

NOT READY FOR CONSTRUCTION? TAKE THESE STEPS FIRST

Recommendations

Establish a fully developed and unified vision for science education progression. It would be unwise to proceed with facility construction before vision construction.

A thoughtful and well-articulated vision for teaching science is the most important element of a successful building project. Planning construction is a weighty task and mistakes or oversights due to a lack of vision will impact students for decades to come. A building that inspires effective and creative pedagogy will be a treasure; a building that stifles may have severe consequences. The science faculty must commit themselves to the difficult and time consuming task of creating a coherent vision from the many different opinions that naturally exist among faculty who are from different disciplines and who are at different stages in their careers. Only after a vision is created should thoughts turn to envisioning the building that will support this program.

Engage faculty in relaxed, in-depth discussions on teaching to facilitate development of a comprehensive, departmental vision.

Ongoing conversations that occur in the normal course of events can be helpful in creating shared understandings about teaching and learning. They do not, typically, lead to the shared, carefully articulated vision that is needed to support a construction process. Early in the planning process faculty must get away from campus to a relaxed environment for extended discussions on teaching. These meetings should focus exclusively on creating a vision for the instructional program. At a later date architects can help translate this vision into a building plan.

Some people enjoy the prospects of building a community vision and others are repulsed by it. At virtually every institution there are individuals who find the idea of planning retreats repugnant and will attend only if there are utilitarian tasks on the agenda. When such voices carry the day, uninspired buildings are erected. Administrative and faculty leaders must do everything possible to ensure full participation by engaged players in extended, off-campus visioning sessions.

Begin fund raising immediately to fund a series of small-scale modifications to the existing facility.

A series of self-contained upgrades to the science facility (described below) should begin immediately. These should be initiated by a series of short, focused position papers from the faculty. Each will describe an individual project to be done within the existing structure. It should be possible to create these papers within a few months as they do not need to reflect consensus on the future direction of the overall program, they simply need to reflect consensus on specific needs, one item at a time.

BACKGROUND

There are many ways to improve an undergraduate science program. Upgrading scientific equipment, changing pedagogy, engaging in faculty development, providing summer research opportunities and renovating or enlarging facilities can all play an important role in program development. The consultants that visited this midwestern college agreed that the college will need to renovate and add to its existing science facility to establish a top-notch program. But they emphasized that a full-fledged building program is not the immediate next step for this department; the institution must take several preliminary steps before moving to facility construction.



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These focused, individual papers will provide faculty with experience in gaining funds for projects. Currently, the department does not have the familiarity with and confidence in fund raising activities. A new facility would require raising \$20+ million and a renovated facility would require \$9-11 million. Before such a large-scale project is undertaken, the faculty should engage in small fund raising activities to provide them with confidence when tackling a large project.

Engage in inquiry-based teaching despite the fact that existing facilities are not ideal for such pedagogies.

It may be true that the current teaching spaces are not ideal for inquiry-based teaching, but these student-centered instructional approaches have been used successfully in extremely cumbersome spaces.

The transition to inquiry-based teaching is difficult, faculty must be willing to spend many hours trying and stumbling and trying again. With outdated facilities there is a temptation to hold back, assuming the process will be easier with a new facility. It is true that a new or remodeled building will be necessary to realize fully the benefits of inquiry-based teaching.

However, one must be fairly advanced in inquiry methods before outdated facilities become the limiting factor. Faculty must not assume that problems are primarily facility-related. Further, the college should make the following moderate investments to eliminate infrastructure nuisances:

- ♦ purchase mobile laboratory furniture
- ♦ install low-noise air conditioning in select laboratory facilities
- ♦ purchase additional equipment to facilitate learning
- ♦ evaluate the existing ventilation system to determine if it is topic of necessity rather than simply a nuisance item to be resolved.

Create common spaces in the existing facility by reconfiguring areas to encourage interactions between colleagues. Several steps can be taken to increase the hospitality of the existing structure. A new facility is not required to create a sense of community. The following can be re-designed to become common spaces:

- ♦ create a furnishing and decoration scheme in the entry lobby to make it an inviting space for students and faculty to gather
- ♦ improve the environment in the reading room by removing walls that separate it from the hallway and the main entrance, this will encourage communal activities
- ♦ use wide hallways to support informal learning spaces, furniture can be placed in wide hallways to encourage collaboration between faculty and students

- ♦ establish a student zone near the main entrance to allow for casual interactions where the most intense traffic occurs in the facility.

Explore short-term improvements for the laboratory-classroom environment to improve the learning experience. The following steps can be taken to improve existing teaching facilities:

- ♦ eliminate old equipment, stored periodicals, and other materials that are no longer used on a regular basis
- ♦ explore options for upgrading or realigning laboratory furnishings to support the methods of teaching currently in use, specifically inquiry-based learning methods
- ♦ explore short-term options for improving the environmental comfort level in laboratories by improving acoustics, environmental sound levels, temperature control, and aesthetics within the laboratory/teaching areas. ■