

Learning Environments | January 2013 Digital Edition | Feature

Designing Collaborative Spaces for Schools

Thoughtfully designed learning environments can help students work together more effectively.

- By Peter C. Lippman
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Editor's note: *This is the first of a two-part series looking at how to design collaborative spaces for schools, written by an architect with extensive experience in the field.*

When architects discuss the educational facilities of the next century and beyond, the conversation turns to collaborative spaces. They envision flexible and fluid spaces that will encourage creative and critical thinking, and free students to communicate clearly about the task at hand. While these are admirable ideals, there are some fundamental questions that administrators and educators should discuss among themselves before engaging in any new building project:

- Why create collaborative spaces?
- What spaces are appropriate for collaborative activities?
- What forms do these collaborative spaces take?
- Can these spaces be created apart from the social matrix of the environment?
- Are these spaces the same in all learning environments, or are they culturally and contextually defined?
- How is information technology integrated into these spaces?
- Are these spaces sustainable over time?

These questions move the dialogue away from planning traditional models of educational spaces to creating alternative settings where learners have a choice in how they work. The goal of this article is to imagine how spaces can be designed to support, inspire, and motivate K-12 students as they acquire knowledge and master skills as part of a community of learners.

The Learning Environment

The learning environment combines physical environments (spatial design, information technology, and building systems) and social aspects (learners, teachers, students, staff, and community members). During the programming, planning, and design phases of the learning environment, design professionals tend to focus on the physical elements--specifically the organization of areas and the building systems. But this approach minimizes how the physical environment shapes the learners.

According to researchers **Heron and Heward**, not only do ambient characteristics such as sound, light, temperature, air quality, and spatial support for bodily movement affect how individuals acquire knowledge, but social relationships and cultural values play an important role in students' level of engagement in learning.

Furthermore, the educational environment must provide opportunities for everyone to learn. Guided by a district's mission and vision, it creates meaning and provides identity for learners as they work independently or with others. To accomplish these goals, the physical environment, the spatial design, and the information technologies must be planned to support a variety of collaboration spaces. When designed thoughtfully, these spaces help create optimal experiences for learning.

Differentiated and Integrated Space

Vygotsky's theory of the zone of proximal development says that learners can acquire knowledge more rapidly when working with others who are more expert in a given task. His theory acknowledges that learners are transformed by their transactions with social and physical environments.

My own **research** suggests that to create flowing, fluid, and flexible learning spaces, the settings must be both differentiated and integrated. In order to create alternative settings, the **physical environment** must be planned to include a variety of defined areas to support individual, 1-to-1, small group, and large **social groupings**. Consider, for example, a ramp for students with disabilities.

First, imagine a school with a common area between instructional spaces, located under a grand stair. To maximize the use of this space, the floor can be lowered approximately 15 inches, defining it as a separate instructional setting that can be used either as a classroom or as a place where a variety of social groupings can gather.

To provide access to this additional floor level, this space will need a ramp. Some may see this as disrupting the flow of the space, but the ramp connects the different levels both visually and physically. It allows all learners to choose how they want to collaborate on tasks between the different floor levels.

Using laptops, tablets, or smartphones, they can work on chairs around tables or on soft seating on the depressed lower level, on the two steps that connect the two levels, or around tables on soft seating on the upper level. With the ramp connecting the two levels, the setting is both

differentiated and integrated because it doesn't separate those with physical disabilities from those without them. This collaborative space, symbolically, offers an environment that is inclusive for all.

Attributes of Collaborative Spaces

Spatial design influences how people engage with one another, and whether or not they are able to fully participate in activities. For this reason, learning environments must encourage collaboration. This raises the question of how collaboration works in a school setting. Generally, collaboration occurs when a group of learners work cooperatively on a task. However, collaboration does not mean that all learners are working with one another on the same tasks throughout the course of the project. After their initial brainstorming meetings, the group may choose to delegate tasks and learners may proceed to work on their own aspect of the project.

It is for this reason that collaborative spaces must allow members to work independently or with one another. Cooperative learning spaces may contract when the group comes together to discuss the project and then expand as individuals separate from one another to work on their specific tasks. This separation might simply entail moving their seating position a few feet away from the group space, or it might mean moving into another space altogether.

According to **Tharp and Gallimore**, collaborative spaces are where learners have access to peers of greater, equal, and lesser ability; where transactions between students and teachers, verbal and otherwise, occur in the daily routine; where investigating an array of activities is permitted; and where low levels of adult supervision give students considerable freedom in what they accomplish and how they accomplish it.

These spaces may be determined by fixed features in the physical environment such as a grand stair, window seat, or built-in countertops along a wall or table. The flexibility of these settings comes from how learners use the spaces between these fixed features. These settings support the use of a number of technologies while allowing learners to work in a variety of social groupings.

Collaborative Spaces in Instructional Settings

Collaborative settings can include all areas of a school, encompassing classrooms and adjacent areas outside them. Collaborative spaces must provide areas for independent learning, 1-to-1 learning, small group learning, and large group meetings in which the entire class comes together.

For example, an instructional space that supports 25 to 32 learners can allow for collaborative settings by arranging fixed elements along with unfixed features and furniture. If the entire class is working in small groups of four or five learners, then the space must be arranged to support five to seven differentiated activity settings, which can expand and contract as needed to support the learners as they work.

Technology as a Catalyst for Learning

Technology can help support a range of social groupings, but a singular technology, such as an interactive whiteboard, has its limitations. An interactive whiteboard is typically used for large group lessons where the teacher or sometimes a student presents. Newer IWB technologies allow

for more than one simultaneous user, but its effectiveness as a tool in encouraging small-group, collaborative learning is still somewhat limited, especially if it is used as the focal point of the space and reinforces a teacher-directed classroom.

To better facilitate a variety of collaborative social groupings, a combination of information technologies can be used to create more than one focal point in the classroom. This may be achieved by allowing learners to work independently with tablets and in small groupings with tablets and LCD screens. When the entire class needs to meet, they can then gather around one of the LCD screens or use a short-throw interactive projector to discuss what they accomplished and what the next steps for the project are.

Furniture Designed for Collaboration

With the technology in place, the next consideration is selecting the proper furniture for supporting small-group collaborative activity. Jason Wheatley, director of ICT at the University of Sydney, suggests that, "for a blend of roundtable conversation and viewing," tables should be shaped like a hyperbola. He adds that, in designing a space that incorporates touchscreens, "You need some space in front of the screen, which has the extra benefit of reducing the angles of view of the closest people."

Education furniture companies are also coming out with classroom tables that accommodate a computer or tablet in the middle of the work surface, which makes collaboration around a screen even easier. And to ensure that students can move freely from one learning location to another, chairs with wheels are becoming standard equipment in K-12 classrooms.

Collaborative Breakout Spaces

The structuring of spatial technology is not only important for the stability of a building, but also for creating and supporting routines that afford growth and stability for learners. Given this, collaborative breakout spaces must be designed with knowledge of how people learn. These spaces must be programmed and planned to support the developmental, social, and emotional needs of learners.

Differentiating the design and size of breakout spaces is important, since the spaces themselves need to support student/teacher, student/student, and teacher/teacher activities. A variety of breakout spaces, described below, support the different ways that people acquire knowledge.

- **Breakout niches** are relatively open areas, such as recesses in walls, in hallways, or at intersections. This type of space might be a waiting area with soft seating, small tables, and chairs; a display area; or an extending learning area. For this reason, green walls, short-throw interactive projectors, or LCD screens may be integrated into these spaces. These are also settings where students may use their laptops, tablets, or handheld devices.
- **Breakout hollows** are more private and semi-enclosed settings that might be "holes" in walls of corridors, within the instructional spaces, or in more public areas like libraries or waiting areas. Breakout hollows function as extensions of the instructional spaces and

support one to three people. These areas might have movable chairs or stools around fixed tables where students may work on their laptops, tablets, or handheld devices.

- **Breakout rooms** are private and enclosed settings for one to six people. They might be used for staff, parent, or student meetings; for evaluation functions; or as quiet rooms for students. Within these spaces might be movable chairs around a movable table (or tables), soft seating, or fixed countertops. Since these spaces might be used for a variety of meetings, they should integrate hardwired computers, short-throw interactive projects, or LCD screens. These are also settings where learners may use their laptops, tablets, or handheld devices.
- **Breakout nodes** promote independent, small-group, and large-group interactions. These spaces might include the sunken floor under a stair described earlier. These are instructional spaces, and as such should be outfitted with the appropriate technology and furniture.

In the February issue, the second part of this article will examine how to design spaces for different age groups, and will provide districts a list of questions to ask prospective design teams.

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