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CREATION OF THE LEARNING SPACE

Catalysts for Envisioning
and Navigating the
Design Process

Before you become too entranced with gorgeous gadgets and mesmerizing video displays, let me remind you that information is not knowledge, knowledge is not wisdom, and wisdom is not foresight. Each grows out of the other, and we need them all.

—Arthur C. Clarke, author and satellite systems inventor

Although a fundamental focus on learners should always inform campus planning for academic spaces, a thoughtful, analytical design process can help to ensure that these learning environments imaginatively and effectively respond to the needs of students today and in the future. Specifically, a strategic design process identifies and summarizes space needs; analyzes possible solutions, functionality, and costs; and synthesizes the most promising elements into recommendations for colleges and universities. Although the needs on campuses are almost always greater than the capital funds available, a planning group or committee comprised of interdisciplinary stakeholders collaborating across tradi-

tional boundaries can take a fresh and creative look at utilization, collaboration, flexibility, and adaptability to cost-effectively achieve many of the institution's most important goals.

Process and Structure of Design

Learning is fundamentally a social construct that allows access to instruction, collaboration, informed research, relevant resources, critical analysis, and integrated results; learning manifests itself in knowledge and often in wisdom. At U.S. colleges and universities, the entire campus is a learning environment, often with the college town or urban neighborhood serving as an extension of that environment. But if one can learn anywhere, why is the magnitude of learning and academic accomplishment tangibly greater on the college or university campus?

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The simple answer is that the campus offers serendipitous interaction, convenient access to resources, and a broad range of environments in which to think deeply and explore possibilities, creating a wonderfully synergistic combination to advance and enhance learning, discovery, and creation of knowledge. Hence, the college campus as a successful learning community continues to attract students, faculty, and researchers pursuing the “life of the mind.”

Yet the pace of change and discovery is greater and more complex today than in any time we can remember. The speed of communication, the vast number of participants, and the flattening of the hierar-

chy of global access have intensified the magnitude of information available and the speed at which it is created, evolves, or becomes irrelevant. To address the rapid change in technology and shifts in pedagogies today and to anticipate significant changes in the future, institutions are exploring flexible and adaptable approaches to learning spaces.

Although the learning environments at various institutions are by no means exactly the same, they do share similarities. Without exception, the campus community is the strength of the institution, and the physical environment supports the community and fosters its uniqueness. The following model for en-

visioning and navigating the design process focuses on this community—that is, on the people, not the technologies. This model is thus applicable to all institutions exploring the spaces needed on campus. The key to creating the best process, activities, and solution, however, is asking the right questions. Some of these questions are posed here for the design planning group to use and expand upon as the group begins the discovery process of envisioning and designing learning environments.

STEP ONE: Identifying the Participants in the Planning Process

Because a diverse representation of constituents is important to understanding the breadth of campus design issues and perspectives, monitoring the discussion to ensure that the committee is not missing an important voice can keep the planning effort informed and on track. As a rule, design and planning teams should include administrators, department leaders, faculty members, undergraduate and graduate students, facility managers, teaching and learning support staff, librarians, instructional technologists, and representatives from the computing, audiovisual, and media departments. When formed, the planning group will need to select a leader—or, according to Project Kaleidoscope (PKAL),¹ a “project shepherd.” It is important for the leader to commit to the process, to the time required, and to ongoing participation in the planning committee to ensure the group’s continuity and successful resolution. After selecting its leader, the new committee will need to discuss and determine its working methodology based on the following questions:

- To whom does the committee report?
- Will every committee member participate in the entire process?
- Will there be subcommittees?
- Will other users and interested parties be involved? If so, how?
- What is the timeframe?
- What is the deliverable?

Allowing the members of a newly tasked committee to get to know each other and share perspectives is a valuable step in a successful design process. Many

campuses have regretted, in retrospect, that their committee members hardly knew each other when they formed the group. A committee with members who have never worked together before needs to develop an understanding of each member's experience, perspective, and role with the institution. Having each member answer the following questions will start this process:

- Have you served on a committee like this before?

- To whom do you report?
- Where else have you worked?
- What is your perspective on these issues?
- What are you most interested in or concerned about in this process?
- Are any voices missing at the table? If so, how can the group reach them?

STEP TWO: Developing Goals

Any group charged with a design process for learning spaces will address a diverse set of needs. Clearly identifying the

charge of the committee will help keep the group focused on its long-term deliverable: a recommendation to the institution for learning space design. Addressing the following questions will help the committee clarify its intentions:

- What is the committee's charge?
- What goals need to be achieved as part of this charge?
- Who should endorse the charge and goals before the committee moves ahead?
- What interest groups may have different goals or may be working on a related charge?
- How have projects on campus addressed these goals in the past?

But before passing "Go," the group must ask itself, "Why?" Having a coherent understanding of why the needs exist creates a platform from which the committee can explore and analyze possible solutions. Too often, colleges and universities ask architects to improve teaching and learning spaces without a direct connection to how

or what is being taught and learned in the environment. All planning aspects are related; institutions need to put capital planning in perspective with other campus planning initiatives. To do so, the design committee should answer the following questions:

- Are curriculum redesign efforts ongoing?
- Have changes in the curriculum been identified?
- Has recent accreditation highlighted capital needs?
- What pedagogy will best deliver results for this curriculum?
- What have peers recently undertaken in terms of curriculum and pedagogy?

STEP THREE: Analyzing Existing Learning Facilities

To respond most effectively to future needs, the planning committee must have a clear understanding of how current needs are being addressed. Developing a spreadsheet to assess existing spaces and their current deficiencies will help the group evaluate the existing resources and define the range of aspirations. In the philosophical context, the group should address the following issues:

- Where does learning take place?
- How is successful learning measured?
- What supports the learning environment?
- Who are the learners, and what is known about how they learn?

In the technical context, the members should ask the following questions about each of the learning spaces:

- What is the size of the learning space (in assignable square footage)?
- How many seats does the space have?
- What is the pedagogical style of the space—lecture, mixed use, seminar, case study, etc.?
- What is the layout and functionality of the space?
- What technology is available in the space?
- What is the overall success of the space in meeting basic human needs such as lighting, temperature, acoustics, accessibility, and adaptability?

- What is the current use of the space—by dates, times, frequencies of use, and users?
- Who controls access to the space? Is it the registrar, the department, the library, or another?

STEP FOUR: Projecting Future Needs and Learning from Others

Based on the analysis of the existing context and the evaluation of current and future activities, the committee should create a program document or spreadsheet of needs. This program document should outline the size, shape, functionality, and control of future spaces but should also include a philosophical approach to the learning environments.

For example, the numbers and kinds of spaces needed for small groups to work together have increased substantially. These spaces often need to be shared by many constituents and distributed across campus. Often, parallel planning efforts are taking place on campus, and a check with other planning groups can be valuable in coordinating campus improvements and philosophies. Two groups often see the same needs or respond simultaneously to community learning needs. Coordinating these efforts will allow for the best use of resources and the most thoughtful distribution of learning spaces across the campus. To develop a meaningful program

document, the group should consider the following issues:

- What are the needs?
- What kind of space does the campus need less of, and why?
- Will these needs shift and change during the course of the academic year?
- What outside influences may affect these needs?
- Will the institution grow or change in any other way? If so, how, why, and when will it grow in terms of enrollment and/or planning for new programs?
- Will the institution develop alliances or partnerships to address these needs?
- Will technology help the committee to address spatial pedagogical needs?

Benchmarking the institutional needs to those of peer institutions or similar design efforts will allow the committee to learn from others and react to those space design solutions that are most relevant to the needs of its own campus. Touring recently completed facilities at peer institutions can be an eye-opening experience and can help the committee solidify its reactions to concrete examples of learning spaces. Photographing these spaces during the tour will give the committee tangible examples to use in

communicating recommendations to the campus interest groups. Additionally, the committee should ask members of the peer design team how they evaluate the success of their learning facilities, which model facilities they emulated in designing the learning space, and the lessons learned that they would apply if they were to undertake the design process again.

Finally, the planning committee should explore the possible impact of the following factors:

- Informal learning environments: learning from the peer on the side; learning by observation; and learning through collaboration
- Variety and level of engagement: instruction spaces, seminars, studios, labs, video and web conferencing, and virtual collaboration
- Integration and convergence: of technologies, distribution, services, and formats
- Portable and customized PDAs: “push technology”; wireless hot spots; the mobile learning environment; and integration with other formats such as print, film, music, animation, and simulation

STEP FIVE: Conducting a Reality Check

Once the group has identified participants, developed its goals, analyzed existing spaces, and projected future needs, the committee should step back for a reality check. Has the group responded unduly to overdue current needs, or has it been able to look down the road and pro-

ject changes that could affect premature choices? Have those activities or evolutions that will affect the program been identified? That is, can the needs of the learning environment be “future tested”? The committee should consider the following questions:

- What lies ahead?
- How could portability, customization, and/or multimedia affect campus needs?
- Are there areas where the institution is duplicating spaces?
- Are there underperforming learning spaces, ones that may include formal classrooms or common breakout space?
- Is accomplishing these goals through this plan realistic?
- Will organizational change in strategic planning, curriculum planning, institutional growth, technology planning, pedagogical innovation, and administration affect the identified needs?

As part of the reality check, the committee should hold a series of open focus group sessions with faculty, students, staff, administrators, trustees, alumni, and neighbors. This will allow the committee to test assumptions and to evaluate the success of its interpretations of the needs and qualities of learning spaces. The committee may stimulate constructive discussion by asking focus group members the following questions:

- Should anything be added to, changed in, or removed from the program?
- Does the program achieve the goals?

- Are there particular adjacencies that would make the program successful?

STEP SIX: Exploring Alternatives

The next step is to apply the program needs to a variety of spatial alternatives. The possibility of upgrading existing facilities should be contrasted with the possibility of building new space. Because the operational support of these facilities is critical to their success, assessing alternative solutions with the supporting departments will help indicate how these alternatives affect operational budgets and constructs.

The committee should begin by mapping the physical network of learning spaces and resources for learning on campus. For example, are videoconferencing sites centralized or decentralized? How visible are the resource choices to the campus community? As alternatives are developed, the group should test models that leverage opportunities for people to interact with resource specialists, making recommendations for additional space only after the existing space has been fully evaluated.

The committee also needs to identify those physical locations where learning takes place now and look for opportunities that enhance the “teachable moment.” Changes may take place in formal spaces, informal spaces, quiet environments, active environments, natural campus crossroads, and comfortable “hang-out” spaces. Finally, the group should determine where students come together within and across disciplines, where students and faculty have opportunities for impromptu meetings, and whether or not such learning experiences can be made visible to the entire campus community. For example, accessible resource areas with whiteboards and plasma screens can showcase active research along with the resource specialists and technology that helped to make the research possible.

The transformation of the campus learning environment is sometimes triggered by the bold intervention of a major addition to the physical environment, but it is also often found in smaller-scale, surgical improvements to relatively flexible buildings. In evaluating the cost implications of alternative solutions, the committee should seek the assistance of cost-

estimating consultants, who can help the group to understand the cost benefit of alternatives. For example, is there an alternative that achieves the goals most successfully, or are there strengths of several alternatives that should be combined? Such consultants can also help the committee develop early approaches for phasing in the recommendations.

STEP SEVEN: Evaluating and Making Recommendations

At this stage, the group should address these final issues:

- How effective is each alternative in meeting the goals of the program?
- Will the renovation of an existing space achieve the desired environment?
- Is there a phasing strategy that allows an existing space to come off-line for renovation while it supports ongoing programs?
- Is the institution creating environmental visions that are truly flexible?

Regarding the last issue, flexibility can be defined in various ways:

- *Programming flexibility:* Designing space to support a variety of similar program uses without any reconfiguration from use to use
- *Spatial flexibility:* The ability of a space to be easily transformed to support a variety of different program uses
- *Structural flexibility:* The ability of a modular building structure to support a major reconfiguration of space over time, including the use of non-bearing walls and other quasi-permanent design elements
- *Future expansion flexibility:* Designing space to accommodate long-term growth and change, including future building expansion, while developing or complying with a master plan

Finally, but most important, it may be helpful to present the alternatives to campus focus groups as part of the evaluation. The presentation of the committee's recommendation is often most effective if it summarizes the process and links the recommendation with the charge and goals. Reaching philosophical agreement on learning environments is a

valuable result of the process and should be captured and shared with other stakeholders at the institution.

Designing the Future

Major discoveries about the learning process are being made each year. Social interaction has been found to enhance the quality of learning in many contexts: "Learning is built up through conversations between persons or among groups and involves the creation of shared understanding through social interactions."²

The overall functionality, degree of human comfort, and beauty of the environment substantially affect the quality of interaction and, as a result, the quality of learning. Students are drawn to spaces that are open, inviting, and stimulating, spaces where they can become fully engaged in the conversation and in the excitement of sharing new ideas. The challenge is to design a variety of environments that respond to and support the broad range of learning styles and activities described above.

Today, students are sharpening their learning skills—the most tangible asset

they take with them from their years in a college or university. The practical longevity of information is shorter than ever, and the need for students to be effective, real-time, interdisciplinary learners is central to the mission of higher education. Institutions also need to educate the next generation to go forward in the world of discovery and inquiry. Creating learning environments, classrooms, libraries, and laboratories to support students today, while keeping pace with change and anticipating future needs, must spearhead facility-planning goals. Above all, the fragile yet vitally important human interaction that these environments support must be protected and enhanced in our increasingly diverse and technologically sophisticated learning communities. *e*

Notes

1. Project Kaleidoscope (PKAL) is an informal, national alliance working to build strong learning environments for undergraduate students in mathematics, engineering, and the various fields of science. See <<http://www.pkal.org>>.
2. Geri Gay and Helene Hembrooke, *Activity-Centered Design: An Ecological Approach to Designing Smart Tools and Usable Systems* (Cambridge: MIT Press, 2004), 32.