGE COHORT 18 TO 24  
HIGHER EDUCATION – 4 YEAR  
SMALL PRIVATES / LARGE PUBLIC / R#1s  
TYPICALLY A RESIDENT CAMPUS; SENSE OF BELONGING IS  
POSSIBLE; DOMINATE PERMANENT STAFF SOME ADJUNCT  
FACULTY – CONTENT DRIVEN; MULTIPLE DISCIPLINES; ADULT  
ERGONOMICS; DIFFERENT FUNDING MODEL / MANAGEMENT  
MODEL; NO EDUCATION THEORY; CONTENT EXPERTS;  
SCHEDULED PLACES

ANDRAGOGY – ADULT LEARNING THEORIES  
BRAIN SCIENCE – DIRECT TRANSFER FROM HIGH SCHOOL FRONTAL LOBE  
OPEN; AGE COHORT 18 TO ???  
COMMUNITY COLLEGES; TEACHING 2-YEAR CAREER FOCUSED AND  
TRANSFER PROGRAMS  
TYPICALLY A COMMUTER CAMPUS; SENSE OF BELONGING IS CHALLENGED;  
SOME PERMANENT STAFF AND MOSTLY ADJUNCT FACULTY – CONTENT  
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SCHEDULED PLACES

FORMAL LEARNING PLACES

HE WORK

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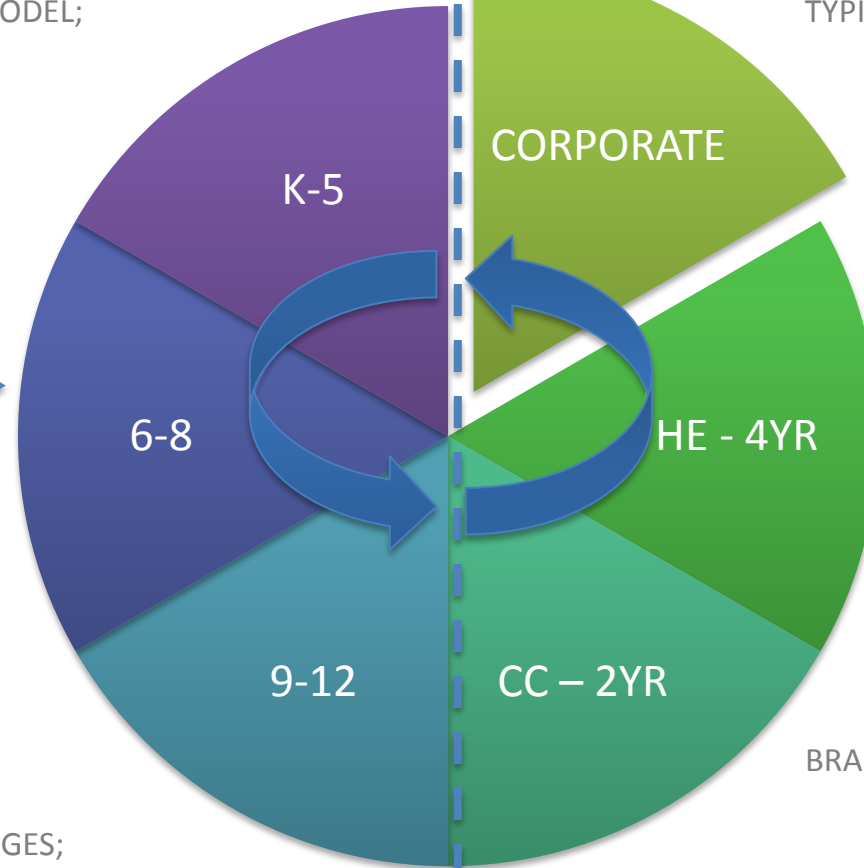
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### POST-SECONDARY / CORPORATE

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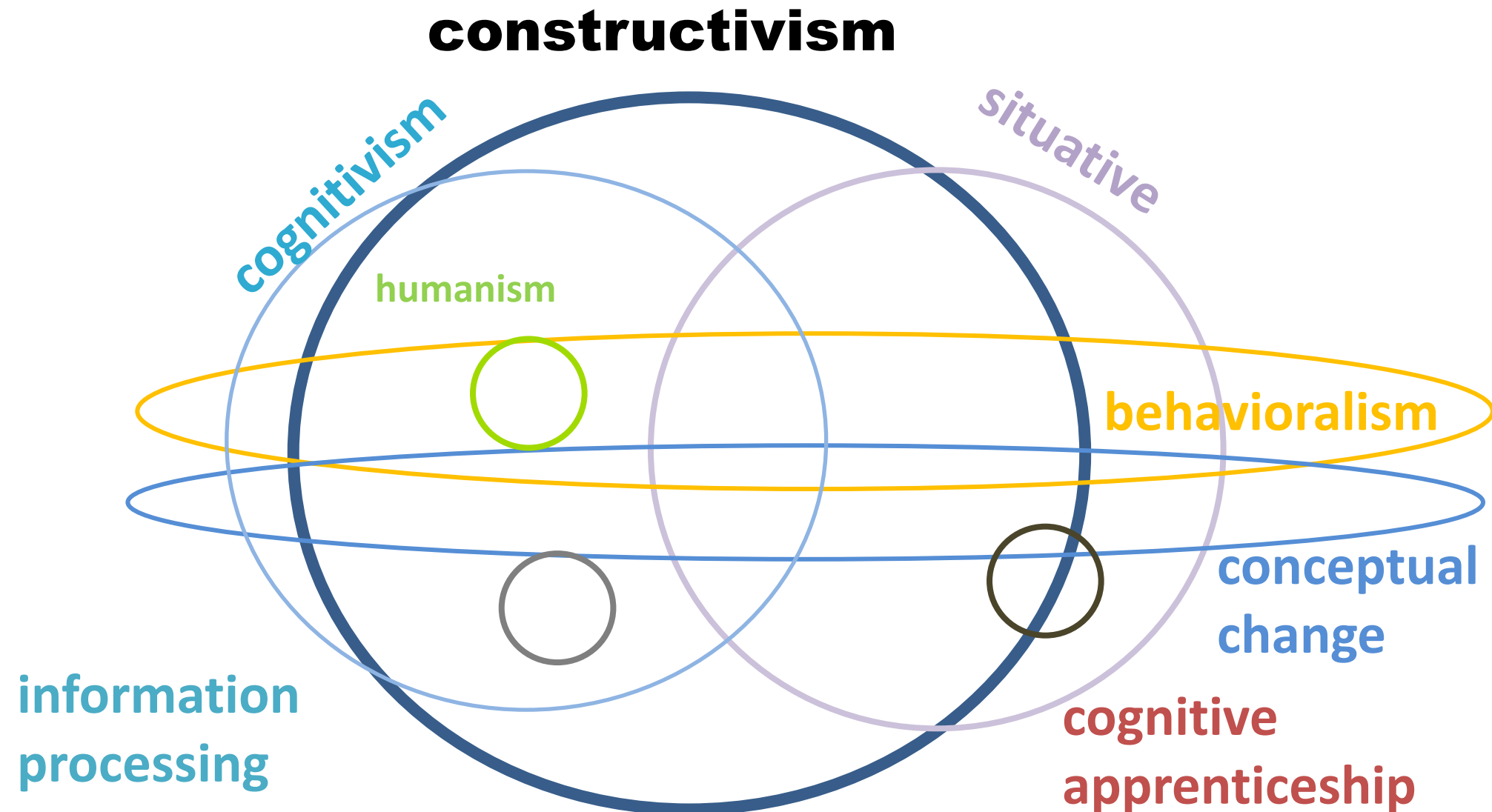
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FORMAL LEARNING PLACES / POV - ACTIVE LEARNING WORKS IN ALL

discovery | learning research

learning research  
has provided a  
theory explaining  
how to support how  
we learn



K12

HE

WORK

discovery | environment behavior psychology

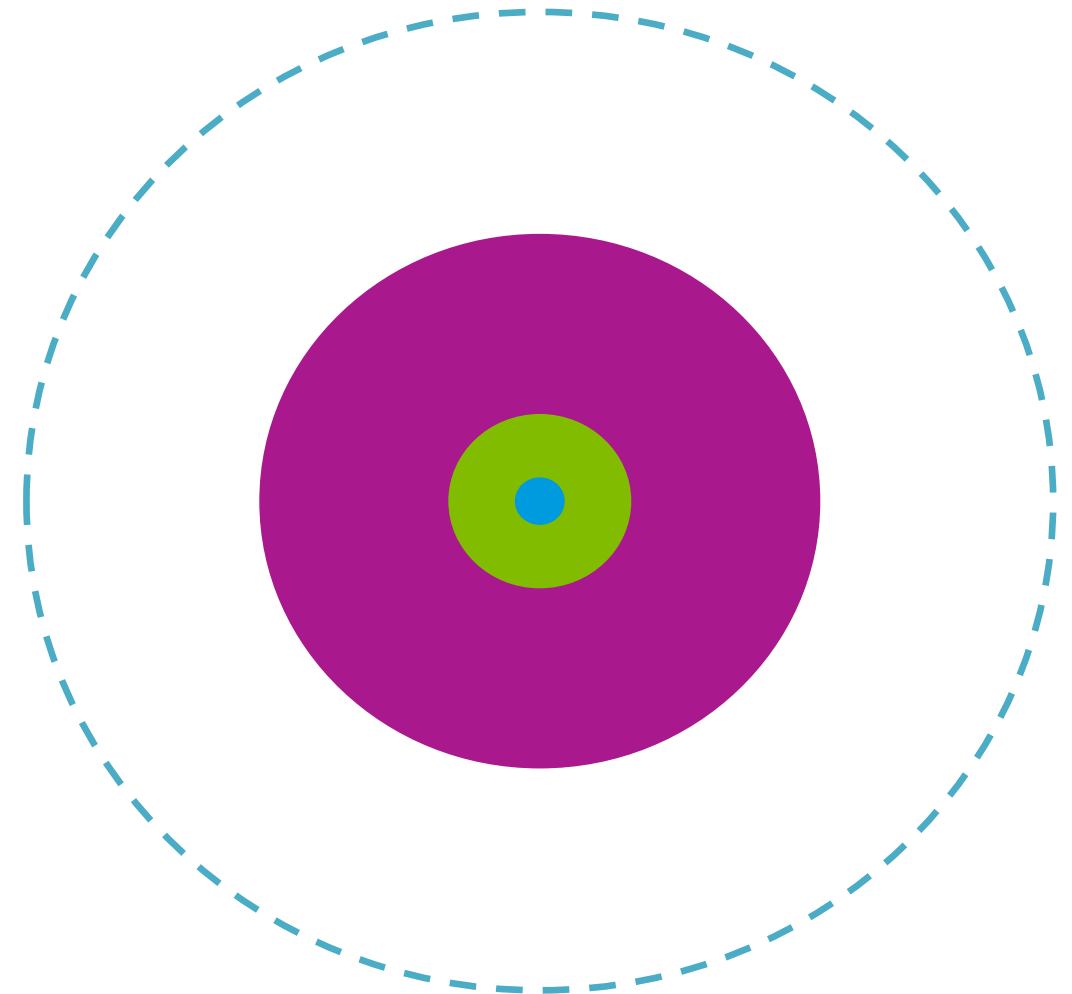
PROXEMIC ZONES

Intimate

Personal

Social

Public



environment  
behavior psychology  
research helps us  
make sense of  
situational needs

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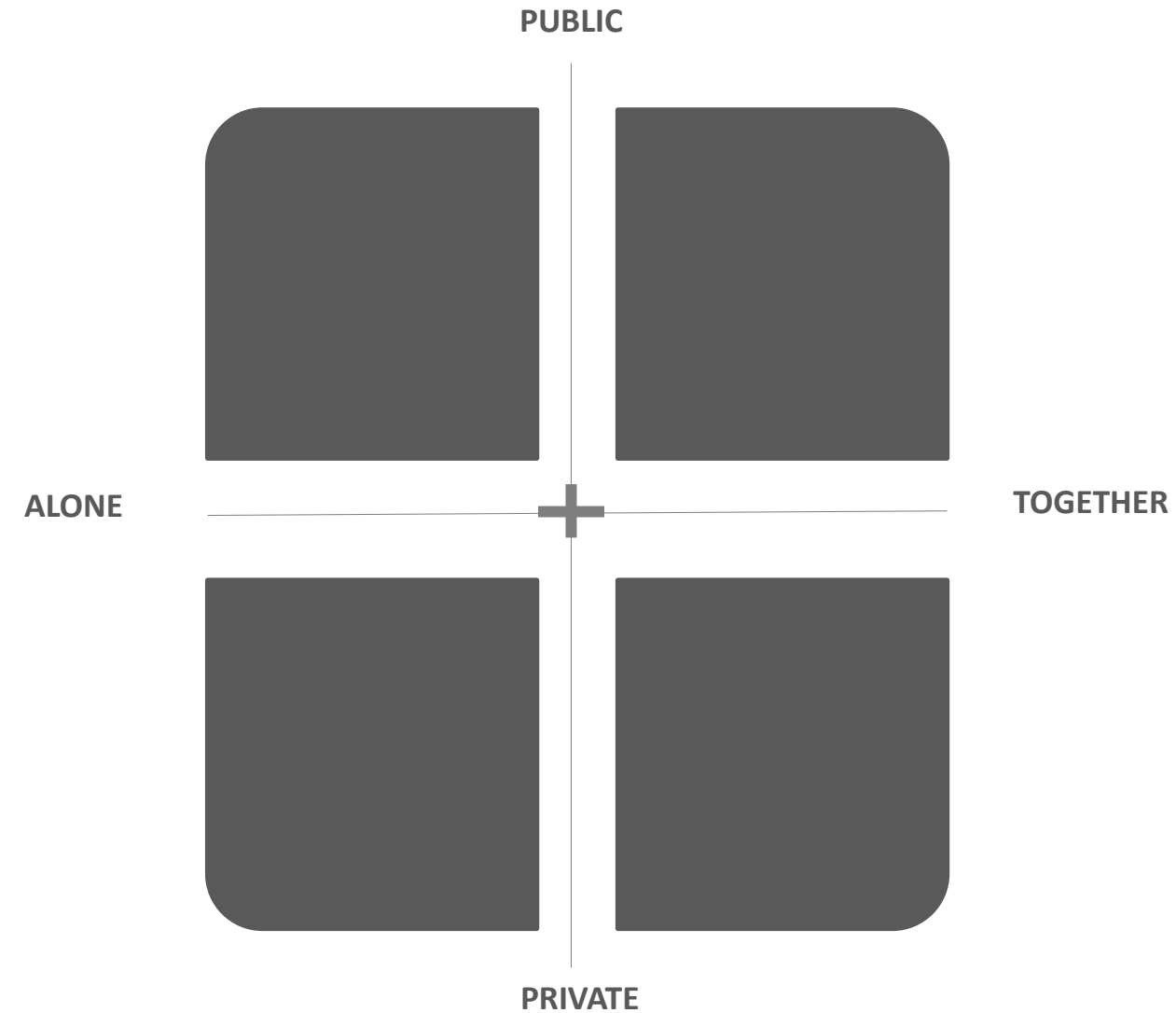
WORK



discovery | human-centered / design thinking  
research

we offer a 'rhythm of  
learning framework'  
to address multiple  
learning needs  
intentionally

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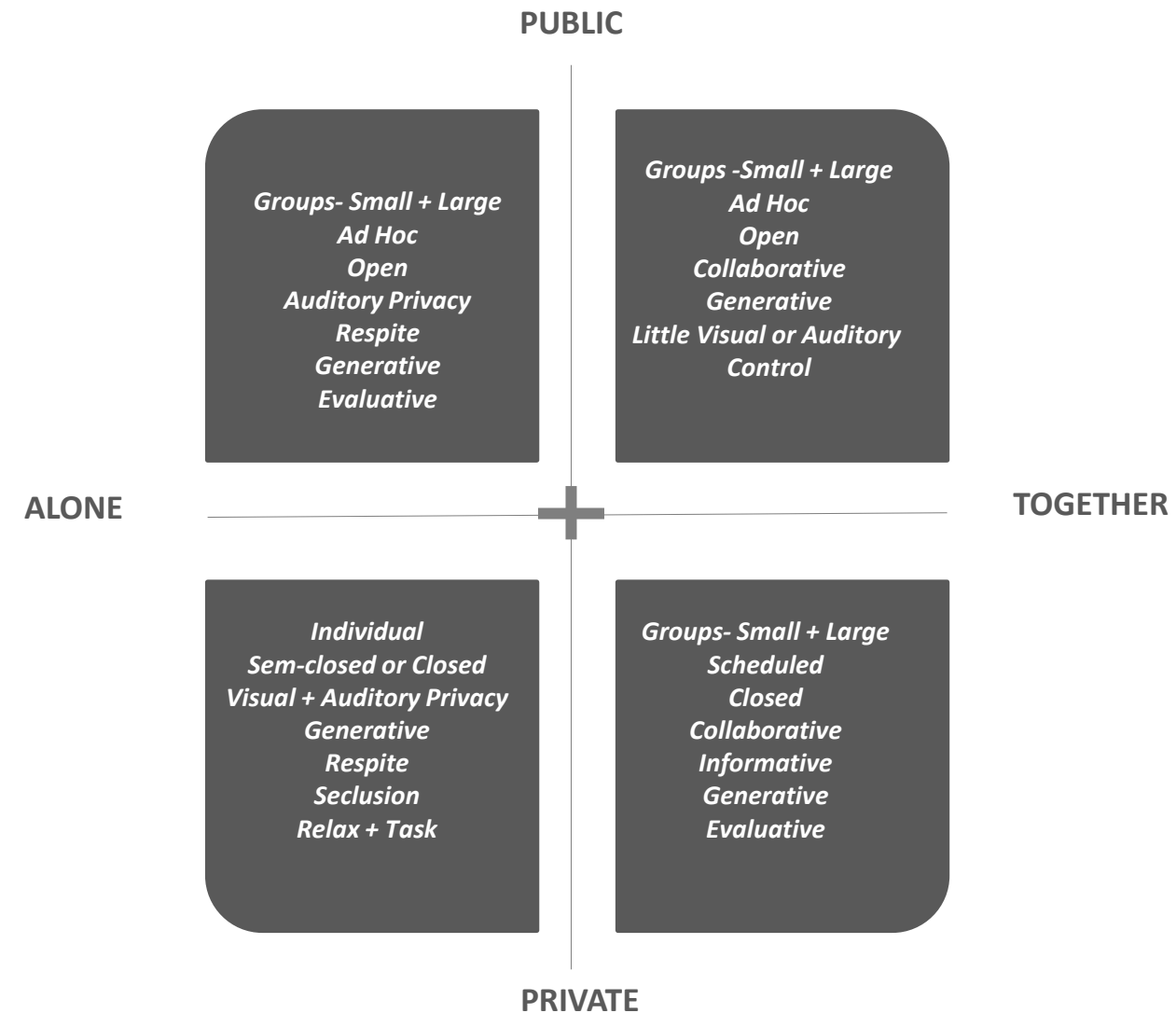
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WORK

discovery | human-centered / design thinking  
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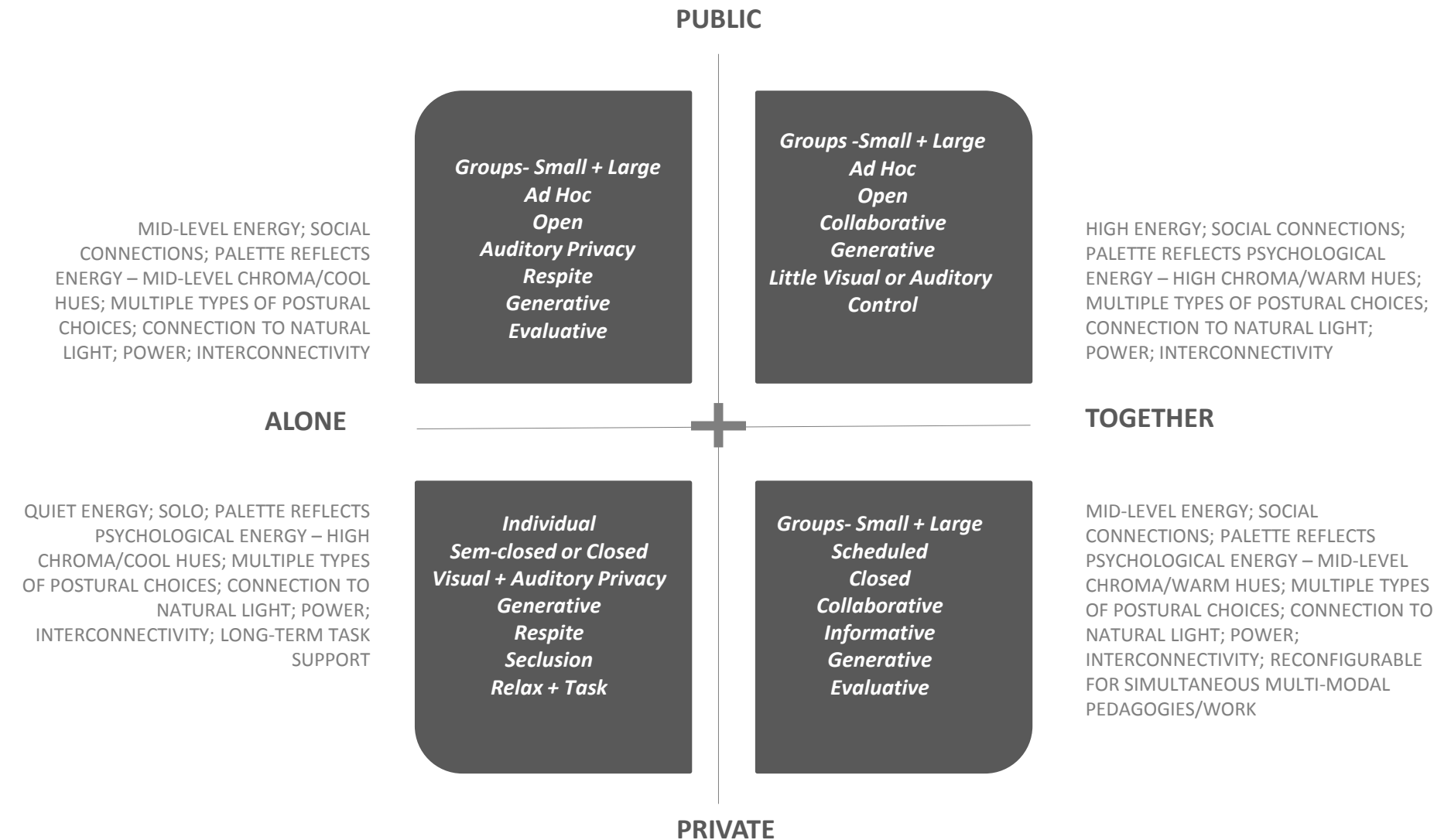
HE

WORK

# discovery | human-centered / design thinking research

we offer a 'rhythm of  
learning framework'  
to address multiple  
learning needs  
intentionally

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discovery | human-centered / design thinking

**capture and  
distribute  
information**

**realize insights and  
design principles  
through ideation**



**visual  
privacy for  
teams**

**co-creation  
of digital  
content**

discovery | human-centered / design thinking

**tools to  
display and  
share  
information**

**realize insights and  
design principles  
through ideation**



**share  
analog and  
digital  
content**

discovery | human-centered / design thinking

**share  
screens  
and work  
surfaces**

**realize insights and  
design principles  
through ideation**



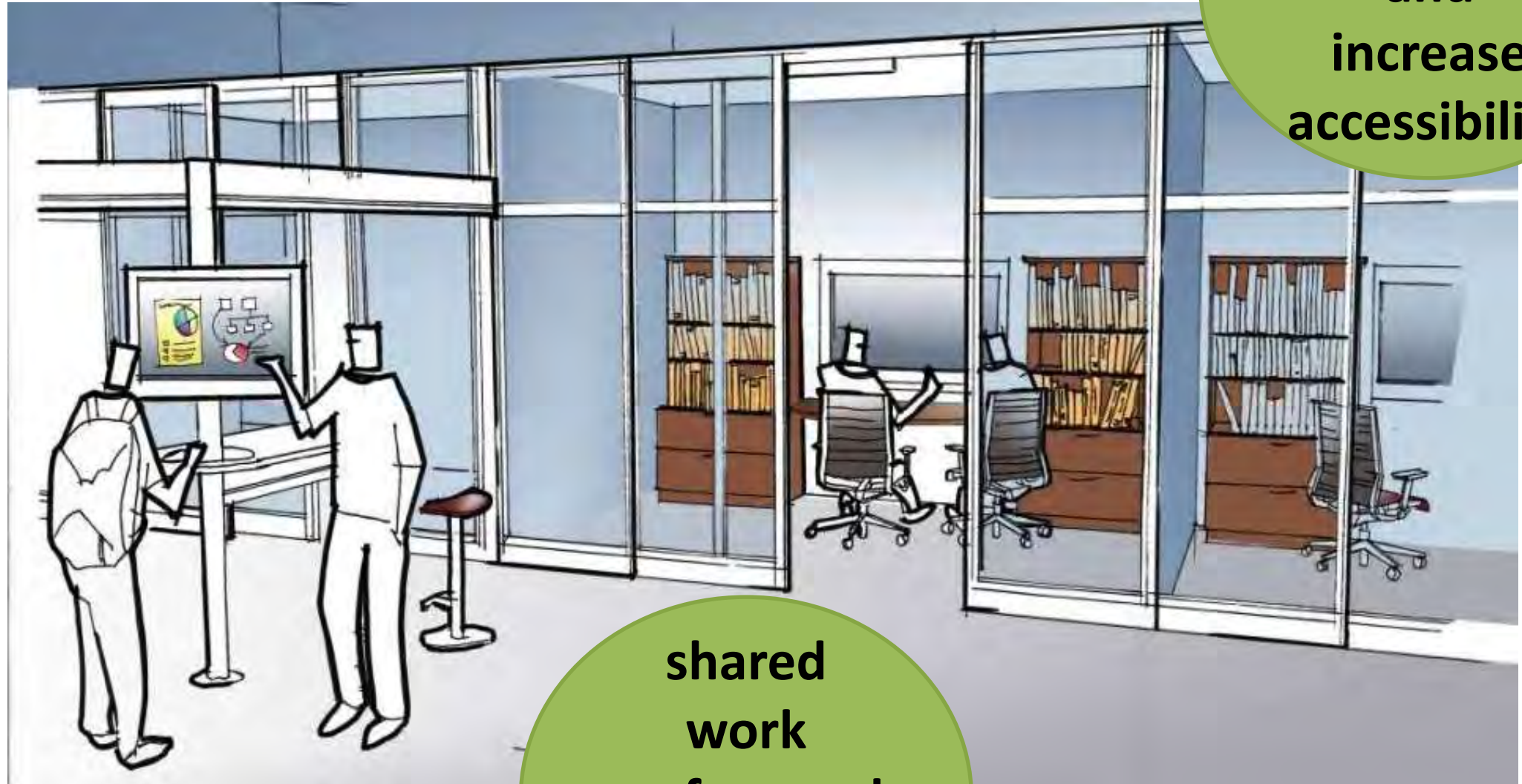
**eliminate  
barriers**

**support  
social  
learning**

discovery | human-centered / design thinking

realize insights and  
design principles  
through ideation

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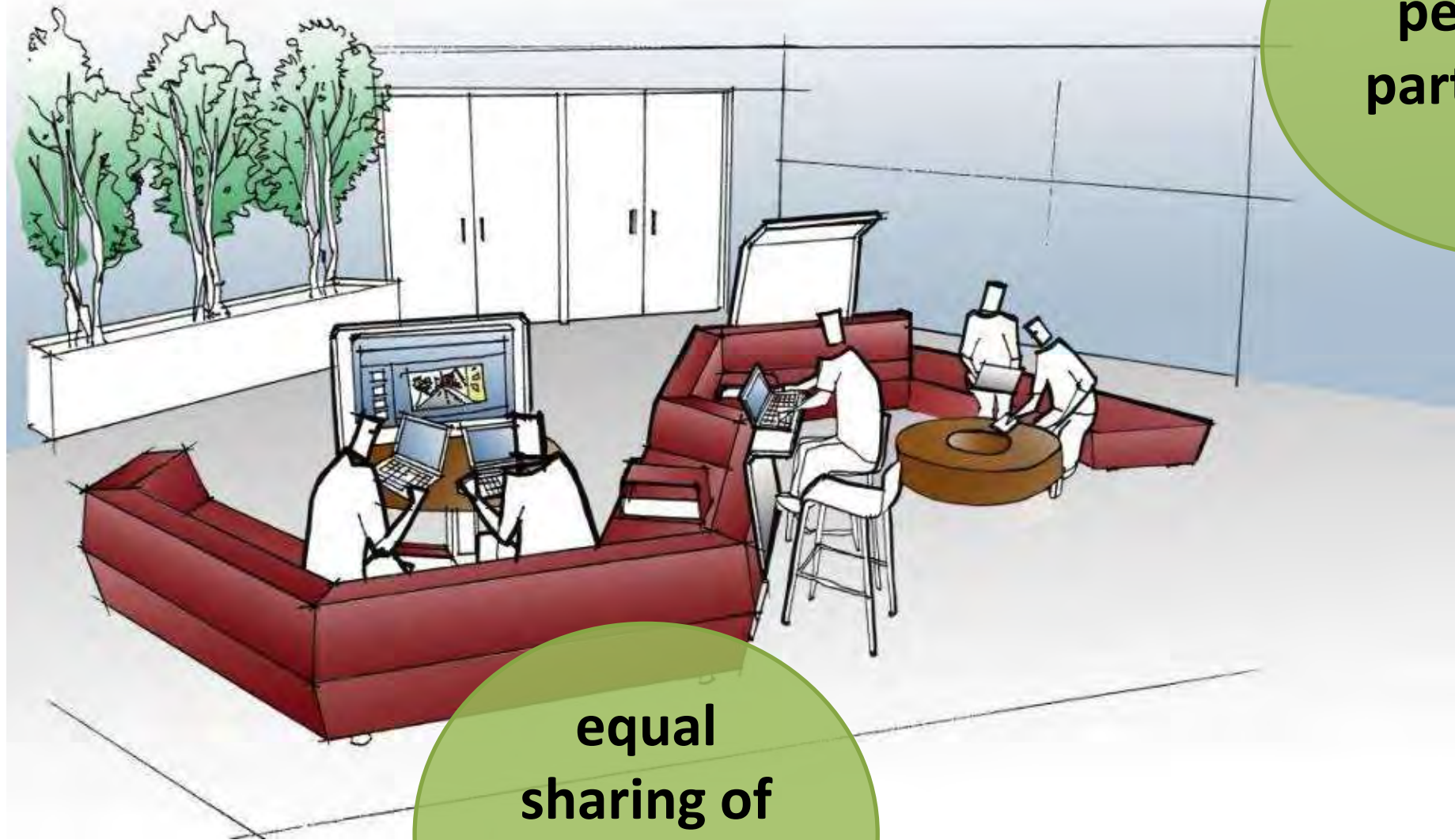
reduce  
barriers  
and  
increase  
accessibility

shared  
work  
surface and  
screens for  
teaching

discovery | human-centered / design thinking

realize insights and  
design principles  
through ideation

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peripheral  
participation

equal  
sharing of  
digital  
content

discovery | human-centered / design thinking

realize insights and  
design principles  
through ideation

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**coffee as a  
grand  
attractor**

**brain  
storming  
area**

**multiple  
seating  
options**

discovery | human-centered / design thinking

**comfortable  
seating**

**realize insights and  
design principles  
through ideation**



**personal  
storage**

**acoustical  
and visual  
privacy**

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discovery | human-centered / design thinking

realize insights and  
design principles  
through ideation



**standing  
height  
work  
surface**

**provide for  
temporary  
and  
permanent  
ownership**

discovery | human-centered / design thinking

realize insights and  
design principles  
through ideation

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easily  
changeable  
display

paths lead  
to  
customer  
touch  
points

discovery | brain science

**children's brains are  
highly influenced by  
their environment**



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## discovery | brain science

young brains are  
changing due to  
technology's  
influence – neurons  
grow quickly daily



## discovery | brain science & learning research

**we know we have to  
move to learn and  
active learning  
provides deep  
learning over  
passive methods**



# discovery | brain science & learning research

changes by cohort  
age with differing  
needs



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# discovery | brain science & learning research

learning is social  
and connecting with  
others is critical



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# discovery | brain science & learning research

we know we need to  
focus and support  
diffuse memory

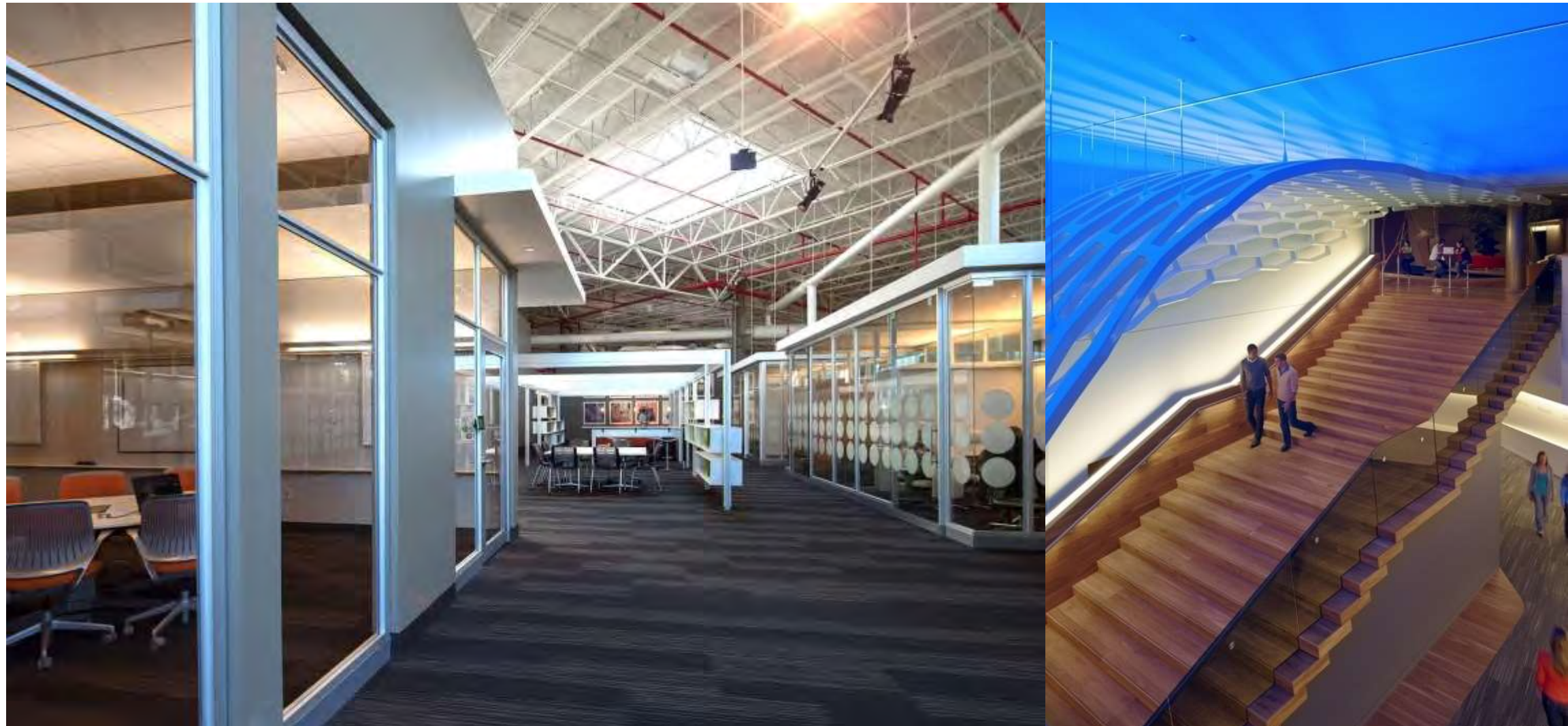


K12

HE WORK

# discovery | learning research

collaboration,  
connection,  
negotiation, etc., --  
21<sup>st</sup> century learning  
skills are critical



K12

HE WORK



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**Panelist Kate Mraw, CID, LEED AP BD+C**

Associate, LPA Inc.  
Programmer & Designer  
K12 Education Learning Environments

100+ Educational Projects

[kmraw@lpainc.com](mailto:kmraw@lpainc.com)



discovery | stepping back

every brain is  
unique; we each  
process information  
in different ways



## discovery | stepping back

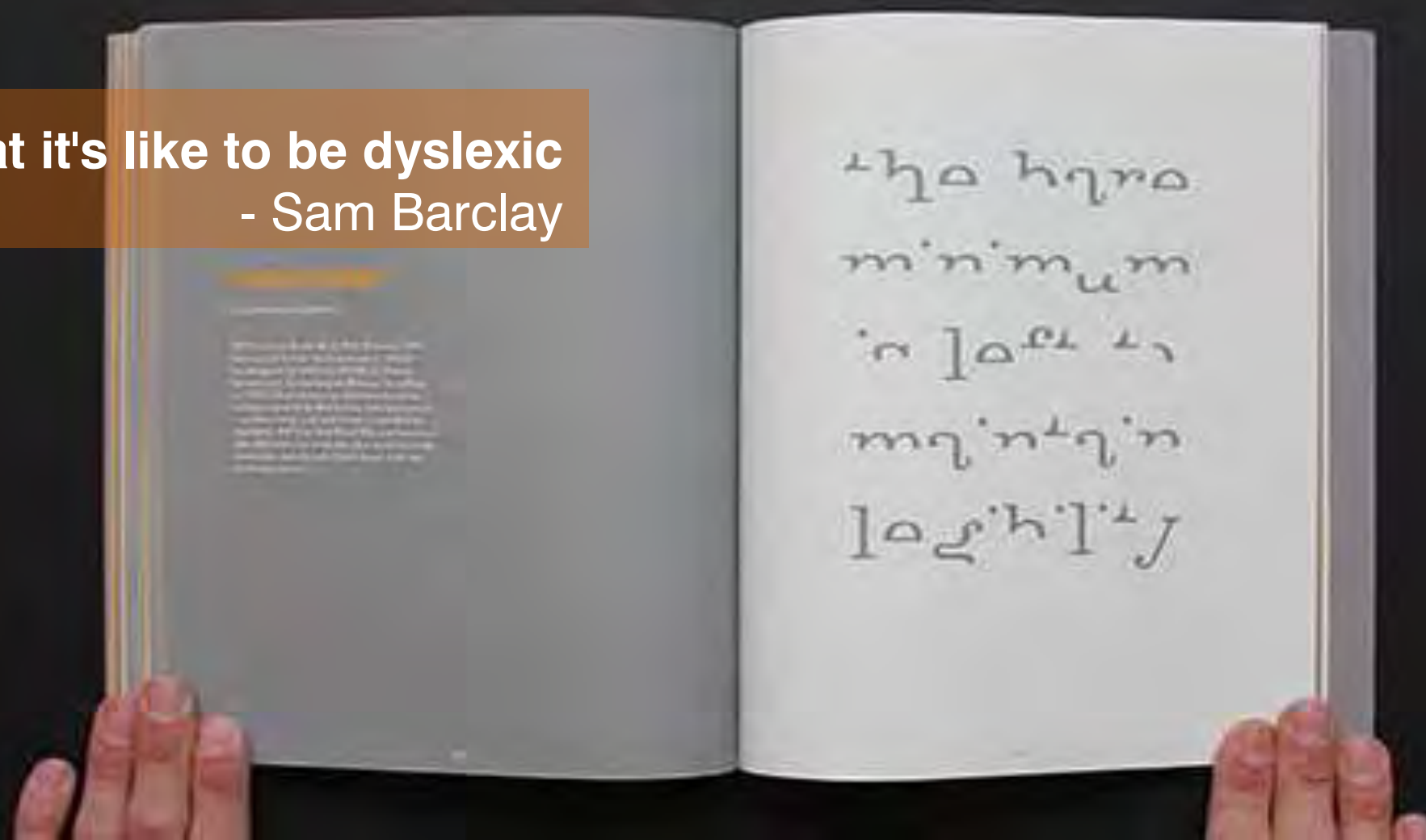
the 21st century  
learners and  
workers have not  
changed

...our awareness of  
how people work  
and learn best as  
individuals  
has changed





I wonder what it's like to be dyslexic  
- Sam Barclay



roughly  
**10%**  
of people  
have a  
language-  
based  
learning  
disability,  
the most  
common  
of which  
is  
dyslexia

...a person with an **auditory strength** means that individual was able to remember approximately **75%**

of what they hear in a 30-to-40 minute lecture without taking notes...



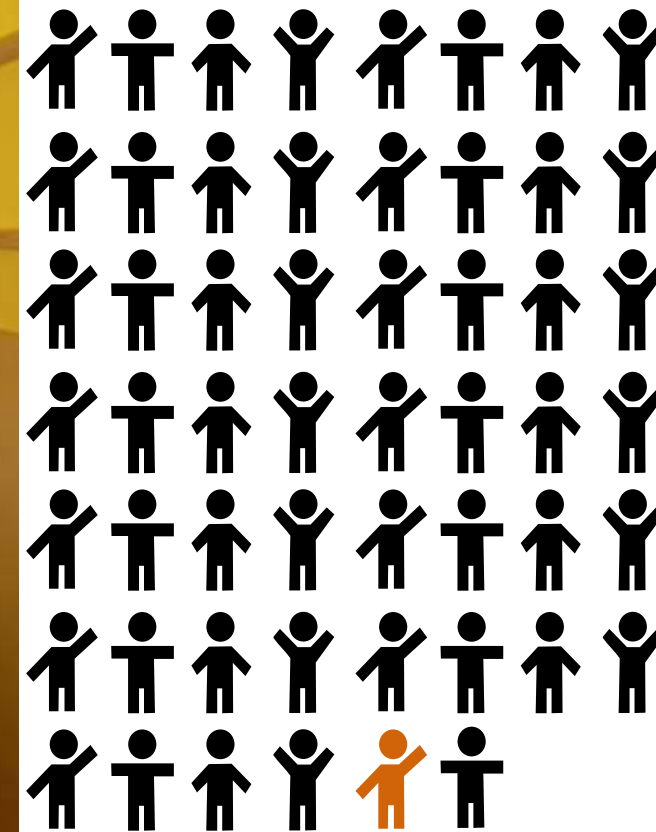
Less than  
**15%**  
of the adult  
population  
worldwide are  
auditory learners

## discovery | stepping back

...A person doesn't  
have to be on the  
autism spectrum  
to be affected  
by sensory issues.”



Autism now affects  
1 in 88 children and 1 in 54 boys



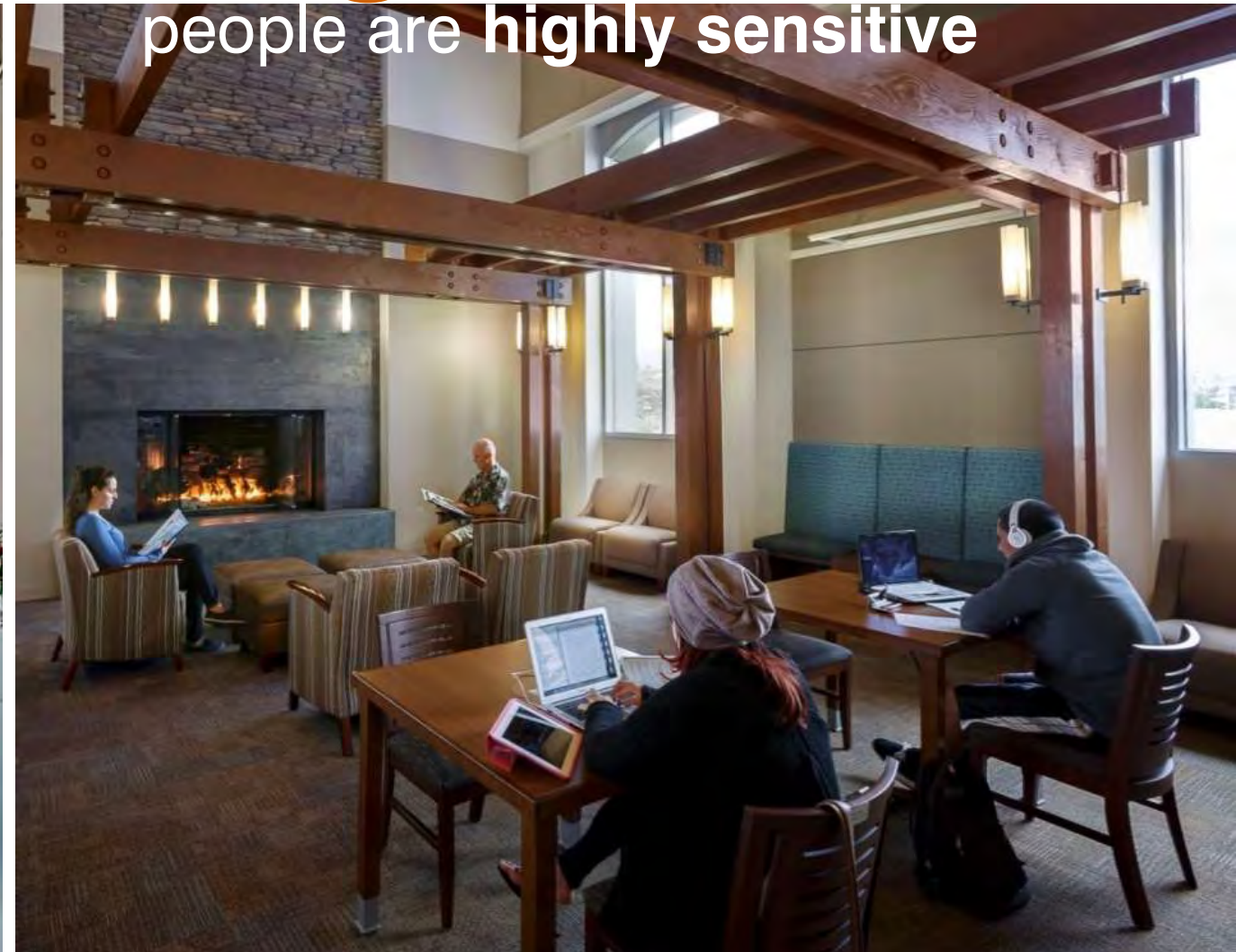
- Dr. Temple Grandin, The Way I See It

discovery | stepping back

1 in 5

people are highly sensitive


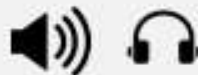






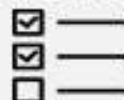


















**Sensory Processing Sensitivity (SPS) is an innate trait associated with greater sensitivity, or responsiveness, to environmental and social stimuli**



- Dr.Elaine N. Aron, The Highly Sensitive Person

discovery | stepping back

“Learning style is the way in which each individual learner begins to concentrate on, process, absorb and retain new and difficult material.”

 ENVIRONMENTAL	SOUND 	LIGHT 	TEMPERATURE 	FURNITURE 		
 EMOTIONAL	MOTIVATION 	CONFORMITY 	PERSISTENCE 	STRUCTURE 		
 SOCIOLOGICAL	SELF 	PAIR 	PEERS 	TEAM 	AUTHORITY 	VARIETY 
 PHYSIOLOGICAL	PERCEPTUAL 	INTAKE 	MOBILITY 	TIME OF DAY 		
 PSYCHOLOGICAL	ANALYTIC 	GLOBAL 	REFLECTIVE 	IMPULSIVE 		

Drs. Rita and Kenneth Dunn and Susan Rundle,  
Learning Style Preferences  
& The Building Excellence Survey 1996-2004



PERCEPTUAL

**Auditory (listeners)**



**Visual Picture (artists)**



**Visual Word/Text (readers/writers)**

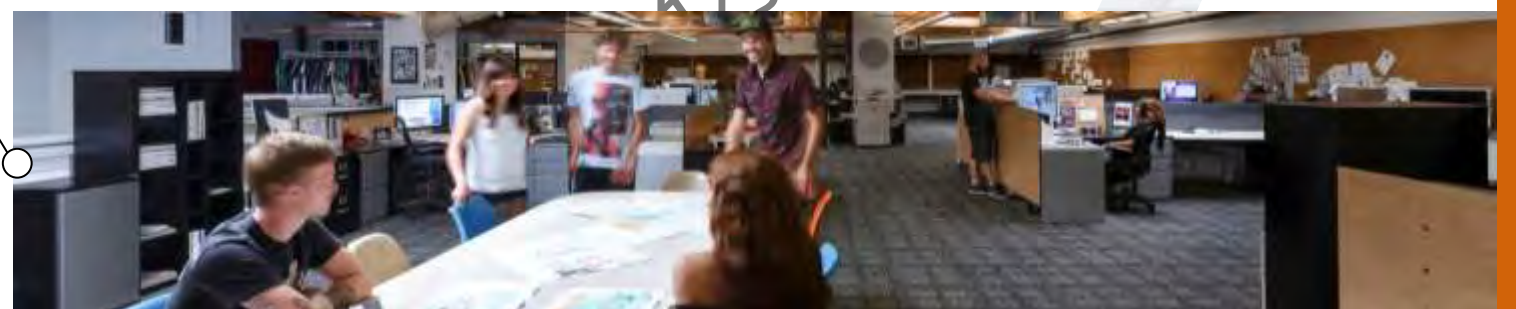
**Tactile (crafters, builders)**



**Kinesthetic (movers, athletes, actors)**



**Verbal (talkers)**





## ENVIRONMENTAL

**Sound – background noise preference**

**Temperature – warm/cool**

**Light – brightness vs. sensitivity**

**Furniture – formal vs. casual**



# discovery | diverse preferences

 flexibility

 controllability

 choice



discovery | stepping back

the world actually  
has changed: from  
information  
to innovation



how are we  
preparing the  
next generation  
for the  
conceptual age?

## PROJECT-BASED LEARNING (PBL)

**learning /  
innovation skills**  
critical thinking  
communication  
collaboration  
creativity

**information, media,  
technology skills**

digital and  
emerging  
technologies,  
media and  
information  
literacy

**life / career skills**

grit, resilience  
project  
management  
social / cross-  
cultural skills,  
leadership &  
responsibility

### supported by:

Standards & Assessments  
Curriculum & instruction  
Professional Development  
Learning Environments



K12

If we can learn to let go a little, and allow children to take an active role in their education, learning may become more fun and engaging.

We need to change how we traditionally think about school if we truly want to encourage experimentation, creativity, and problem solving.

*Adapted from Sugata Mitra's TED Talk, Children Driven Education*

**watering hole**



**mountain top**



**sand pit**



**cave**



**camp fire**



space to come together to  
exchange ideas + cross  
pollinate

space to celebrate and share  
your learning, 'one to many'

space to play, prototype and  
experiment

space to withdraw from noise  
and be alone with thoughts  
and reflections

Space to share your stories,  
exchange ideas and build on  
each others' ideas

**watering hole**



space to come together

**mountain top**



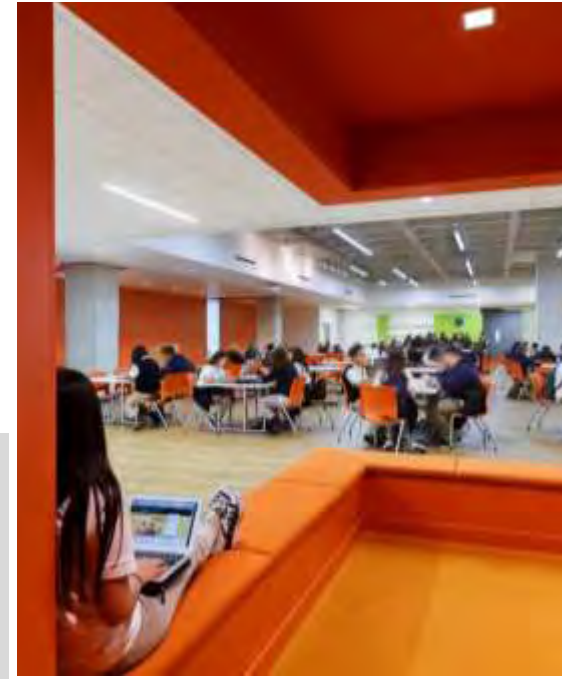
space to celebrate

**sand pit**



space to experiment

**cave**



space to reflect

**camp fire**



space to share ideas

e3 Civic High School, Downtown San Diego

## discovery | case study

**E3 Civic High**  
Is located inside of  
a public library,  
offering extensive  
opportunities for  
collaboration as  
both organizations  
support a mission of  
lifelong learning and  
literacy








discovery | case study

space was designed  
to encourage social  
interaction

yet every gathering  
space also has a  
niche, a cove or a  
focus room



 ENVIRONMENT	 OWNERSHIP	 ACOUSTICS + LIGHT	 FURNITURE	 TECHNOLOGY
Formal / Informal Simple / Chaotic Clean / Coordinated	Student / Teacher Owned Community Involvement Personalization	Loud / Quiet Collaborative / Focused Quiet / Contained	Static / Mobile Consistent / Diverse Array Soft / Hard	Tethered / Untethered Individual Access / Group Distance Learning

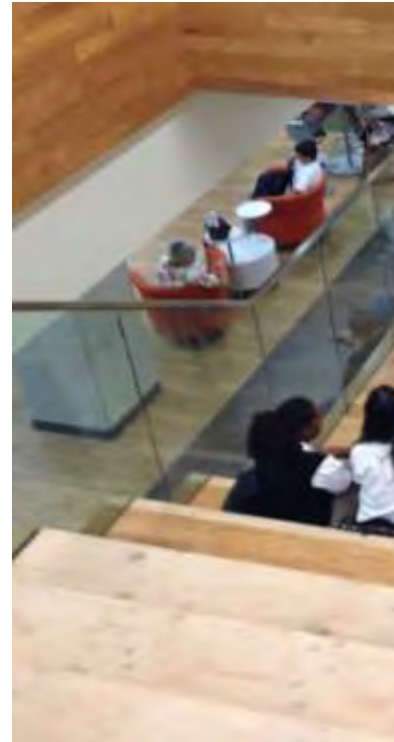
## discovery | case study

“my students feel ownership of the room and have their ‘spots’ that they go to when they need to focus”



# discovery | case study

- 1 In what ways do occupants **leverage various design features** on behalf of 21c teaching and learning?
- 2 To what extent are specific design features related to the occupants' **individual and collective identities** as learners and urban citizens?
- 3 How do various design elements **foster a constructive relationship** between school occupants and the community?
- 4 How did the process of educational commissioning **contribute to or hinder the pedagogy-environment fit**?



## collaborative research project



## observational surveys, walking interviews, student workshop and focus group meetings



+



National Center  
for the 21st  
Century  
Schoolhouse

Center for  
Education  
Policy and  
Law

K12

discovery | looking forward



we all learn in unique ways

where we learn matters



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## Panelist **Dan Rentsch, Architect**

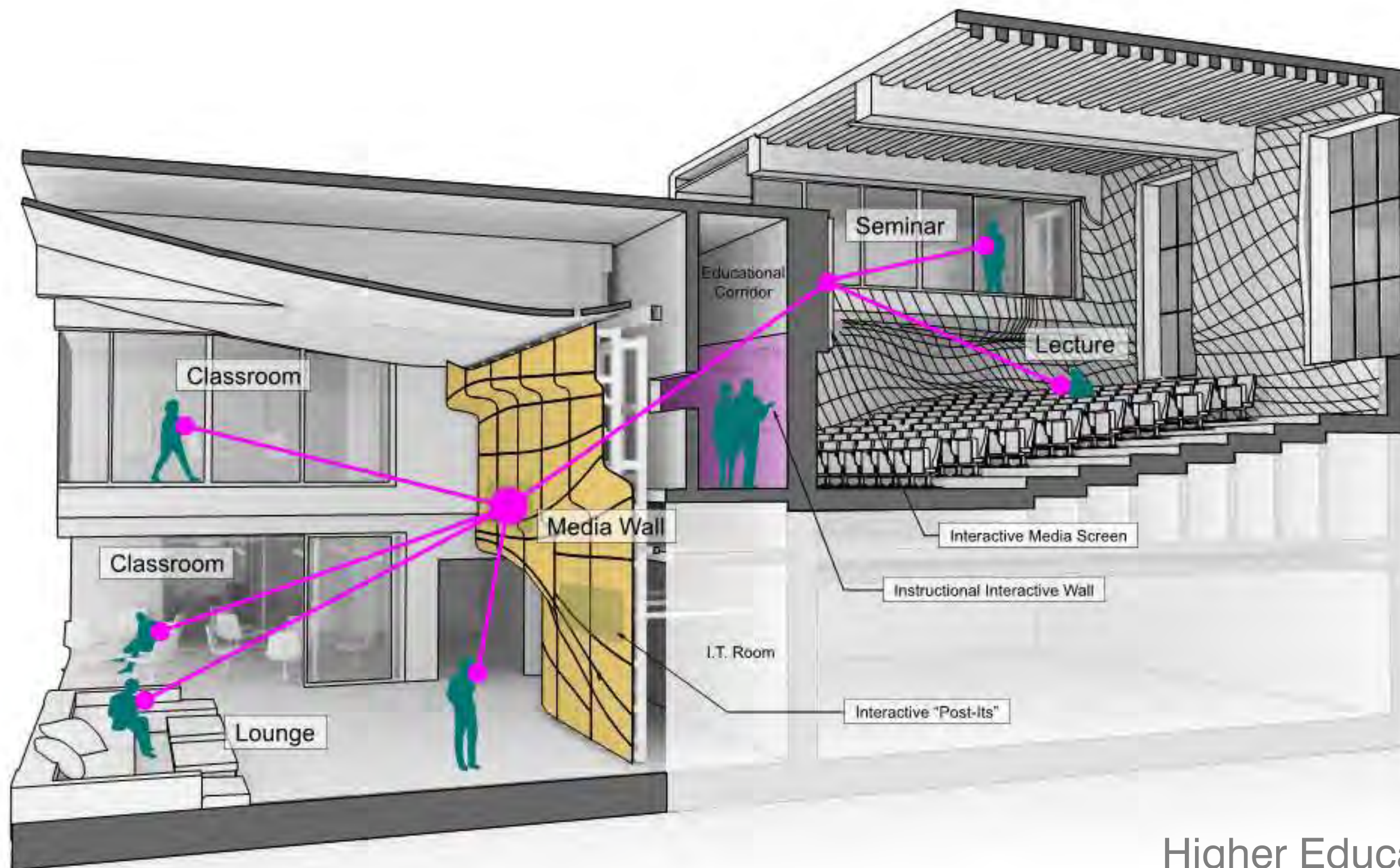
Belzbergarchitects.com  
Higher Education Architect

Occidental College Case Study

dan@belzbergarchitects.com



Higher Education



Higher Education

# discovery | The McKinnon Center for Global Affairs

Wall of micro-etched glass, laminated for projection

10 embedded video screens / curated by students

casual seating encourages social learning

Higher Education

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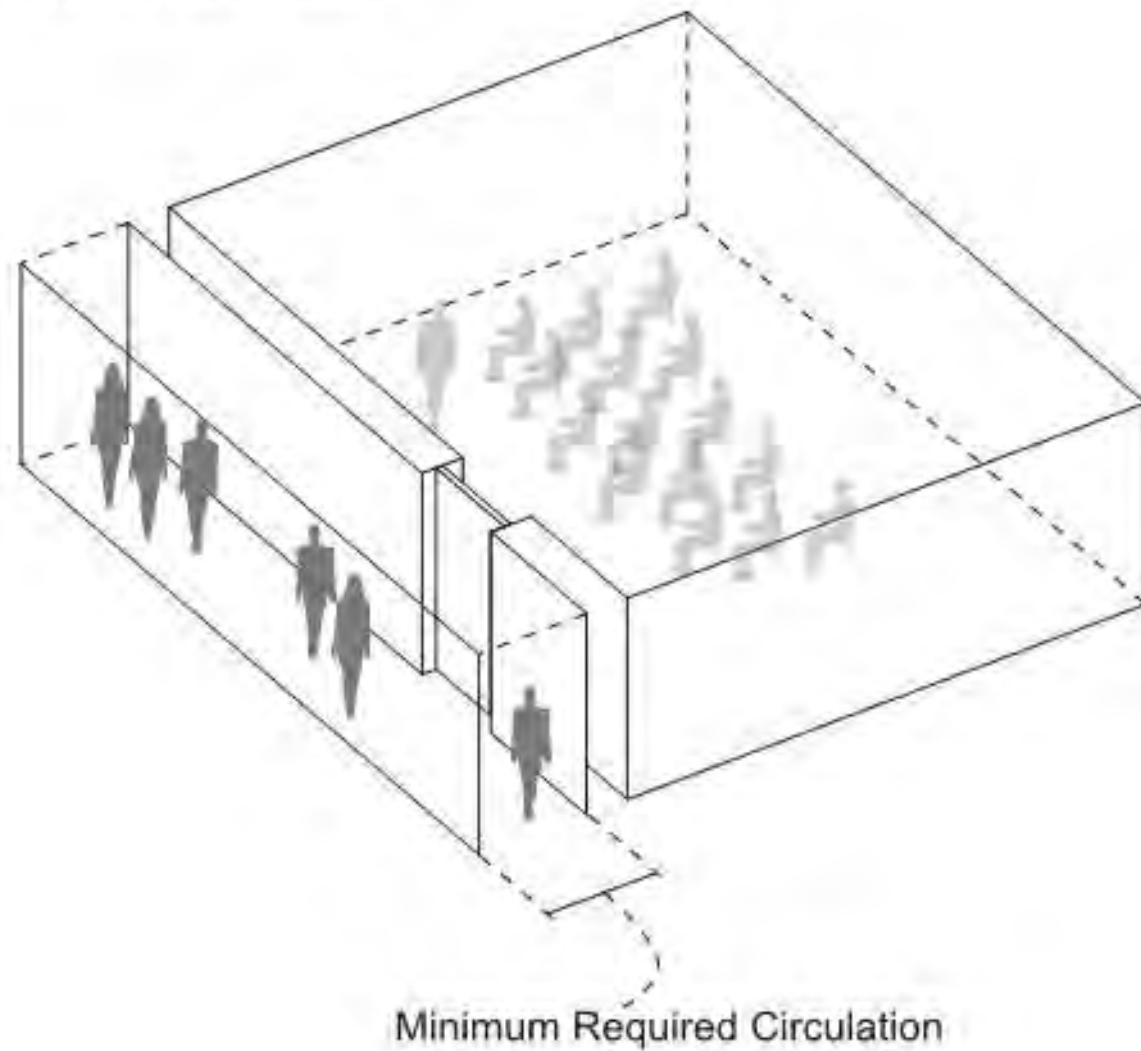
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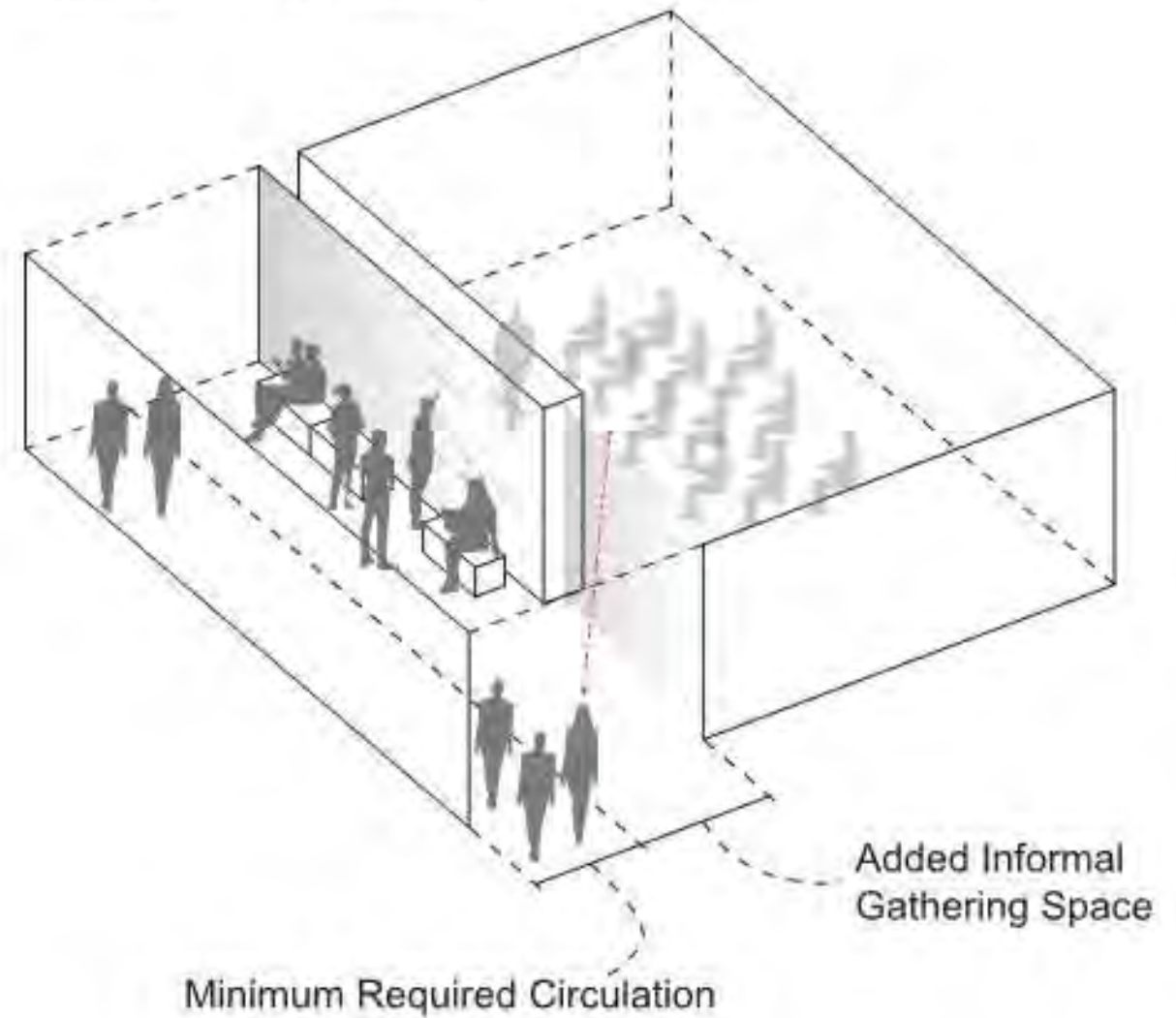
Higher Education

inspiring | learning happens everywhere

**Typical Circulation**



**Transformed Circulation**



Higher Education

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10 embedded video screens / curated by students

casual seating encourages social learning

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# discovery | The McKinney

Wall of micro-etched glass, laminated for projection

10 embedded video screens / curated by students

# Center for Global Affairs

casual seating encourages social learning

Higher Education



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**Panelist Natalie Zweig, Associate IIDA / LEED AP ID+C**

LPA Inc.  
Work/Learn Environments

Interior Strategist 75+ Projects

[nzweig@lpainc.com](mailto:nzweig@lpainc.com)



Corporate

discovery | changing the expected

These spaces  
can potentially  
encourage  
collaboration  
Rather than  
discourage it



Typical  
corporate  
educational  
spaces are not  
conducive to  
meaningful  
learning

*Training rooms can be environments where people meet,  
learn, share ideas and collaborate*

Corporate

## discovery | spaces designed for interaction

Light, furniture,  
ergonomics  
color and  
technology  
must all be  
considered



Educational  
spaces are  
becoming  
amenities  
instead of  
afterthoughts



*Corporate education should be seen as an investment in  
the employee which can be utilized for recruitment and  
retention*

Corporate

# discovery | The PDS Institute

Multiple projection screens and integrated technology address large and small meetings

Specialty learning environments encourage specific education

Flexible furnishings allow multiple configurations

Corporate

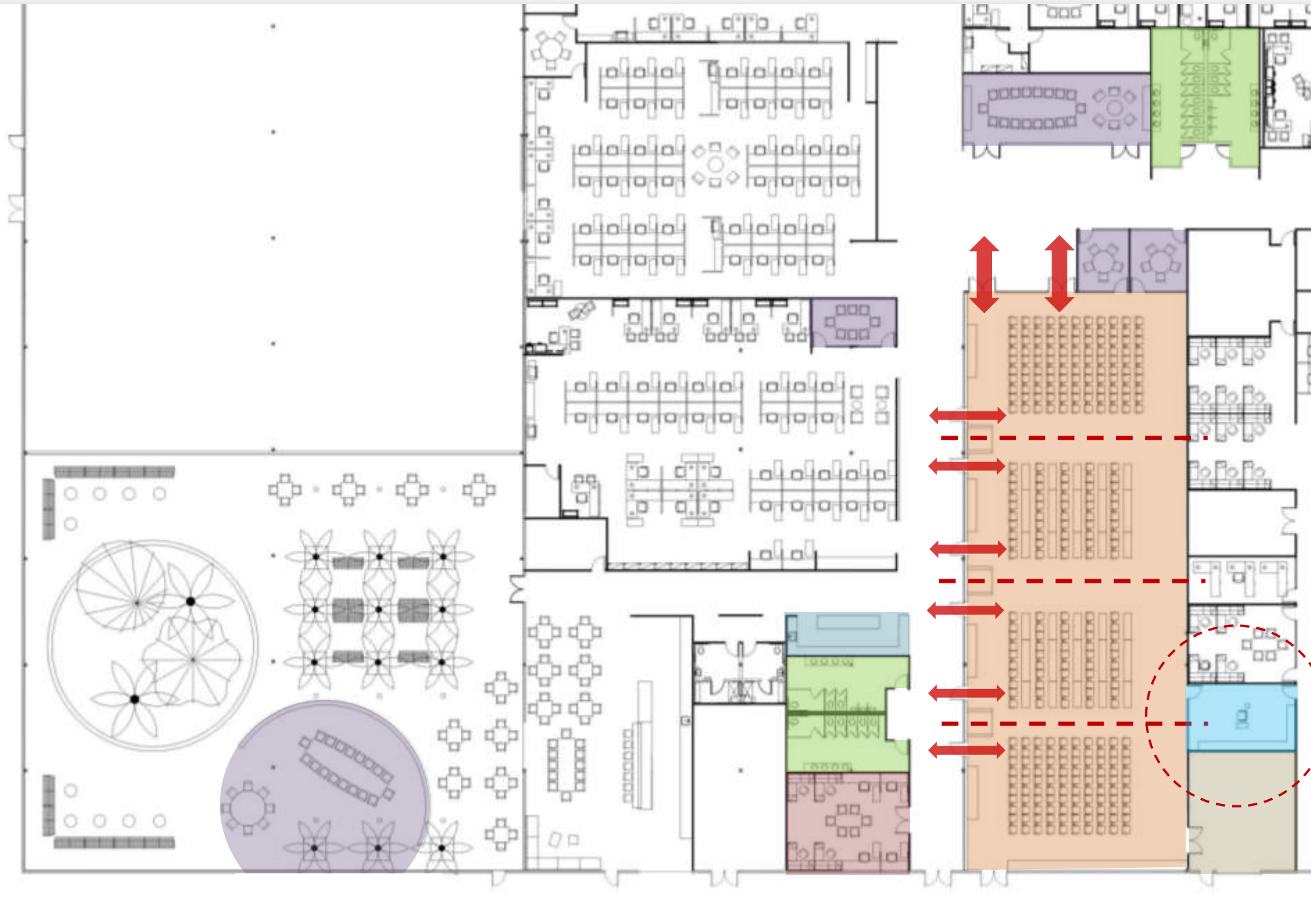
## discovery | The PDS Institute [ Zoom Out ]



- Central Focus
- Easy Access/ Egress
- Outdoor Adjacency
- Flexible Sizing

Corporate

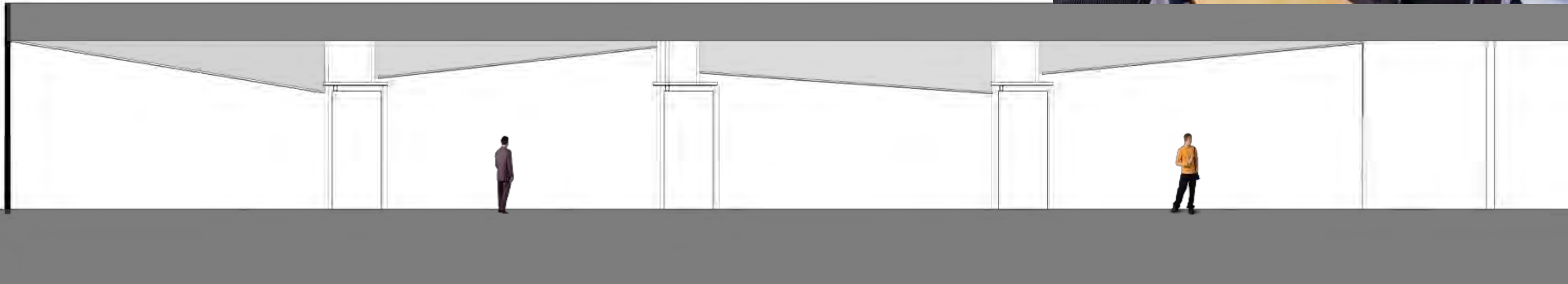
## discovery | The PDS Institute [ Zoom In ]



- Easily Loaded/ Unloaded
- Easily Serviced
- Restroom Location and Quantity
- Guest Services
- Food Service
- Break Out Rooms
- Specialty Learning Environments

Corporate

# discovery | The PDS Institute [ Form ]



*Flexible, adjustable spaces*



Corporate

## discovery | The PDS Institute [ Central Focus ]



*Educational spaces should be perceived as an investment in the staff.*

Corporate

## discovery | The PDS Institute [ Food Service ]



*Create spaces that are easy to stage and service.*

Corporate

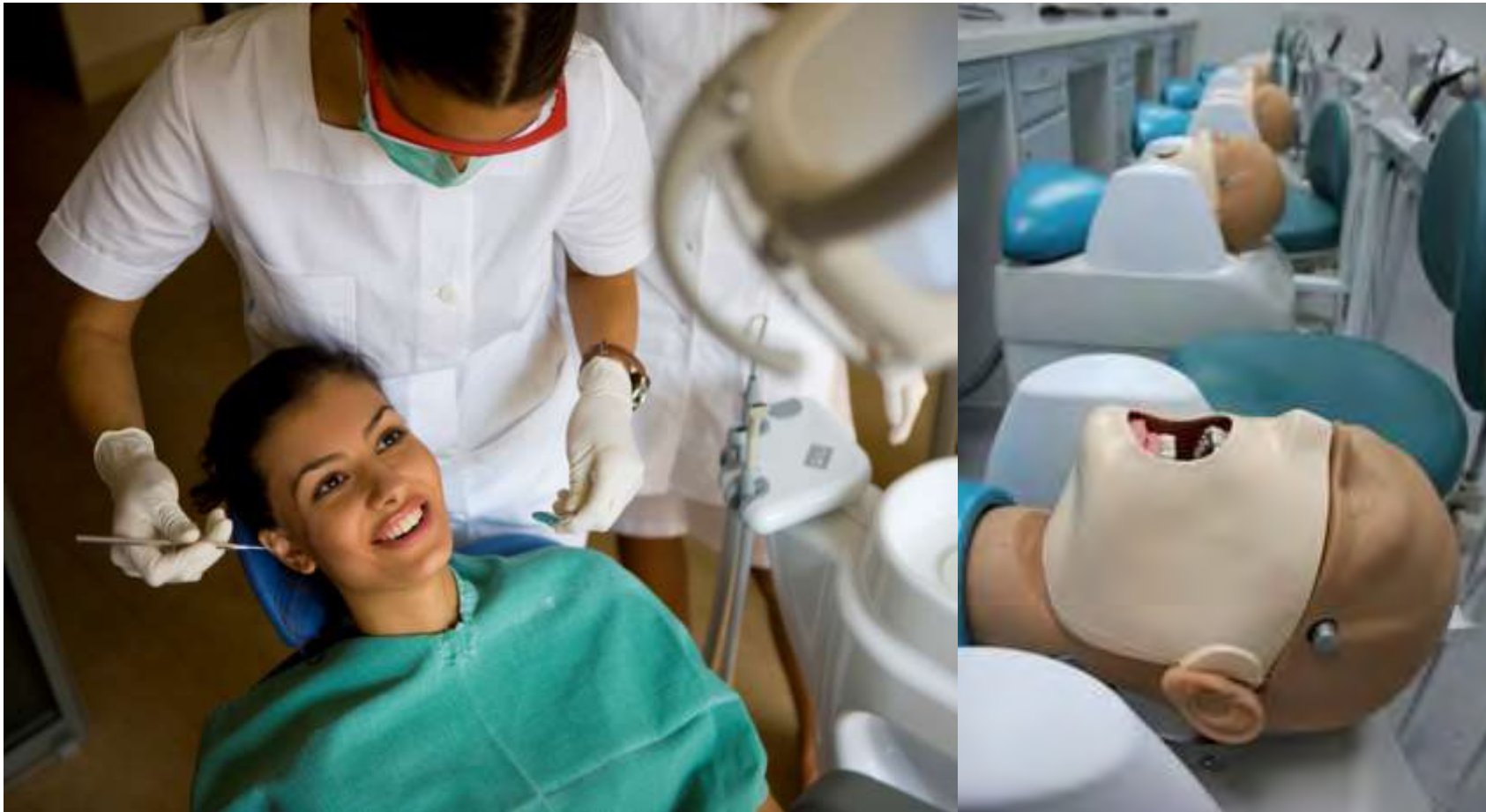
## discovery | The PDS Institute [ Break Out ]



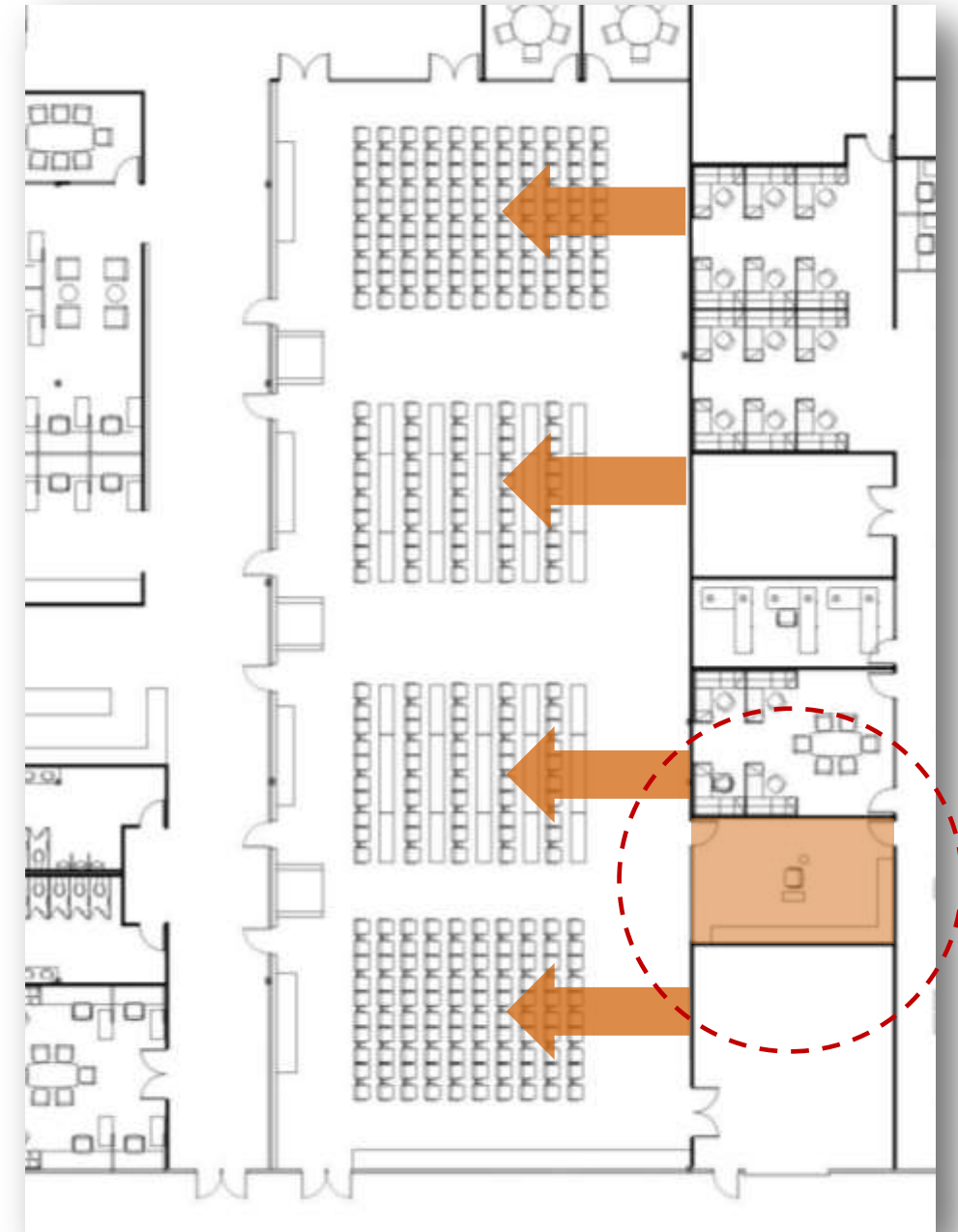
*Break out spaces that are varied in size, structure and technology*

Corporate

## discovery | The PDS Institute [ Specialty Learning ]



*Specifically designed spaces and technologies for learning*  
[ The Operator ]



Corporate

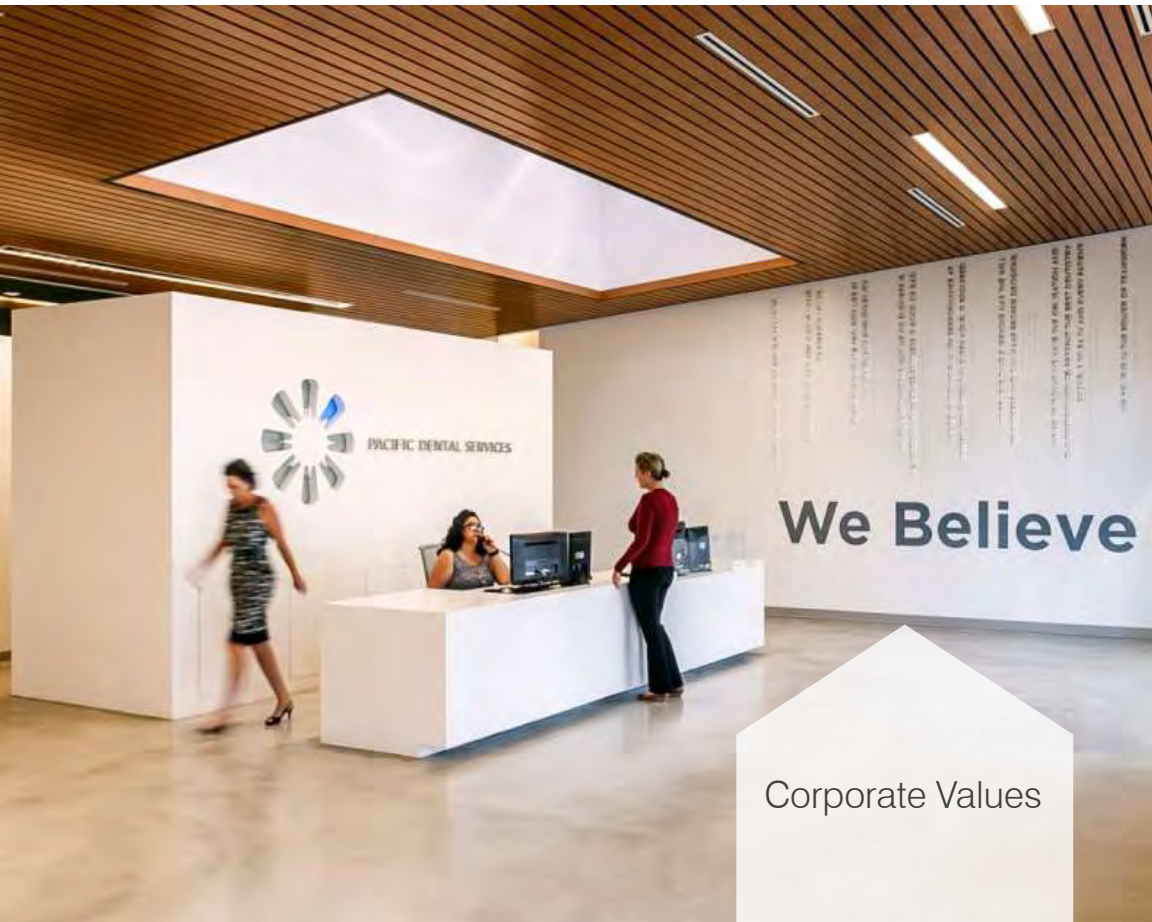
## discovery | The PDS Institute [ Alternative Learning ]



*Giving the spaces in between meaning and function*

Corporate

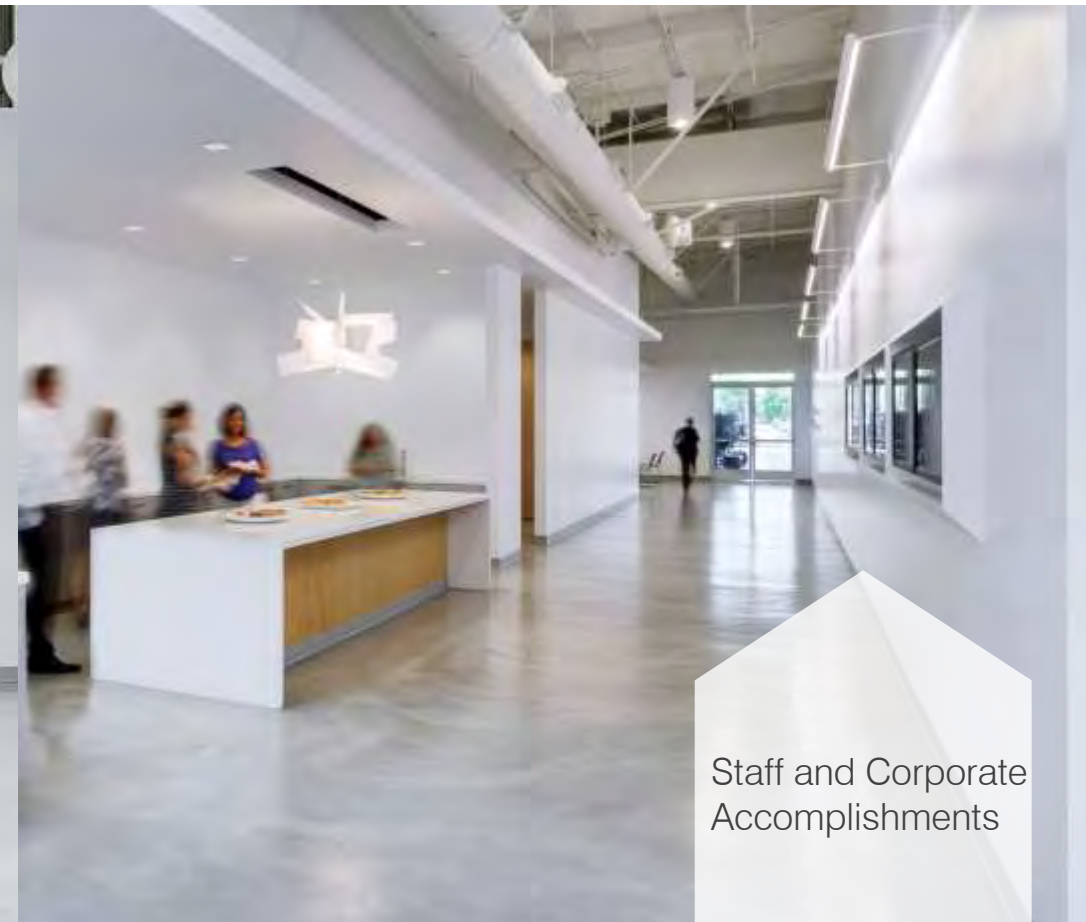
# discovery | The PDS Institute [ Alternative Learning ]



Corporate Values



Consultant and  
Vendor Showcases



Staff and Corporate  
Accomplishments

*A space that teaches*

Corporate



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Committee on Architecture for Education

**21st Century Learning Environments**

READ





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## 21st Century Learning Environments Reading List

Aring, M. & Brand, B. (1998, January). **The teaching firm: Where productive work and learning converge.** Research summary and implications of findings. MA: Center for Workforce Development Education Development Center, Inc.

Alford, N.I. (1991) **Attitude and communication in the electronic classroom: A closer look at the interactive television system of instruction.** (Report No. S5507648). (ERIC Document Reproduction Service No. ED 339965). Paper presented at the meeting of the Communication Education Division of the Central States Communication Association, Chicago, IL.

Barker, B. O., & Harris, B. R. (1993, April). **Establishing and using an electronic classroom: The Western Illinois University experience.** Paper presented at the regional "Teaching with Technology" conference, Moline, IL.

Baron, R. A., Rea, M. S., & Daniels, S. G. (1992). **Effects of indoor lighting (luminance and spectral distribution) on the performance of cognitive tasks and interpersonal behaviors: The potential mediating role of positive affect.** *Motivation and Emotion*, 16 (1), 1 - 33.

Barr, R. & Tagg, J. (1996, November/December). **A new paradigm for undergraduate education.** *Change Magazine*, 27, 13-25.

Bell, T. H. & Elmquist, D. L. (1992, March). **Technical interaction in the classroom.** *Vocational Education Journal*, 22-24.

Blackett, A., & Stanfield, B. (1994, Spring). A planner's guide to tomorrow's classrooms. *Planning for Higher Education*, 22, 25-31.

Boray, P. F., Gifford, R., & Rosenblood, L. (1989). **Effects of warm white, cool white, and full-spectrum fluorescent lighting on simple cognitive performance, mood and ratings of others.** *Journal of Environmental Psychology*, 9, 294 - 308.

Brown, H. M., & Minton, P. G. (1993, March). **Classroom 2000: A room with a view to the future.** *T.H.E. Journal*, 65-69.

Brown, T. (2009). **Change by design.** NY: HarperCollins.

Brubaker, W., Bordwell, R., & Christopher, G. (1998). **Planning and designing schools.** New York: McGraw-Hill.

Clabaugh, S. (Ed). (1993). **Design of general purpose classrooms, lecture hall, and seminar rooms** (2nd ed.). University of Maryland: Educational Technology Center.

Cornell, P. (1998). **Learning environments for the information age.** Workplace issues: one in a series. MI: Steelcase, Inc.

Cornell, P. & Scott-Webber, L. (2001). **Environments for sharing knowledge. A sheet for grist, fodder, starters, solutions, stories, insights, and beginnings.** Application series 1 to 9. TX: Vecta

Darrouzet, C., Dirckinck-Holmfeld, L., Kahn, T., Stucky, S., & Wild, H. (1994, August 23). **Rethinking "distance" in distance learning.** CA: Institute for Research on Learning.



## THE AMERICAN INSTITUTE OF ARCHITECTS

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# 21st Century Learning Environments Reading List

Davis, S. & Meyer, C. (1998) Blurr...**The speed of change in the connected economy**. NY: Warner Books.

Day, C.W. (1994, March). **Designing new spaces in tomorrow's school**. American School & University, 28.

Fawson, E. C., & VanUitert, D. D. (1990). **The technology classroom: Alternatives for future planning**. Tech Trends, 35, (4), 29 - 34.

Flordia, R. (2002). **Rise of the creative class**. NY: Basic Books.

Fulrath, D. (1976). **Some effects of seating arrangement and task duration on fatigue, attention, participation, and preference of individuals engaged in small group media tasks, Doctoral dissertation**. Boston University, Ann Arbor, MI: University Microfilms.

Gilber, W. (1991, Fall). **The AT&T Teaching Theater at the University of Maryland at College Park**. SIGUCCS Newsletter, 18 -19.

Graves, B. E. (1993). School ways: **The planning and design of America's schools**. New York: McGraw-Hill Incorporated.

Hansen, E., Brown, B., Chong, S., Kubota, K., Totten, N., & Hubbard, L. (1991). **Computer conferencing for collaborative learning in large college classes**. (Report No. HE 024 782). (ERIC Document Reproduction Service No. ED334938). Final report of a grant project, Indiana University.

Harmon, D. B. (1951). **The coordinated classroom**. File no. 35-B. Washington, DC: American Institute of Architects.

Hauf, H., Koppes, W., Green, A., Gassman, M. & Haviland, D. (1971). **New spaces for learning: The design of college facilities to utilize instructional aids and media**—2nd printing. New York: The American Institute of Architects.

Haviland, D. & Winslow, W. (1971). **Designing for educational technology: A guide to the available resources**. New York: The American Institute of Architects.

Haviland, D. & Millard, W. (1971). **Multi-media classrooms revisited. A look at some college facilities designed for educational technology**. NY: Rensselaer Polytechnic Institute.

Herbin, P., Scott-Webber, L., Greco, J. & Higa, K. (2006, June 2). **The community college campus as a catalyst for advancement opportunities – Parts I & II**, Council for Resource Development Region IV and VI Regional Conference. Savannah, GA.

Hiller, B. & Hanson, J. (1984). **The social logic of space**. MA: Cambridge University Press.

Jaeggli, N. D. (1992, March). **Multimedia system**. Vocational Education Journal, 30-31.

Kaplan-Neher, A. (1991). **Apple technology in support of learning: Teaching with computers**. California: PUBLIX Communications Co.



## THE AMERICAN INSTITUTE OF ARCHITECTS

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# 21st Century Learning Environments Reading List

Kelly, F, McCain, T. & Jukes, I. (2009). **Teaching the digital generation. No more cookie-cutter high schools**. CA: Corwin Press, a Sage Company.

Kettinger, W. J. (1991, August). **Computer classrooms in higher education: An innovation in teaching**. Educational Technology, 36-42.

Knirk, F (1992, September). **Facility requirements for integrated learning systems**. Educational Technology Magazine, 33, (9), 26-32, New Jersey: Educational Technology Publications, Inc.

Lengel, T. & Kuczala, M. (2010). **The kinesthetic classroom. Teaching and learning through movement**. CA: Corwin, a Sage Company & Regional Training Center.

Lewis, P. T. (1990), **Noise in primary schools: Implications for design**. Journal of architectural research, 6 (1), 34-37.

McVey, G. (1996). **Ergonomics and the learning environment**. In D. Jonassen (Ed) Handbook of research for educational communications and technology. A project of the association for educational communications and technology. New York: Simon & Schuster Macmillan, (pp. 1045-1104)

Meister, J. (1998). **Corporate Universities. Lessons in building a world-class work force**. NY: McGraw-Hill, Inc.

Oblinger, D. G. (2006). **Learning Spaces**. CO: EDUCAUSE.

O'Neill, G. & McMahon, T. (retrieved January, 2011). **Student-centered learning: What does it mean for students and lecturers?** AISJE Readings. <http://www.aishe.org/reading>.

OWP/P **Architect, VS Furniture & Bruce Mau Design**. (2010). The third teacher. Self-published.

Pink, D. (2005). **A whole new mind. Why right brainers will rule the world**. NY: Penguin Group.

Reber, A. (1993). **Implicit learning & tacit knowledge. An essay on the cognitive unconscious**. NY: Oxford University Press.

Robertson, M. M. (1992, Summer). **Ergonomic considerations for the human environment**. School Library Media Quarterly, 211-215.

Ross, T. & Seward, G. (1993). **Facility planning for technology implementation**. The Educational Facility Planner. CEFPI, 31. No. 3, 9-12.

Scott-Webber, L. & Temple, J. (2010). **Decentralized Teaching and Learning – Intentionally Designing the “box” to work. In the Conference on higher education pedagogy proceedings**. Blacksburg, VA, p. 27.

Scott-Webber, L. (2007, June 13). **Learning-centered solutions – not just an academic exercise**. Keep up. NeoCon World's Trade Fair 2007. MI: Interior Design Magazine, <http://merchandisemart.com/neocon/showinfo/conference-proceedings.html/W302>].



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# 21st Century Learning Environments Reading List

Scott-Webber, L. (2004, July 17-21). **Two sides of the efficiency coin: knowledge delivery/knowledge retention.** SCUP '39 Hard choices...smart planning. The 39th Annual International Conference and Expo. MI: Society for College and University Planners. (p. 14).

Scott-Webber, L. (2003, June 16). **Environments for Sharing Knowledge in the Knowledge Age 2:** NeoCon World's Trade Fair 2003. [http://www.neocon.com/neocon/c\\_proceedings.html/M124](http://www.neocon.com/neocon/c_proceedings.html/M124).

Scott-Webber, L. (2003, October 19-22). **Two sides of the efficiency coin.** Northeast Regional Conference for the Society for College and University Planners' Conference Proceedings, (p. 3).

Scott-Webber, L. (2003, May 15-16). **Can you hear me now?** In S. O'Neill's (Ed.) Ryerson University May Faculty Conference Abstract Proceedings. ON: Toronto. <http://www.ryerson.ca/lt/images/PDF%27s/program-final.pdf>

Scott-Webber, L. (2002, September 19-20). **Environments for Sharing Knowledge in the Knowledge Age.** IIDEX/NeoCon. ON: Toronto. <http://www.merchandisemart.com/neoconcanada/proceedings/T8.html>.

Scott-Webber, L. (2001, July 21-25). **Environments for learning: Issues and implications.** Pre-conference workshop at the International conference for the Society for College and University Planning, Boston, MA. (p. 20).

Scott-Webber, L. (2000, June 8-10). **Environments for learning--Design implications.** NeoCon's International Conference and Trade Show, Chicago, IL. (p. 52).

Scott-Webber, L., Marini, M., & Abraham, J. (2000, Spring). **Higher education classrooms fail to meet needs of faculty and students.** Journal of Interior Design, 26, (1), 16-34.

Scott-Webber, L. (1999), March 22-23). **Space matters—making instructional space fit user needs.** IT '99, Instructional Technology Conference: The new millennium. Blacksburg, VA.

Scott-Webber, L. (1999, April 14-17). **Pedagogy: 'Keystones' An approach to creating an aesthetic palette for interior spaces.** In S. Marshall (Ed.), Proceedings of the Interior Design Educators Council, International Conference, Designing in the digital world: process, pedagogy, and practice. Clearwater, FL. (p. 76).

Scott-Webber, L., Marshall-Baker, A., & Marini, M. (1998, October 1-2). **Classrooms designed for teaching and learning.** In Martha Burbitt (Ed.), Proceedings for the Interior Design Educators Council Southeast Regional Conference, Raleigh, NC. (pp. 24-27).

Scott-Webber, L. (1998, December 10-13). **Characteristics of a conceptual framework addressing the environment of instructional space holistically: design, users, pedagogy and technology.** In H. Thomas (Ed.), American Vocational Education Research Association Conference Proceedings. New Orleans, LA. (p. 54).

Smith, G., & Debenham, J. (1993, August). **Automating university teaching by the year 2000.** T.H.E. Journal, 71-75.



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## 21st Century Learning Environments Reading List

Sommer, R. (1959). **Studies in personal space**. Sociometry 22, 247-60.

Sommer, R. (1965). **Further studies of small group ecology**. Sociometry 28, 337-48.

Sommer, R. (1967). **Small group ecology**. Psychological Bulletin 67, (2) 145-50.

Sommer, R. (1968). **The ecology of study areas**. University of California Cooperative Research Project, No, 6-1121. US Office of Education, Washington, DC.

Sommer, R. (1969). **Personal space: The behavioral basis of design**. Englewood Cliffs, NJ: Prentice Hall.

Sommer, R. (1969). **Personal space**. NJ: Prentice Hall, Inc.

Sommer, R. (1970). **Studies of small group ecology**. In RS Catheart & LA Samovar (Eds.) Small group communication. Dubuque, IA: Wm. C. Brown.

Sommer, R. (1974). **Tight spaces: hard architecture and how to humanize it**. Englewood Cliffs, NJ: Prentice Hall.

Sommer, R. & Becker, F.D. (1971. Dec 2). **Room density and user satisfaction**. Environment and Behavior (4), 412-17.

Spenser, D. (1954). **Comparative analysis of comfort and glare**, Illuminating Engineering 49, 39-49.

Staff, 2000a. **Learning environments for the Information Age: New environments for learning**. MI: Steelcase Inc.

Staff. Horizon Report 2011. CO: **EDUCAUSE**.

Staff (Fall, 2010). **Rethinking Higher Education Spaces**: Issue 60. Steelcase Threesixty Magazine. MI: Steelcase Inc.

Staff (June 2010). **Harder Working Spaces**: Issue 59. Steelcase Threesixty Magazine. MI: Steelcase Inc.

Steelcase Workspace Futures. (November 2010). **How the Workplace Fosters Innovation**. Steelcase Threesixty White Paper. MI: Steelcase Inc.

Steelcase Workspace Futures. (June 2010). **Brand, Culture, and the Workplace?** Steelcase Threesixty White Paper. MI: Steelcase Inc.

Sullivan, K. (1993, September/October). **Reshaping the classroom**. Architecture Minnesota, 19, (5), 17 - 64.

Taylor, A. & Enggass, K. (2009). **Linking architecture and education. Sustainable design for learning environments**. NM: University of New Mexico Press.

Williams, J. C., & Crowell, C. R. (1993, November). **Providing institutional support for educational technologies: A case study**. T.H.E. Journal, 114 - 118.

Wolfe, P. (2010). Brain matters. 2nd edition: **Translating research into classroom practice**. VA: ASCD.



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