



WHAT MATTERS - QUESTIONS FROM THE PKAL COMMUNITY

COLLECTING QUESTIONS FROM THE FIELD

At the core of the work of PKAL, within and beyond our facilities planning efforts, is gathering, distilling and disseminating evidence from campuses of all kinds, in all parts of the country, about what works in shaping robust undergraduate STEM learning environments. One means of finding out what is important to campuses is a pre-workshop assignment to teams preparing for a PKAL facilities planning workshop.

These questions from the field have grown increasingly sophisticated and complex over the past fifteen years, as a greater body of relevant knowledge, wisdom and experience is available to 'work-in-progress' planners of undergraduate STEM facilities. Reflecting on 1992, we can recall no questions about sustainability or about technologies; neither were there questions about how to accommodate interdisciplinary programs or how to pay attention to research on learning during the planning process.

To a large extent, the questions brought to earliest facilities workshops were about fixing problems, not about enabling dreams. We hope this snapshot into the large PKAL archive of 'burning questions' helps further communities realize their vision of spaces in the service of learning.

I. Planning & People

- ♦ how do you facilitate a healthy dialog between faculty and administration so all perspectives are heard and decisions made in a collegial manner?
- ♦ what are the roles of the different players (who are they) at different stages of the planning process, given the extent and complexity of the project we are undertaking?
- ♦ what is the role of the faculty, of the faculty shepherd?
- ♦ how do you encourage faculty to explore new ideas, approaches, pedagogies and technologies (e.g., the *Bio2010* model) for introductory courses, as a means to "jump-start" the planning process?
- ♦ recognizing the potential of tempers frayed and tensions visible and invisible, how do you shape and orchestrate the planning process to avoid such?
- ♦ how do you bring the brightest and best into the planning process, and sustain their involvement over the long-term?

II. Flexibility

- ♦ how to create the most flexible labs (multi-disciplinary, multi-level, for use for non-STEM learners)? What are the pros and cons associated with such labs?
- ♦ how do we build a state-of-the-art facility that enhances student learning for current and future generations and that facilitates the best pedagogical practices, now and in the future (while making maximum use of limited resources); how do you differentiate between flexibility, adaptability, and versatility?
- ♦ what does flexibility look like; can it be defined? ▶

Planning Facilities for Undergraduate Science & Mathematics: 2006 PKAL Facilities Workshop at Meredith College, Raleigh, North Carolina.

QUESTIONS TOO NARROW TO START WITH

- ♦ How many square feet per faculty member, per major, per department do we need?
- ♦ 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?

BETTER "FIRST" QUESTIONS

- ♦ What does strengthening our science and mathematics program, 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?
- ♦ What can we learn from how other institutions are answering questions about educational vision, facilities planning, and community building?

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- ♦ what are ways to maximize the facility's flexibility to serve the future, while optimizing its capacity to serve current, highly-specialized curricular and research efforts?
- ♦ how do we design functional spaces for formal and informal learning that incorporate modern technologies, reflect current insights about how people learn, yet allow for future advances in paradigms of teaching and learning?
- ♦ can a multi-disciplinary facility serve needs of both bench-sciences and field-sciences?
- ♦ can a facility be flexible from all perspectives: learning, research and teaching spaces, formal and informal learning spaces (including offices)?

III. Budgets, Planning, & Construction

- ♦ what are the stages of project planning; what are the expectations at each?
- ♦ are there pit-falls in the "design build" approach?
- ♦ how can we develop, design, and construct a "green" building that promotes investigative learning in a facility designed specially for freshmen and sophomores in a liberal arts setting?
- ♦ how do we find funding for each stage of the process and for maintenance, after move-in?
- ♦ what are the stages of project planning; what are the expectations at each of these stages?

- ♦ what are the "tricks-of-the-trade" in giving attention to space utilization before and during the planning process (under-used classrooms and maxed-out research space) that can keep the size of the project under control?
- ♦ how are budget compromises made responsibly, so efficiency is improved and ill-advised decisions avoided?
- ♦ what are the most common missteps in planning and construction, new and renovated projects?
- ♦ how do we link campus-wide planning (meeting science needs, serving the Living Learning Center, campus-master planning etc.)?

IV. Academic Planning & Spaces

- ♦ how can we use this project— its planning and its realization— to achieve the true integration of our academic programs?
- ♦ how can we connect two buildings (old and new) that will serve a multi-disciplinary program in ways that ensure continued and expanded cohesiveness and interactions?
- ♦ what is the most effective interplay and relationship between planning programs, considering pedagogies, and designing spaces; does one precede the other?
- ♦ if it is true that shared spaces decrease current and long-term building costs, encourage interdisciplinary efforts, and increase efficiency of space use, what works in getting individuals and departments to "take all they can get for themselves"?

- ♦ how do you avoid common pitfalls in designing true communal research spaces?
- ♦ how do you design research spaces so they safely draw in undergraduates and representatives of the larger off-campus community?
- ♦ how do you deal with the logistical matters such as technologies, adjacencies and access to a mix of learning environments in a facility designed to serve multiple disciplines?
- ♦ how can one plan to enhance the campus aesthetic?

V. Renovations

- ♦ how do you take advantages of current strengths and limitations of a building as you renovate?
- ♦ how can renovations be stages so the spaces can continue to be used?

VII. Future

- ♦ what future developments and directions might change the way we now think about shaping new spaces for undergraduate science?
- ♦ our vision is of a building that will "convey a sense of excitement and welcome, as students, faculty, staff, and visitors more around the building?" How do you make this happen? ■