

# Designing for Collaborative Learning

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Today, facility managers find themselves under tremendous pressure to reduce real estate costs. At the same time, there is pressure on those whose job it is to think about the future of the organization, stimulate human performance, and boost intellectual capital, creativity, and ideas. We find ourselves headed down a path upon which people are trying to come up with big, profitable ideas from small, crowded places. Rarely are the relationships between space, innovation, and learning truly understood.

This article looks at collaborative learning, why it is critical to our collective futures, and how to create environments that nurture it.

### Collaborative Learning

Collaborative learning goes much deeper than popular notions of “brainstorming” or “teaming” which imply the short-term completion of tasks at prescribed intervals. It transcends technology and training programs and depends heavily on individual initiative and mutual cooperation, exploration, and creativity. Collaborative learning is nothing less than a sustained human exchange of tacit knowledge, implicit beliefs, and explicit questions and ideas. It occurs when a work group, team, or business unit can focus long enough on a particular question, process, or project with enough attention to notice what’s working and what’s not, and then ask meaningful questions about where to look in the future.

Much of the exchange that makes collaborative learning possible occurs through non-verbal communication and coincidence of interaction. This is why, even though we all need private time and space to contemplate and sort out our own thoughts, we need the larger context of the organization to interact with on an almost accidental basis. Externalizing the group’s thought processes — turning them inside out and making them visible — stimulates a thinking dialogue between

members of the organization. Without it, even within a close-knit work group, two people sitting next to each other may not realize how they could be of help to each other. If we could find a sensible way of externalizing our ideas in the environment, then there would be no excuse and far less chance for this type of “miss” to happen.

One example of a collaborative learning context is a well-run kindergarten class. Everyone learns from each other, and the product of that learning begins to flow out onto the walls and windows and hallways. The environment emerges from next to nothing yet reflects everything, and the tools and technologies of learning abound. However, we slowly wean children from this environment, creating in its place the increasingly transient environments of secondary schools and higher education until finally, our classrooms lose any sense of organic meaning and become instead like factories — little more than processing facilities for instruction and testing. Then we take that manufacturing mentality into our workplaces. Perhaps this is why, while we appreciate a well-designed office in terms of accessibility, lighting, color, and comfort, at some deep place in our learning memory many of us miss the potential for the space to become an extension of our brains.

### The Importance of Context and Physical Space

Collaborative learning happens in contexts that promote connections. “Break the pattern which connects the items of learning,” comments the noted anthropologist Gregory Bateson, “and you necessarily destroy all quality.” The environment in its whole and saturating presence has a significant effect on the ability of people to see connections between seemingly random events. Especially in an age when time itself is a diminishing resource and our work lives increasingly resemble “to do” lists, the work environment can play a starring role in creating a meaningful context for collaborative learning.

There are many who would argue that the future context for collaborative learning is an exclusively digital one that will all but eliminate the need for an office space where people interact. In this virtual scenario, a central nervous system connects everyone, everywhere, at all times, in a seamless exchange of data and imagery. Digital devices are embedded everywhere allowing knowledge to be created, accessed, and shared at any time. Virtual reality interfaces allow us to interact with data and “meet” with coworkers time zones away.

However, virtuality itself might increase our dependence on physical space and cognitive artifacts in the same way that the technology of the paperless office has actually increased our dependence on paper. The reason is that human beings use their physical surroundings as extensions of their minds, off-loading tasks, reminders, important information, inspiration, reference materials, etc. into their environment. And so we find ourselves printing e-mail messages, web pages, and numerous iterations of documents in an effort to embed them in our personal space. Post-It® notes radiate from our computer monitors in an effort to put important tasks in our field of view — a good example of our desire to connect the digital focal point of our workspace with the ambient “surround” of cognitive artifacts.

The technology of the virtual office may indeed succeed in becoming a pervasive presence in our work environment and aid us in situations where co-location is impossible. It is probable, however, that it will be most successful in supporting collaborative learning within the office if the technology is developed as part of a much larger movement. This should take into consideration how human cognition, perception, and relationships work together to make innovation and learning possible, and what roles the digital, physical, social, and organizational dimensions of the whole environment play in the process.

How do our environments contribute, then, to collaborative learning? Simple questions to ask ourselves are: Do our work environments make sense? Do they communicate meaning? Do our shared work spaces evoke learning? Let us consider three design challenges we see in creating spaces for collaborative learning and offer some ideas about how to overcome them.

### **The Challenge of Designing Meaningful Places**

Meaning is a prerequisite for learning. Organizations that hope to become “learningful” must first become

meaningful. This extends to the physical environment as much as it does to the social culture of an organization. How do spaces become meaningful? Perhaps the closest example is a person’s own living space. When we first arrived, the home or apartment was most likely bare. It was meaningful mostly in the sense of possibilities. “I can see an herb garden there,” one might think, or “it would be great to take out that wall and put in some glass doors.” Over time, whether we actually do the things we imagined or not, meaning emerges and the environment becomes an extension of ourselves.

This is as true for the workplace as it is for the college dorm or the finest home. While this observation was alluded to in the 1980s, the conclusion was often drawn that the office should visually become more like the home. Instead, we are saying that the visual, domestic “quality” of the home is not necessarily the thing to emulate in the office. The possibility for the emergence of meaning is what matters, especially in the context of groups.

A meaningful context — one that is truly inhabited by its occupants — sets a frame for collaborative learning. It focuses our attention in a particular way — perhaps to an idea or purpose that holds a sense of urgency or immediacy to the group. But when designers of office facilities try to design this quality of meaning into a team’s workspace, it can actually block the emergence of new meaning over time. What painter would buy a canvas that already had a portrait on it? What writer would buy a journal that has already been filled? Meaning is always present in a built environment, but the question is, whose meaning is it? A Frank Lloyd Wright home is the perfect example of a pre-defined but museum-like quality of meaning.

Noted Professor of Architecture Amos Rapoport speaks of the difference between associational versus perceptual meaning. Designers tend to react to environments in perceptual terms, while users relate to space in

associational terms which arise mostly through the addition of “stuff” to the environment. When we look at how meaning is established on an individual level or in small groups, we find that it emerges organically from the inside out.

What clearly doesn’t work is attempting to prescribe meaning from the outside-in. Well-intended as they are, corporate slogans and other attempts to capture the employees’ imaginations rarely succeed. The basketball hoop specified by the designer (sort of a corporate dictate to “have fun”) is less meaningful — and no doubt less used — than the one installed in the middle of the night by a clandestine gang of programmers.

Consider the very successful Vest Pocket Park program of the 1970s in which the City of New York gave burned-out property back to their own neighborhoods to turn into parks. The neighborhood itself designed and maintained the parks, so each park was different and reflected the priorities and interests of its surrounding neighborhood. This illustrates a statement by Rapoport that may at first seem obvious — that “the meaning of many environments is generated through personalization.” This means more than a watered-down interpretation of paper trays and screen savers. It’s about “taking possession, completing it, changing it.” (Rapoport 1982 pp.21)

In the end, the design challenge is an enabling challenge. Associational meaning emerges from its context. It can’t be designed, but it can be fostered. Rather than prescriptively designing meaning in, we need to design room for meaning to emerge.

### **The Challenge of Making Room for Learningful Spaces**

While we can’t design meaning into spaces, we can create spaces that encourage collaborative learning to take place. Part of the learning process for group members is the evolution of the space itself. They find out what does

and doesn't work over time. Do group members have the freedom to reinvent their space to suit the way they work? Much of the "innovative" design work we see praised in magazines today is portrayed as finished, which tells future occupants that they are little more than actors in an exhibit and that innovation occurs at their expense. In his book, *How Buildings Learn*, Stewart Brand reported that researchers at MIT felt their favorite building was not the I.M. Pei-designed Media Lab, but the ugly, seemingly long-obsolete Building 20, where "nobody complained when you nailed something to a door." With no sense of shared ownership of their space, workers who inhabit exhibit-like buildings are likely to withdraw into their own workstations, adding to the museum-like air of the perceptually perfect lobby.

Too often office space is treated mechanically and overhauled every so often like an engine. Maintenance and control are necessary to keep the engine running efficiently, and only certified mechanics are permitted to tinker with it using genuine OEM parts. Somehow, we must find ways to give user groups more control over their environments without sacrificing order and accountability. Perhaps this means looking at a group space as a single office with eight people in it and letting them configure it to their needs, tuning it to the right balance of privacy and openness, etc., just as we do now with individual workstations. Perhaps it means we need to rethink our roles to help work groups express their own unique identities and shared context.

**The Challenge of Designing for the Fluid Middle**

Christopher Alexander defines the physical spaces of an organization as "a nested hierarchy of realms: individual > work group, team, or project > department > business unit > corporation > community. The problem facing most organizations today is that the middle realms — from work group up to business unit — are in constant flux. It has become more and more difficult to guess whose space I've wandered into. Marketing? A project

team? At the team level, the spaces look pretty much alike."

It's fairly simple to solve design problems within the realm of the individual or a dedicated project team or skunkworks that has clearly defined boundaries. The realm of the corporation as a whole is also pretty easily defined. However, between these realms lives an increasingly fluid mix of complex work groups or business units comprised of diverse individuals who have overlapping team responsibilities, who move between positions in the same company, and who experience serious breakdowns in communication despite inhabiting an open environment. As their work environment gets more complex and fluid and the boundaries get fuzzier, individuals react by retracting into the only realm they can depend on being meaningful — Me, Inc.

It's here that the tension between real estate and corporate vision makes itself most painfully felt, and our design choices — hot desking, hoteling, free address — look eerily like the path from the rich learning environment of kindergarten to the anonymous processing facilities of the university. If we can find design solutions in this fluid middle that solve both needs simultaneously, we will have gone a long way toward creating spaces that can sustainably evoke collaborative learning.

**Fostering Meaning through Knowledge and Design**

Providing this middle realm with an efficient real estate solution and a sustainable, meaningful context in which knowledge can incubate and thrive is extremely difficult — both spatially and organizationally. However, there are a number of steps we can take.

1. Create islands of meaning or visible cognitive domains. Islands of meaning are created when a compelling question has a place to incubate. This is where team-level personalization can and should happen, such as walls dedicated to product introduction

timelines, stimulating questions, press clippings, hot debates, etc. — anything that gets people to look up and think in a larger frame. Symbols of past successes and, if the team is brave enough, reminders of lessons painfully learned can be powerful meaning-makers. In a complex and fluid environment, these islands and the symbols they contain can help people shift from short-term tasks at hand (usually containable within a notebook) to what's important, what they've succeeded at in the past, and what's likely to lead to success in the future. This level of personalization helps people ask very different and much more powerful questions.

2. Learn from best practices. Designers and facility managers are exposed to a variety of "solutions" created by our clients — odd objects hanging from the ceiling, shrines on filing cabinets, failed prototypes turned into million-dollar coasters. These solutions may not fit into the design specs, but there are lessons to be learned from what helps people make meaning. These ideas may be helpful to share with other clients and organizations.

Noticing and capturing these best meaning-creating practices can add to our value as design and planning resources — especially for work groups that have been pushed and pulled in any number of directions, feel squeezed by a million priorities at once, or have been chartered to do the unthinkable in an impossible time frame, with a ridiculously small group of people, on an pitiful budget. We can help these groups by keeping a lookout for what naturally expresses itself in their current space and giving it room to grow in their new space. We can help them envision truly generative collaborative spaces instead of conventional meeting rooms.

3. Allow for negative space. Leaving pockets of negative space, especially in areas where groups intersect or overlap, can provide venues for

the creation of shared or displayed meaning. Larger areas, centrally located, could be provided for the externalization of intra-group activity in which a group's latest work is projected next to the work of other groups. This could spark connections between groups and inform large portions of the organization as to what else is going on.

4. Provide flexible tools to support the creation and sharing of knowledge. This means everything from the interior walls to digital devices to furniture, accessories, and supplies. First and foremost, these tools should form a sub-context that draws people in and keeps their attention. One way to accomplish this is to avoid corners, such as in a typical conference room, which push one's attention to the center of a wall. Vertical surfaces should be semi-fixed so as to provide a stable environment that can be easily reconfigured to scale the amount of seclusion or exposure desired at a given time. The ability for a space to be transformed easily from a private thinking space to an open sharing space should be supported by tools at the group level, rather than making a space either an open team space or closed war room. This should also be true of individual work stations, so that if the group decides to be open, individuals can close themselves off to focus on a tough problem and then turn their spaces inside-out to communicate what they're doing.
5. Plan for the exposure of thinking. Imagine walking into an office space in which the potential for externalizing ideas is everywhere. Picture a cognitively ergonomic environment where cognitive artifacts hang in the air like leaves on a tree and the floor is designed to be an interactive terrain. What would it be like to not have to pack up all your ideas after a meeting and hope they aren't forgotten, but instead be able to return to the place where the ideas were created and build on them, document, and learn from the process?

**Conclusion**

It is our hope that future work spaces may resemble exploratoriums of creative thinking, habitats for human development of competency leading to the discovery of islands of mastery, and ecosystems designed to immerse people in visual space, drawing them out from seclusion and lifting their eyes from letter-sized micro-verses to see the larger purpose in what they're doing.

Space-makers must continually strive to understand the space/brain relationship so that we may speak with authority in the planning phases of workplace design. Only then do we have any hope of establishing connections between space and collaborative learning and creating spaces we can be proud of because they work for the people who inhabit them long after we've moved on.