

# EDspaces

Designing the Future of Education

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## The Calmative Place / A Wellbeing Intervention for Educators Incorporating Biophilic Patterns

[11/5 | 12:30 – 2:00]



# The Calmative Place / A Wellbeing Intervention for Educators Incorporating Biophilic Patterns



**Lennie Scott Webber,  
PhD, ECLPS Certified**

INSYNC:: Education  
Research + Design;  
Senior Fellow, Design for  
Learning Co-Lab;  
Director ECLPS/EDmarket



**Dave Broz, AIA,  
LEED AP, ECLPS  
Certified**

Columbia College Chicago  
Associate Fellow, Design  
for Learning Co-Lab: Core  
Instructor ECLPS  
/EDmarket



**David Cupolo, PhD**

Educational and  
Instructional Leadership -  
School Design Learning  
Space Consultant



**Bryan Dean**

Innovation Strategist at  
CAST/ UDL

Your team for this presentation

“U.S. teachers and educational staff are quitting the profession at record numbers. In September 2024, **about 57,000 U.S. teachers and other private educational staff quit their jobs.** According to a study from the American Education Research Association (2024), teachers in the U.S. are **40% more likely to experience symptoms of anxiety** in comparison with healthcare workers, 20% more likely than office workers, and 30% more likely than workers in other professions like farming and military...”

“Chronic stress can often feel inescapable – it can affect our minds, bodies, performance and relationships. It ultimately leaves us feeling less than our best. But, here’s the good news! Research suggests that when we intentionally look for ways to reduce stress in our environments, it can positively impact our daily lives. Calming spaces are great tools for supporting mental and emotional well-being in the workplace. These dedicated spaces provide opportunities to slow down, recharge and decompress. They can decrease stress and improve focus. One study found that calming spaces at work can reduce stress by 60% after just 15 minutes. Calming spaces at work may also help:

- decrease rates of burnout
- improve mental health
- foster resilience
- lessen anxiety
- strengthen immune systems
- improve resting heart rate and lower blood pressure
- restore cognitive function lost to trauma”

SOURCE: <https://hr.uky.edu/work-life-and-well-being/personal-resilience/creating-calming-spaces#:~:text=Using%20natural%20materials%20like%20wood,comfort%20to%20a%20calming%20environment.&text=Use%20soft%20lighting%20whenever%20possible,help%20create%20a%20soothing%20ambiance.>

Citation: Scott-Webber, L., Broz, D. Cupolo, D. & Dean, B. (2025). The calmative place / a wellbeing intervention for educators incorporating biophilic patterns EDspaces Conference.



**Biophilic research** points to the human need for connections to nature. Evidence using biophilic patterns when incorporated specifically for stress relief support mental health and wellbeing. This workshop explores the 15 Patterns of Biophilic Design.

## **Activity: Write down...**

- 1) What one word describes calm to you.
- 2) What does that mean for you?
- 3) What do you do to create calm in your life?

# Share out

What patterns, if any, are we hearing?



*“Abstract:*

*Biophilia is the theory that humans are innately connected to nature. As a basis for forming built space, biophilic design has been proven to reduce stress, improve cognition and enhance mood—it makes us happier. In the last 20 years, research in learning spaces has shown an association between biophilic design and student mood, calmness and improved standardized test scores.” [p.419]*

## NATURE IN THE SPACE



# 15 Patterns with Positive Health & Learning Outcomes

## NATURAL ANALOGUES

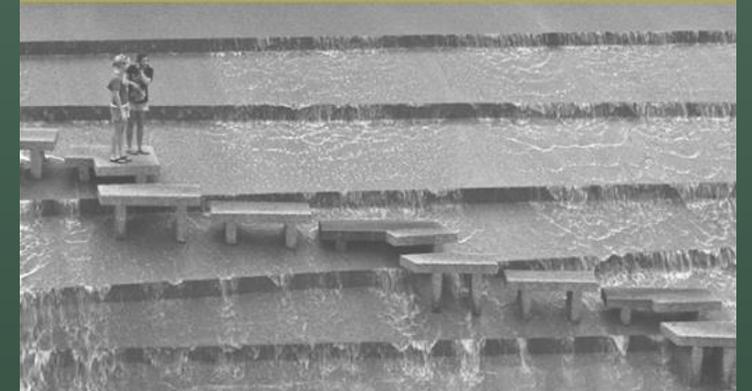


Nature of the Space	Prospect
	Refuge
	Mystery
	Risk/Peril
	Awe

Nature in the Space	Visual Connection with Nature
	Non-Visual Connection with Nature
	Non-Rhythmic Sensory Stimuli
	Thermal & Airflow Variability
	Presence of Water
	Dynamic & Diffuse Light
	Connection w/ Natural Systems

Natural Analogues	Biomorphic Forms & Patterns
	Material Connection with Nature
	Complexity & Order

## NATURE OF THE SPACE



SOURCE: Browning, W. & Determan, J. (2024). Outcomes of biophilic design for schools. *Architecture*. 4: 479–492; Figure on p.480; from #7 - Browning, W. & Ryan, C. *Nature Inside, a Biophilic Design Guide*; Royal Institute of British Architects: London, UK, 2020. <https://doi.org/10.3390/architecture4030026>

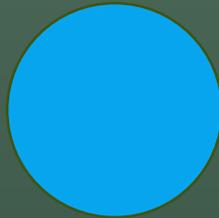
SOURCE: Browning, B., Ryan, C. & Serafin, S. (2024). *14 Patterns of Biophilic Design. Improving health and wellbeing in the built environment*. Terrapin Bright Green. <https://www.terrapinbrightgreen.com/reports/14-patterns/>

# Nature in the Space

## NATURE IN THE SPACE



Nature in Space /  
Direct Experience



- 1. Visual Connection with Nature.** A view to elements of nature, living systems and natural processes.
- 2. Non-Visual Connection with Nature. Other sensory -** Auditory, haptic, olfactory, or gustatory stimuli that engender a deliberate and positive reference to nature, living systems or natural processes.
- 3. Non-Rhythmic Sensory Stimuli.** Stochastic and ephemeral connections with nature that may be analyzed statistically but may not be predicted precisely.
- 4. Thermal & Airflow Variability.** Subtle changes in air temperature, relative humidity, airflow across the skin, and surface temperatures that mimic natural environments.
- 5. Presence of Water.** A condition that enhances the experience of a place through the seeing, hearing or touching of water.
- 6. Dynamic & Diffuse Light.** Leveraging varying intensities of light and shadow that change over time to create conditions that occur in nature.
- 7. Connection with Natural Systems.** Awareness of natural processes, especially seasonal and temporal changes characteristic of a healthy ecosystem.



## Natural Analogues

Types of patterns found in nature include: symmetry, branching/fractals, spirals, cracks, spots, stripes, flows, meanders, waves, dunes, bubbles, foam, arrays, crystals, tessellations/tiling, or line patterns.

SOURCE: <https://blogs.uoregon.edu/artofnature/nature-observed/natures-patterns/#:~:text=Types%20of%20patterns%20found%20everywhere,arrays%2C%20crystals%2C%20and%20tilings.>

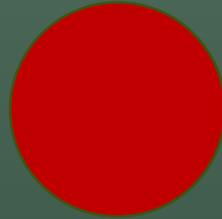
Citation: Scott-Webber, L., Broz, D. Cupolo, D. & Dean, B. (2025). The calmative place / a wellbeing intervention for educators incorporating biophilic patterns EDspaces Conference.

## NATURAL ANALOGUES



Image: Falling Water by Frank Lloyd Wright

Natural Analogues /  
Indirect Experience



**8. Biomorphic Forms & Patterns.** Symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.

**9. Material Connection with Nature.** Material and elements from nature that, through minimal processing, reflect the local ecology or geology to create a distinct sense of place.

**10. Complexity & Order.** Rich sensory information that adheres to a spatial hierarchy similar to those encountered in nature

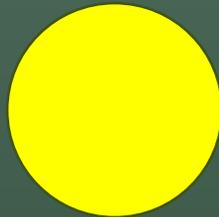
# Nature of the Space

## NATURE OF THE SPACE



Image: Waterfall in Fort Worth, TX

Nature of the Space /  
Direct Experience



- 11. Prospect.** An unimpeded view over a distance for surveillance and planning.
- 12. Refuge.** A place for withdrawal, from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.
- 13. Mystery.** The promise of more information achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment.
- 14. Risk/Peril.** An identifiable threat coupled with a reliable safeguard.
- 15. Awe.** Standing on the edge of a space. Entering a cathedral.

“Research has found that children are more sensitive to light exposure than adults because they have larger pupils and significantly greater light-induced melatonin suppression, with young adolescents having greater circadian-system sensitivity to light exposures than older adolescents (Crowley et al., 2015; Eitland et al., 2018; Higuchi et al., 2016; Lund et al., 2012; O’Hagan et al., 2016).

In children, higher levels of average daily daylight exposure have also been associated with reduced weekday and weekend sedentary time and with increased levels of physical activity on the weekends (Aggio et al., 2015; Eitland et al., 2018).

Access to natural daylight has been linked to greater subjective well-being, higher levels of alertness, faster cognitive processing speed, [and] better concentration performance (Eitland et al., 2018)” (p.5.).



Impact of Biophilic Learning Spaces on Student Success | 7

SOURCE: Determan, J., Akers, M. A., Albright, T., Browning, B., Martin-Dunlop, C., Archibald, P., & Caruolo, V. (2019). The impact of biophilic learning spaces on student success. Retrieved from <https://www.brikbase.org/sites/default/files/The%20Impact%20of%20Biophilic%20Learning%20Spaces%20on%20Student%20Success.pdf>

Citation: Scott-Webber, L., Broz, D. Cupolo, D. & Dean, B. (2025). The calmative place / a wellbeing intervention for educators incorporating biophilic patterns EDspaces Conference.

## *“Dynamic and Diffused Lighting Biomorphic Forms and Patterns*

Nature-inspired patterns were provided on several classroom surfaces. A wall graphic was designed by the collaboration of Dr. Tom Albright, neuroscientist (Salk Institute), and Sara Balderi, artist (Designtex). The graphic design aligns with Dr. Albright’s theory on nature patterns that are easily processed by the brain’s visual system, an ability developed through evolutionary adaption. Additional patterns were provided including carpet with the print of “prairie grass”; a row of 3-dimensional ceiling tiles consisting of vertical planes carved into a wave; and the shades printed with the image of tree shadows. These patterns have been associated with observed view preference (Joye, 2007; Vessel, 2012).



*Dynamic and Diffuse Light - motorized shades with prints of tree shadow*

SOURCE: Determan, J., Akers, M. A., Albright, T., Browning, B., Martin-Dunlop, C., Archibald, P., & Caruolo, V. (2019). The impact of biophilic learning spaces on student success. Retrieved from <https://www.brikbase.org/sites/default/files/The%20Impact%20of%20Biophilic%20Learning%20Spaces%20on%20Student%20Success.pdf>

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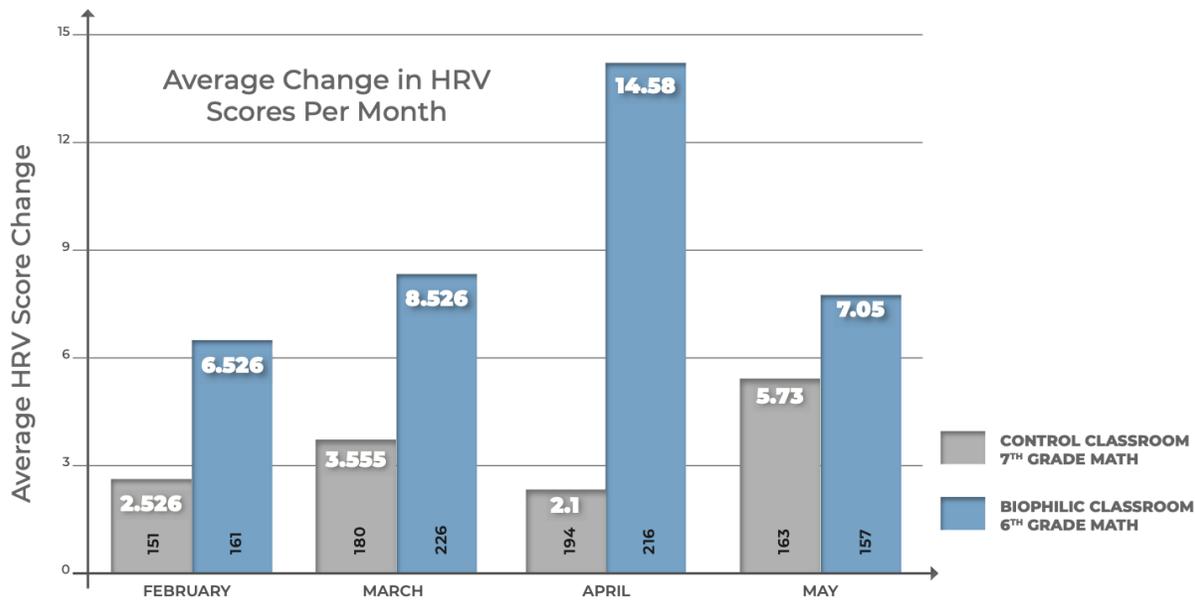


Figure 6. Average Change in HRV Scores per Month

Figure 6 reinforces the data in Figure 5. The monthly average HRV score delta is significantly larger for the biophilic students. The cumulative stress reduction for students in the biophilic classroom is worthy of note.

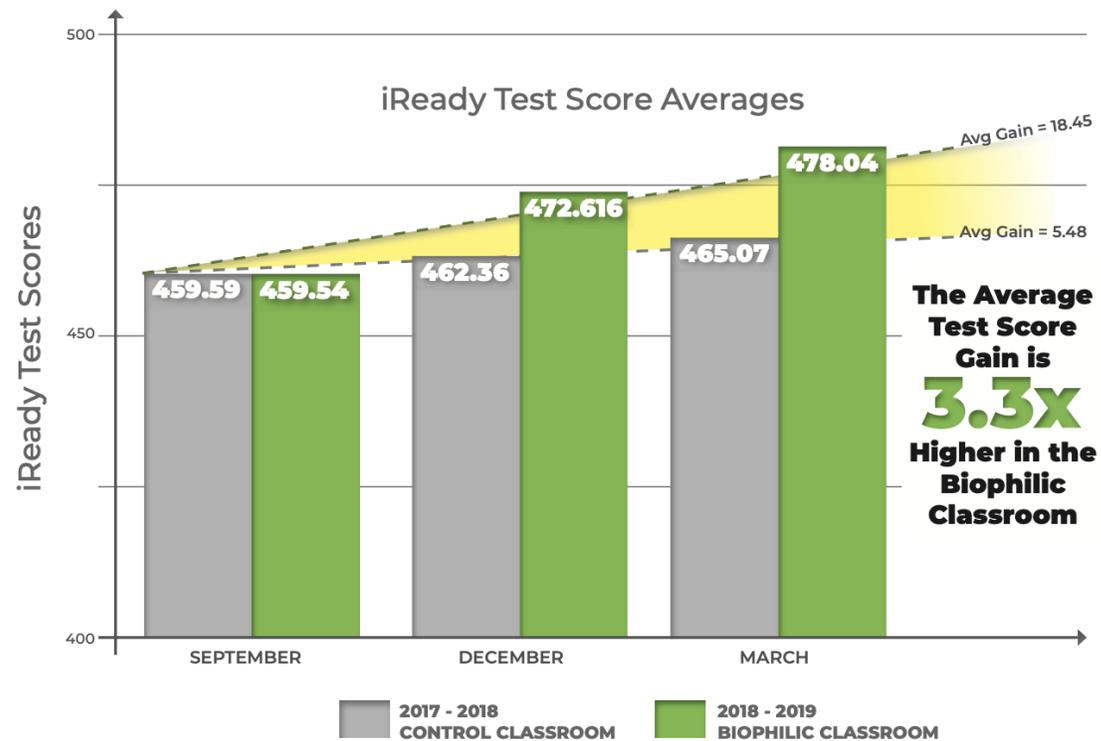


Figure 7. Average Math i-Ready scores for the biophilic and control classes



Calming Retreat

Image: Fielding International Design Patterns



A

Nature in the Space



B

Natural Analogues



C

Nature of the Space

# Calmative Places

Analyzing 4 Spaces

What do they have in common?

What elements are different?

How does each fit within Biophilia's major tenants [i.e., A, B, or C]



1



2



3



Image by: Genster

SOURCE: Genster. <https://www.genster.com/blog/why-biophilic-design-is-crucial-in-workplace>

# ‘Walk About’

Patterns?

Dissimilarities?



# Shout Out

Patterns?

Dissimilarities?



# DLR Group Space

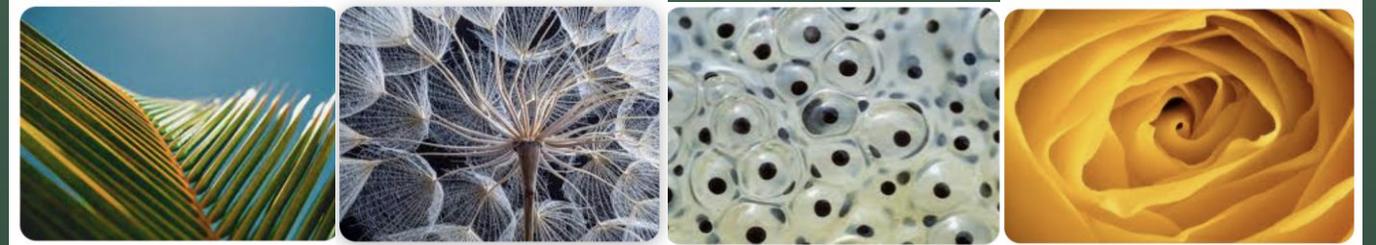
We're in it!!!



# Biophilia this space!

Patterns?

Dissimilarities?



# Shout Out

Patterns?

Dissimilarities?



# Sensorial



## Sight

Exposure to photos or virtual environments that incorporate nature can lower stress by decreasing blood pressure and heart rate. Even simply bringing a plant into a windowless area has soothing benefits.



## Sound

Brain imaging shows that nature sounds and calming music stimulate areas of the brain that calm emotions, decrease pain, and lowers heart rate and blood pressure. Even a short break (under 7 minutes) of listening to nature sounds can reduce muscle tension, pulse rate and stress.



## Touch

Calming touch can make you feel safe as it soothes your stress and helps you relax. Basic warm touch calms cardiovascular stress and activates the body's Vagus nerve. This can release a soothing hormone called oxytocin. Bringing elements of nature indoors to touch and experience, even for a short time, can reduce stress.



## Smell

Aromatherapy, specifically lavender, can improve your mood, lessen anxiety and calm your nervous system. The scents released by essential oils interact with the brain and positively affect your mood, reduce your stress response, lower anxiety and deepen sleep.”

# CALMATIVE WORKSHEET

- **1. “Comfortable Seating**

Provide comfortable seating options such as sensory pods, floor cushions, rocking chairs or a (Soft Touch Tatami Rug) to encourage relaxation and comfort.<sup>1</sup>

- **2. Sensory Tools**

Incorporate a variety of sensory tools such as weighted blankets, fidget toys, wobble cushion and big soft pillow to offer tactile stimulation and promote sensory integration.<sup>1</sup>

- **3. Visual Stimulation**

Decorate the room with calming visuals such as sand art scapes, nature scenes, soft colours, and sensory wall panels to engage the visual senses and promote relaxation.”<sup>1</sup>

- **4. “Worksheets**

Or posters that help individuals identify and reflect on how they are feeling, such as a “What are your emotions telling you?”<sup>2</sup>

- **5. Lamps**

...or other sources of light that are calming and provide a sense of separation from the standard.<sup>2</sup>

- **6. Timers**

For individuals to keep track of how long they are spending in the space; just 5 minutes of calm time may be adequate for the person to self-regulate enough to return to class<sup>2</sup>

- **7. Sign-in sheet**

(Helpful for gauging use and seeing if any one is returning frequently—which may indicate they need additional support)”<sup>2</sup>

SOURCE: [2] worksheets or posters that help students identify and reflect on how they are feeling, such as a “What are your emotions telling you?” <https://ca-safe-supportive-schools.wested.org/wp-content/uploads/2022/10/Calming-Spaces-in-Schools-and-Classrooms.pdf>

SOURCE: [1] [https://sensoryassist.com.au/blogs/sensory-blogs/creating-calm-spaces-the-ultimate-guide-to-sensory-room-essentials-blog?srsId=AfmBOopcbffdqPgBO73oYBKWy\\_wLATPK2gqDcZoKay7STMieQyDMETiC](https://sensoryassist.com.au/blogs/sensory-blogs/creating-calm-spaces-the-ultimate-guide-to-sensory-room-essentials-blog?srsId=AfmBOopcbffdqPgBO73oYBKWy_wLATPK2gqDcZoKay7STMieQyDMETiC)

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# Take Aways?

3 Pieces of information that you will be able to implement?



# EDspaces

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# Thank You!

Please scan the QR code to provide session feedback.

