

# Asking the Right Questions: Toward Building Communities

Jeanne L. Narum, Principal  
*Learning Spaces Collaboratory*

Too often, planning for new spaces for undergraduate teaching in science and mathematics begins with the wrong questions. Sometimes the initial miss-step occurs when faculty say “we do not have enough space—we need more room for faculty, for students, for equipment.” Questions about size— “How many square feet per faculty member, per major, per department do you need?”— often surface in response to such demands.

Other questions arise when you recognize that the building has deteriorated, that it may be unsafe for student activity in classroom and lab, that mechanical systems are not adequate to support (or even accommodate) state-of-the-art instrumentation, that the very physical state of the faculty presents barriers to productive learning in the sciences and mathematics.

Such circumstances lead to questions such as: “What are code requirements, how do we accommodate adequate HVAC systems to ensure safety and accommodate the sophisticated instruments faculty say they need? How do we keep cold rooms cold and green houses warm? Can we renovate or do we have to build new?”

These are important questions; they need to be addressed. However when they shape the initial stages of planning, the process is skewed. You will not end up with the building that your institution needs, that your students deserve. Creativity is inhibited; flexibility is limited. Questions about amount of square foot needed per faculty member, about how to devise adequate HVAC systems may be easier to answer than some more basic questions, but if you ask the right questions from the start in the long run, you will save both time and money.

Most important, however, you will have the opportunity to build a true natural science community on your campus. It has been interesting to observe the evolution of question-asking on campuses where people are talking about the need for better facilities for undergraduate science and mathematics. Although the initial spark for discussions about new spaces may have ignited from differing circumstances, even concerns about crowded and outdated and unsafe spaces ultimately lead to discussion about more basic educational issues— about the future and about the nature of the learning experience on a campus. Why is this?

The characteristics of community— a predisposition to share ideas, to challenge precepts, and to revel in exploring unfamiliar territory—relate directly to the endeavor of collaborative planning. How can this be? Think about how a true community exhibits the willingness, even the drive, to discuss matters of the moment informally with colleagues in the lounge, or to explore issues in formal, regular sessions with peers.

Community is the spirited enactment of the conviction that ideas are important, and that they gain life when people bring different perspectives to their consideration. Communities embrace a common vision, yet allow— even promote— difficult dialogues. This is the challenge to leaders, within the faculty and the administration, as your planning proceeds.

—PKAL Volume III.1995.

In PKAL, we are convinced that the very process of planning builds community; it challenges administrators and faculty (and perhaps even students) to think more strategically about who they are. Maybe this happened because of the cost of science buildings; people soon realize that they cannot do everything, that neither faculty members nor departments can have everything on a wish list— so they begin to set priorities and to develop a strategic plan— they begin negotiating— collaborating all activities essential to community.

Discovering the right first questions happens when departments begin thinking about how to accommodate the research activity of a new faculty member, find space for students to do independent research, put a critical piece of instrument so more than one department can use it. This must move toward a more interdisciplinary STEM environment.

In wrestling with such issues, faculty focus on student learning— what actually is to happen in the classroom and lab, about the kind of learning that is encouraged as students work together, and have hands-on involvement with physics, or another of the sciences.

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“First” questions arise when faculty begin to think about what happens when students have their own spaces for investigative research, when labs accommodate student teams wrestling with questions to which answers are not known, when students have the opportunity to use state-of-the-art instrumentation to do science.

Questions about the nature of the educational experience—about quality and the nature of the learning community—are questions that must be asked first and asked persistently throughout the process, and indeed before, during and beyond the process of planning a facility.

Your goal is to have a science and mathematics building with “soul.” To accomplish this, there are questions that must be asked:

- ◆ What kind of world will our students be entering when they graduate?
- ◆ What does strengthening our science and mathematics programs, including providing better spaces for teaching and learning, have to do with our efforts to prepare students to lead productive, satisfying, and meaningful lives upon graduation?
- ◆ If ‘community’ is a distinguishable characteristic of strong undergraduate science and mathematics programs, what does community have to do with planning new spaces for these programs on our campus?
- ◆ How are other institutions answering the questions about educational vision, facilities planning, and community building? What can we learn from others to advance our planning? ■

In the workshops on facilities PKAL has hosted since 1992 we challenged participants to be conscious of the relationship between the success of the collaborating community and the success of the spaces that emerge from their work. Participants comment:

“we now recognize that a characteristic of community is informed discussion, and that there has to be institutional commitment if the project is to succeed.”

“we also recognize that designing a building is a community-builder; we have been impatient, planning too much department by department...”

Thus, we suggest a community that works is one that:

- ◆ has a clear understanding of the students of today, and of the future in which they will live and work
- ◆ energizes gifted and respected leaders in the faculty and administrative ranks, and gives them the requisite flexibility, responsibility, and resources to effect change
- ◆ understands the critical questions to be asked at each stage in the process of reform, and asks them in a context of mutual respect and shared commitments
- ◆ takes risks, seeks new collaborators and supporters, develops partnerships that dissolve boundaries within the academy and within the larger community of stakeholders
- ◆ broadens the discussion, redefines the problem, and understands the kaleidoscope nature of efforts to build natural science communities that serve the national interest.

—PKAL Occasional Paper #2. 1994.