

BEYOND TECHNICAL PERFORMANCES— AFFORDANCES AS QUALITATIVE BUILDING PERFORMANCES

Abstract

This paper extends the notion of building “performance” through a discussion of the impact of a building on its users’ performance and the concept of architectural “affordances” affecting the culture of space. The objective of this study was to identify “architectural cues” impacting and empowering learning cultures and behaviors related to new approaches in education and working processes for the 21st Century. The study explores the influence of affordances of motions (Gibson, 1979) and emotions (Griffero, 2014) on learning-related activities, behaviors, and feelings while focusing on the needs of individuals and teams in a collaborative culture. Through content analysis of awarded projects and post-occupancy evaluation of the newest building at the Illinois Institute of Technology, a set of codes and affordances were developed to be used as identifiers in evaluating how spatial context affects motions, behaviors, activities, and emotions. Affordances suggest activities that influence behaviors and feelings and have the ability to empower the users’ social, academic, and working performances. Hence, affordances influence culture and are referred to in this work as building cultural performances.

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Keywords

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Introduction

There has been a steadily growing awareness of how research in the cognitive and social sciences draws attention to spaces in which learning happens following the publication of “How People Learn” by the National Academy of Sciences (Bransford et al., 2000). A diagram is shared indicating the timeframe of change (Figure 1).

A parallel body of evidence is emerging from the work of academics and design professionals across the world. These conversations and reflections are responsive to questions about how spaces matter and influence the learners’ engagement and performances academically and socially. Recent studies indicate a genuine and robust connection

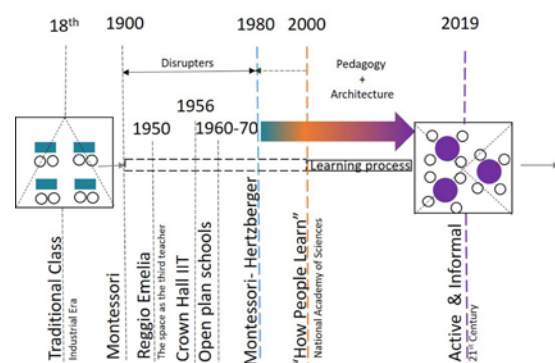


Figure 1: From traditional formal classroom to today’s dialog on architecture responding to pedagogy.

between learning activities, behaviors, and space, and how the physical space could positively increase the impact on teaching and learning (Scott-Webber, 2014; Scott-Webber et al., 2017).

Consequently, current architectural solutions are being challenged (Boys, 2011) to comply with more active, creative, and transformative evolving cultures of learning.

The paradigm shift moves from teacher-centered focus to a learner-centered one, and from formal to informal models of spatial solutions, while considering both students and teachers as learners (Scott-Webber, 2014). Social values (Scott-Webber, 2014) and collaborative creativity (Sawyer, 2007; Clapp, 2017) play an essential role in the learning approaches for the 21st Century. As a result, new teaching strategies enhance active learning with more “collective” arrangements (e.g., group settings and team project strategies). This shift is reflected mainly in the collaborative culture and spaces of the “corporate world,” but not yet understood nor integrated yet within the “world of education” (Robinson, 2011). Therefore, it is important for learning-driven environments to offer qualities that suggest behaviors related to the culture of collaboration for all learners. In addition, building and space performances are two of the significant components in gaining culture change (Seelig, 2012; Groves & Marlo, 2016), and according to current research, “space does matter” in learning-driven environments (Scott-Webber et al., 2017).

Architectural qualities and elements create cues and suggestions of behaviors and feelings, which are called affordances. This term was introduced in the study of cognition by the American psychologist James J. Gibson (1966) and relates to an object’s properties that show the possible actions users can take with it, thereby suggesting a performance-enhancing mechanism between object and user. According to Merriam-Webster (n.d.), one of the definitions of performance is “the manner in which a mechanism performs”; thus, it is proposed that buildings perform affordances.

Therefore, this study aimed to emphasize and enhance awareness on how building performance influences the culture of learning and learners’ activities, behaviors, and feelings through architectural affordances. The study focused on affordances theories of motions by Gibson (1974) and emotions by Griffiero (2014) and developed a new platform for measuring spatial context related to behaviors and feelings. The proposed platform represents architectural settings supporting the culture of collaborative learning processes, and behaviors and actively engaged learners.

Methodology

A mixed-method research design was used to define current relationships between architectural settings and behaviors. The study investigated through Post-Occupancy Evaluation how the building’s performances and affordances influenced the users’ motions and emotions.

The techniques included: (1) a content analysis, and (2) ethnographic techniques used post-occupancy. The goal of this methodology was to develop a set of codes documenting affordances representing building performance patterns. Each technique is explained next.

Content Analysis

The objective of the content analysis was to develop a collection of architectural attributes and patterns from which to develop a coding pattern. This analysis included awarded and well-known innovative learning spatial solutions to provide a collection of references that:

- Helped structure the focused interviews
- Detected qualities that could become identifiers for spatial performances

Sixteen projects from K–12, higher education, and corporate learning environments were evaluated. All of the projects had won an award for supporting new learning cultures and social performances, and included known schools as well as ones that represent the current phenomena of co-working and collaborating spaces (Figure 2).

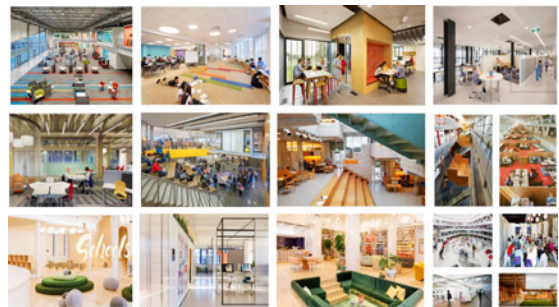


Figure 2: The evaluated K-to-corporate learning environments.

Ethnography / Post-Occupancy

The second technique used a set of ethnographic techniques (Zeisel, 1981) in a post-occupancy situation. This Post-Occupancy Evaluation (POE) was of the new, innovative building Kaplan Institute at Illinois Institute of Technology. It offered an opportunity for new dialogues about the ways space performs and supports learning culture, by its unique visual and audio connections. The environment-behavior analysis included 25 observations through a learning week, 18 interviews, and 95 surveys focusing on creative and collaborative learning behaviors of Interprofessional Projects Program (IPRO), and Institute of Design (ID) students and faculty.

Findings

Results from the content analysis provided identifiers related to space qualities and the results from the POE provided a taxonomy of three categories of affordances: (1) private-to-public conditions, (2) concrete-to-abstract settings, and (3) convergent-to-divergent culture, which overlapped with behaviors, emotions, and atmosphere.

Cueing Code Identifier

The content analysis generated a cueing-code identifier related to space qualities, a culture of learning, and behaviors related to skills for 21st Century learning. To identify messages in those awarded projects, a system of visual codes was developed for four categories: (1) Culture setting (formal-to-informal, closed-to-open, non-adaptable-to-adaptable), (2) Behaviors (lecturing, moving, passive collaboration, active collaboration, expressing, socializing, reflecting, making), (3) Space's physical qualities (soft and hard finishes, hard and soft barriers, movables and fixed furniture, physical contrast, integrated technology), and

In contrast, the abstract space represented low cue spaces, provided informal, movable, and more ad-hoc, messy, dynamic, and active learning activities. These solutions encouraged a “move-to-learn” atmosphere. These abstract spaces were defined by current users mostly as “Informal” spaces. They signify a more student-centered approach allowing different activities and options for redesign as needed and mostly represent inviting and soft atmospheres.

CONVERGENT VS. DIVERGENT CULTURES

The third family of expressions collected from the POE was complementary to the two previous categories and relates to spaces performing as anchors vs. spaces that perform as a network system associated with current social and educational discussions (Ito et al., 2013). The divergent concept characterized by a deviate setting, which represents a divergent thinking associated with a multidisciplinary approach, freedom to wonder, and appreciation of the learner’s interests, led to more creativity. This setting type reflected a network setting characterized by multidirectional design, flow, soft connections, bright and airy atmospheres, movable elements, and decentralized planning. The converge setting represented a collecting concept symbolizing a congregation assembly, a centralized anchor with one focal point. The collecting setting represented a familiar protective setting where the user was a part of a united community of knowledge and learners.

This study, using four techniques, began to ‘prove’ that architecture performs cues for types of intentions relative to behaviors expected.

Conclusion

Findings indicated that when considering educational design, all categories of building performances are important. Each act as influencers impacting the learner’s ability to perform creative learning. Buildings may perform a combination of some or all of the three categories, mentioned above, concurrently.

Affordances then have the potential to be cultural influencers, and act as qualitative building performances (Figure 7).

However, performances and affordances are negotiable and create trade-off conditions when supporting a collaborative culture. In collaborative spaces, special attention was desired for the individuals and the team needs in each stage of their learning process. In addition, when environments supported different users, approached the external expression of the flow of knowledge and communication needs, special attention to qualities such as privacy, ownership, and authenticity for individuals and teams needed to be considered. Those trade-off conditions of spatial performances should be sensibly designed according to a specific learning process and the users’ performing needs.

Space has the potential to act as a major cueing factor. It also must be designed to support a creative and collaborative learning process by allowing the users to generate the appropriate affordance for their specific needs.

This research suggests creating active architecture with blurred boundaries and multilevel ranges of affordances to allow moving dynamically between the learning process stages. Therefore, network-like settings representing the relations between space, motions, activities, and emotions are suggested. The building which supports those qualities

and allows the users to manipulate its setting actively participates in the learning process. The significance of this work is by generating “deep dives” into the connection between building dynamic performance and behaviors related to collaborative cultures in learning and working-driven buildings and environments.

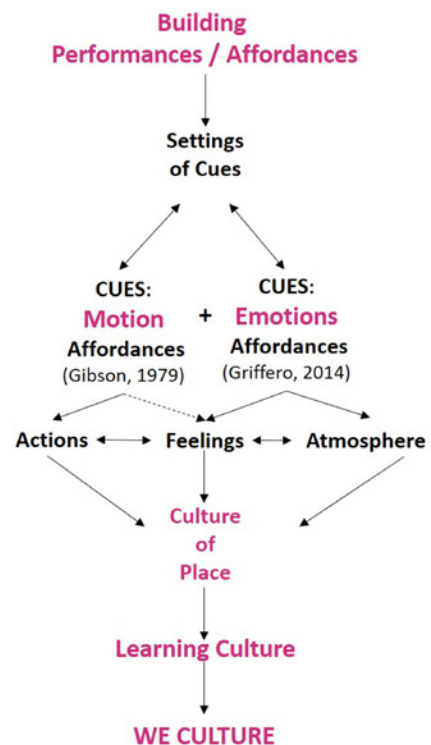


Figure 7: Building performance influences learning culture.

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