CONSTRUCTING NEW FACILITIES— ONE STEP AT A TIME

Recommendations:

Consider planning options that allow for a phased project.

Design the needed facility, and then phase it according to the budget allotments available. To aid in implementing a phased project, use master planning principles that include:

- designing the facility needed and then phasing it in according to the funds available, remembering that a donor might give more or less than expected
- expanding in place rather than building on a separate site, by extending the boundaries for the building outward the common elements (stairwells, elevators, etc.) do not have to be duplicated and economies of scale can be achieved
- determining the highest and best use of the existing facility, the current building is well suited for classrooms and dry science spaces and it is least suited to high-tech, vibration-free wet labs with fume hoods; wet lab accommodation should receive top priority in the new addition
- utilizing other campus resources; non-science courses could be taught in the science building and vice versa, through this the college may begin to break down barriers between the science department and other departments through informal interactions between colleagues
- recognizing (during the planning phase) that certain departments work well together and should occupy proximate space; math, computer science and physics value their interactions and there is a synergy among them, in addition psychology and biology are closely aligned; much of their research is converging and a shared animal facility would further necessitate their presence in the same facility.

BACKGROUND

The president of this small, private, mid-Atlantic college requested the consulting team come to campus to help a standing committee determine whether the current science building could be renovated or if a new facility is needed. The team determined a phased project-one in which additions to the existing structure are completed as funding is made available-suited the needs of the college. They also made design recommendations for the future facility.

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Design classrooms and laboratories for flexibility of use so the facility remains on the cutting-edge.

Science facilities are extremely costly to construct, therefore much must be done with what a campus already has (as stated above). Any additions to the existing facilities must be flexible in order to remain relevant to the ever-changing world of scientific exploration. New facilities should also have the following characteristics:

- all students will own laptops, therefore access to power and Internet connections is crucial
- student workspace (desks, benches, and laboratories) should be designed to accommodate laptop use
- laboratory benches should facilitate collaborative work and permit visual access to the entire classroom, therefore benches should be hip-high (rather than the traditional waist-high height) sufficient space to allow safe foot traffic between relatively permanent equipment stations is necessary in laboratories
- a few seminar or small meeting rooms should be available for small classes and group projects
- support spaces or instrumentation rooms adjacent to laboratories are important for storing large or noisy equipment, if located centrally such rooms can reduce the need for redundant equipment in individual labs.

Realize the importance of incorporating a T3 line to facilitate wireless communication in the new facilities.

Expanding wireless technology into every room on campus will provide the opportunity for tremendous teaching experiences. Wireless access allows the development and deployment of multimedia tutorials, assessments, and teaching tools, as well as development of novel, hands-on student opportunities. For example, publicly accessible databases allow students to conduct research in genomics without leaving their dorm rooms.

The college can also bring guest lecturers and performers to campus from all over the world. Students can also observe what goes on in the surgical suites of the local hospital without leaving the classroom and Russian art experts can give students a tour of a gallery in Moscow.

Further, a T3 line allows students to develop their own network labs for computer science, and their own virtual galleries, theaters, TV stations and/or radio stations. Such student projects afford interdisciplinary cooperation between: computer science majors writing code, setting up and maintaining LANs, servers and other equipment; graphic art students developing visuals; communications and English majors writing and scripting the projects, etc.

The T3 line also allows for the sharing of major pieces of equipment between distant colleges and universities. For example, the biology department might scan all of the items in their extensive and laudable herbarium. Annotating each scanned item and creating the database of plants would make an excellent long-term project for students, while vastly improving their currently limited accessibility to this resource.

Equipment that others have that your campus cannot afford could be shared remotely via wireless technology. The college's boundaries will be vastly expanded by allowing its students to access places, people and information that currently they only read about. ■