

# ACTIVE ENVIRONMENTS — BEHAVIORS, EMOTIONS, AND PANDEMICS

## Abstract

2020 influenced the 'where' and 'how' learning was executed due to the onslaught of a global pandemic. In the USA, specific recommendations made by the Centers for Disease Control (CDC) for classrooms included student seating at 6' apart, facing forward, teacher at front — back to 19th Century teaching strategies; a combination of online and/or onsite connections resulted. Prior to the pandemic, advanced learning methods based on research and focusing upon active learning were gaining ground; encouraging active and establishing collaborative cultures to empower creativity in student-centered opportunities, with informal settings, supporting 'moving to learn,' as a desired format for learning experiences. Architectural solutions and their affordances were developed to support these needs.

This PhD's dissertation study was pre-pandemic, yet knowledge gained may be important in both the current and post-pandemic worlds. Space makes a difference, and spaces/places provide behavioral cues often defining and/or developing into situational cultures (Scott-Webber, 2004). Therefore, it is argued here that the intentional design for learning places must work to support what we know about how we learn, and in turn, help educators understand its value. It is further argued architectural affordances influence learning and behaviors and, accordingly, emotions; strongly impacting the abilities of both active and passive learning performance. This paper will offer ideas on how spatial affordances/designs may maximize opportunities for active environments empowering dynamic behaviors and supporting positive emotions no matter which format (i.e., online or onsite) learning experiences take. This article addresses: (a) active learning tenants, (b) spatial cueing, and (c) opportunities for the future, post-pandemic.

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## Introduction

An educational paradigm shift was making progress pre-COVID-19 (pandemic). This shift was moving from a 19th Century, traditional, teacher-centered, passive model to one focused on a student-centered, active one. Years of research show an active learning/student-centered model generates deeper and more focused learning for students (Bonwell & Eison, 1991). With this active model, architectural solutions, advancements in furniture design and interior affordances (i.e., furnishings, fixtures, and equipment), and research on moving to learn generated new design solutions and resulting behavioral cues for users (Cleveland, 2009 and 2011; Kariippanon et al., 2019; Anonymous, 2014). Progress in a more engaged learning process took place, and measurements revealed that student engagement increased when located in advanced designs for active learning (Scott-Webber et al., 2013, 2017, 2018, and 2019).

In 2020 the pandemic hit with an almost instant move to complete closings or online classrooms. During those first months, much was learned about how to 'go back to school safely.' In the USA, specific recommendations made by the Centers for Disease Control (CDC) for classrooms included student seating at 6' apart, facing forward, teacher at front — back to 19th Century teaching strategies; a combination of online and/or onsite connections resulted. This article will share: (a) why it is important to keep the active learning tenants moving forward no matter the format, (b) how the new, severe spatial cues may impact the emotions of users, (c) how we might use this pandemic situation as an opportunity to think about the post-pandemic needs and thus how to fully embrace active learning, and (d) what the architectural designs supporting this future-focused opportunity might embrace.

## ACTIVE LEARNING TENANTS

For nearly 100 years, researchers and authors have indicated that more active learning models are ones that promote student engagement and student agency; research is ongoing. The challenge has been to move the educational system and teaching practices from the passive, more 'efficient' model, or one-to-many, and into the active, more 'effective' one (Scott-Webber, 2004). The Knowledge Economy for work (Mangaberia-Unger, n.d.) shifted the emphasis and encouraged a more rapid embracing of active learning than at any other time in our history. New technologies allowed cognitive neuroscience to provide solid evidence that being more active in one's pursuit of learning is paramount to owning one's knowledge (Wolfe, 2010). This new evidence helps us understand that how we learn leads to change in our knowledge intake, behaviors, beliefs, and attitudes. This evidence has the potential for improving learning performances through the use of consequences of thinking in all its forms, including: critical, creative, and reflective (Ritchhart, 2015).

As a paradigm shift, active learning was making progress (Figure 1), but had a way to go for full adoption across academia. However, long-serving evidence reveals that keeping active learning tenants is now even more necessary for all learners' learning, and understanding how design informs spatial cues, provided next, begins to make that case.

## SPATIAL CUEING

Spatial cueing (i.e., how the design of the built space "cue's" behaviors by means of its structural and affordance solutions) and design may develop opportunities to connect, to collaborate, and to work together in more collective/connected community cultures. What we know is that cueing impacts behaviors (Zeisel, 1981), and therefore the design of space matters (Scott-Webber, 2004 and 2014). Designs may develop using some combination of these basic types of built solutions: fixed (e.g., the building and items attached to it), flexible (e.g., items that can be moved with some effort and planning), fluid (e.g., chairs with wheels — instantly moved); affordances offer the most fluidity, and free (e.g., items that 'have no home'). Thus, the language of the building's design cues helps users understand the 'permission' granted, or behavioral expectations for using these multiple types of spaces and their associated affordances. Ranges of spatial types include the spectrum from individual respite/headdown/focused ones to large, community gathering places (Figure 2).

Changes often provide opportunities, and it is expected this pandemic situation should be one of them. The hope is to resume the push to a future-focused, active learning experience agenda. The hope is also that the current 19th Century, CDC requirements acting as a temporary situation will be temporary, and long-lasting behavioral changes will **not be** adopted. The next section of this article (Opportunities for the Future) will focus on using the affordances of motions (Gibson, 1979) and emotions (Griffero, 2014), along with new understandings developed in a recently completed dissertation (Mor-Avi, 2020), suggesting alternative thinking for proactively developing a Building Cultural Performance Model.

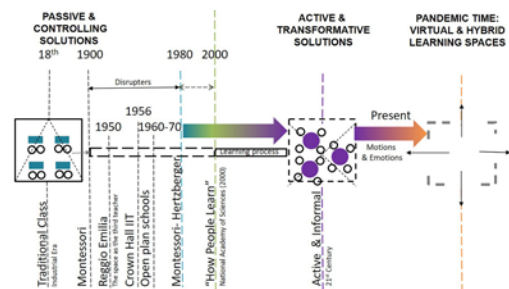


Figure 1: Teaching models continuum. (Source: Mor-Avi, 2020, p. 17.)

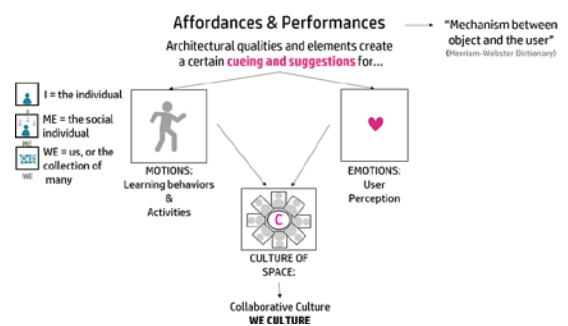


Figure 2: Affordances and performances. (Source: Mor-Avi, 2020, p. 305.)

## OPPORTUNITIES FOR THE FUTURE

It is important when ideating new ideas to first share some background information on a collection of terms and expressions connecting industrial design, business, communication experts, and sociology. *“These terms represent concepts of design reflecting new collective approaches, encourage people-to-people connections, and have the potential to empower a ‘WE’ situation,”* (Mor-Avi, 2020, p. 204) (Figure 3).

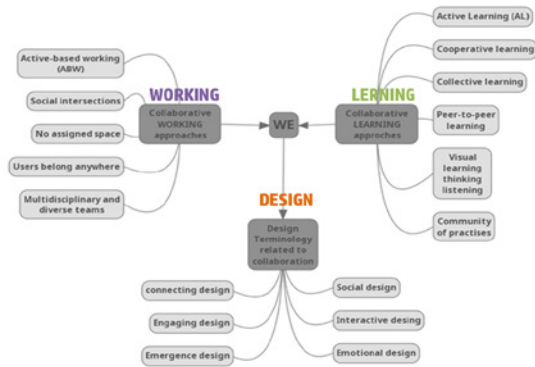


Figure 3: A “WE” terminology – approaches and responding design solutions. (Source: Mor-Avi, 2020, p. 205.)

The terminology for innovative approaches in many domains reflects the needs for a 21st Century, or beyond solution and embraces expressions and terms connected to these aspects:

- *“Social: collaborative patterns, engaging patterns, motivated-driven patterns;*
- *Emotional: belonging patterns, sense of freedom and control; and*
- *Performance: active-based patterns, sharing patterns, interested-driven patterns, self-regulating patterns, diversity, and multidisciplinary patterns.*

*To foster these aspects, active-based working and learning experiences promote a multidisciplinary framework, collaboration, social interaction, engagement, participation, sense of freedom, and self-regulation. The architecture and the design of spaces then is a key element in supporting active patterns. To support the social, emotional, and performance patterns, space should be active as well,”* (Mor-Avi, 2020, pp. 205–206).

Different kinds of architectural patterns emerge to further connect active learning with an opportunity for a full change in a post-pandemic world. In the PhD dissertation, Mor-Avi (2020) explored how new contextual thinking emerges and is offered to support creative thinking processes with a focus on a new reality/post-COVID. The Method & Findings section is next.

## METHODS & FINDINGS

The research involved a mixed methodology with multiple techniques, including: (a) a literature review, (b) content analysis of 16 learning-driven environments, and (c) Post Occupancy Evaluation (POE) techniques including interviews and surveys of both faculty and students, and behavioral observations (onsite behavioral and photographic traces) (Zeisel, 1981). The Innovation Hub at Illinois Institute of Technology (IIT), a new and American Institute of Architects (AIA) awarded Kaplan Institute as a convenience sample. The content analysis supported the collection of architectural qualities and affordances in awarded facilities

across a kindergarten-to-corporate learning spectrum. The findings are shared next.

Three ‘families’ of affordances situations were identified in the findings: (1) private/public, (2) concrete/abstract, and (3) convergent/divergent. Some brief descriptions follow (Figure 4).

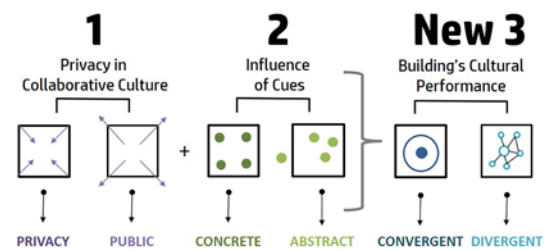


Figure 4: Family of affordances. (Source: Mor-Avi, 2020, p. 275.)

- *Private/Public: “Private space was considered to be a separate setting with partial- or full-height opaque boundaries where individuals or teams enjoyed a degree of quietness, isolation, confidentiality, and control over visual, auditory, and physical interventions. Private spaces support learning activities as reflecting, focusing, collaborating, and expressing, and represent a reflective culture ... Public space was considered a social space that was generally open and accessible, and inclusive to all learners, and offered access and sharing opportunities for academic content as well,”* (Mor-Avi, 2020, pp. 275–279).
- *Concrete/Abstract. “The category of affordances named ‘Concrete’ represented spaces that provided strong building cues suggesting specific behaviors generally affiliated with passive learning versus low cues spaces that offered more active behaviors and more ownership. Concrete spaces reflected a culture of learning, which was defined as ‘formal/passive’ ... In contrast, the ‘Abstract’ category represented a setting that provided informal, movable, and more ad-hoc situations to support messy, dynamic, and active learning activities. Those affordances support educational approaches encouraging ‘move to learn,’”* (Mor-Avi, 2020, pp. 279–283).
- *Convergent/Divergent. “This set of expressions, collected from the POE, was complementary to the two previous categories and related to spaces performing for two different cultures: (1) Convergent Culture represented by anchors, and (2) Divergent Culture performing as a network system ... The Convergent Culture represented a collecting concept symbolizing a congregation assembly, a centralized anchor ... The divergent concept was characterized by a deviated setting type, which represented divergent thinking associated with a multidisciplinary approach, freedom to wander, and appreciation of the learner’s interests, all of which led to more creativity. This culture reflected a network setting characterized by a more multidirectional design, flow, soft connections, bright and airy atmospheres, movable elements, and decentralized planning,”* (Mor-Avi, 2020, pp. 283–284).

## DISCUSSION

New building designs ought to try and provide a type of ‘cultural performance’ using the three families of affordances, and it is suggested this approach is a way forward for architectural planning purposes. It is also realized that these settings and conditions affect the quality related to passive vs. active learning activities.



As shown in Figure 5, the first perspective offering concrete solutions such as private conditions are related to more passive behaviors. Opposite of this perspective is the abstract and public solutions. These opposites are affiliated with more active and spontaneous behaviors (Figure 5).

Flow	Divergent				Concrete/suggested
	A	SA	SC	C	
Ad-hoc Abstract	A	SA	SC	C	Concrete/suggested
Open Public	PU	SPU	SPR	PR	Private/Close
Divergent Thinking	⊕	⊕	⊕	⊕	Thinking - Convergent
On the go listening	⊗	⊗	⊗	⊗	Listening - Suggested
Active Collaboration	⊗	⊗	⊗	⊗	Collaboration Passive
Learner-Led Expressing	⊗	⊗	⊗	⊗	Expressing/sharing Teacher-Led
Informal Lecturing	⊗	⊗	⊗	⊗	Lecturing Formal
Spontaneous Moving	⊗	⊗	⊗	⊗	Moving Planned
Informal Making	M	M	M	M	Making Formal
Casual Socialized	⊗	⊗	⊗	⊗	Socialized Ceremonial

Figure 5: Scale for relationship between affordances and behaviors. (Source: Mor-Avi, 2020, p. 326.)

Architectural affordances affect emotions as well. The findings show a connection between fixed and concrete solutions and the lack of a sense of ownership and of belonging. These situational cultures seemed to encourage passive behaviors and passive emotions. Opposite of the fixed/concrete one, the abstract affordances appeared to support the feelings of being active and the ability to 'take' some ownership on the 'where and how to learn' (Mor-Avi, 2020, p. 348). The current pandemic situation and the fast move into a virtual space dramatically changed the ability to offer any physically active, collective environment. However, planning more abstract solutions that accommodate different settings with affordance options for different distances may serve as an on-site solution for times of unusual situations.

## Conclusion

We must continue to look to the future and continue building upon the robust scientific evidence from multiple domains. The future of learning — real, deep, and meaningful learning is at stake. We know the risks, and decades of measuring means the rewards are clear — design matters. It matters that people understand its cues, the permissions granted for each area, and these ideas will help future education design decision-makers recognize how important this choice has become. A network of fixed, flexible, fluid, and free settings with movable features/affordances designed for different learning behaviors and different social and distance situations have the potential to support crises such as this pandemic (Figure 6). Thus, proactively developing a 'Building Cultural Performance' Model.

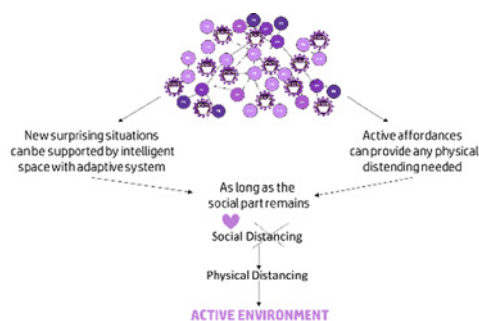


Figure 6: An adaptive network system for the active environment. (Source: Adopted from final dissertation presentation, Mor-Avi, 2020.)

Therefore, the suggestion of implementing an adaptive system of spaces allows users to redesign every day (Figure 6). These systems act as if they are part of an alive and active setting that may keep the desired learning behaviors of the 21st Century, and beyond, future-focused. This adaptive system may also support healthy emotions and provide innovative learning approaches, including social gathering with only physical distance while complying with unique circumstances like the ones faced currently.

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