

Date: June 30, 2000

To: Lawrence B. Dumas
Provost

From: Jean Shedd
Associate Provost

Ronald Naylor
Associate Vice President for Facilities Management

Re: Classroom Committee report

We're pleased to present the University Classroom Committee's report on classroom use and quality. We consider this report to be the first step in identifying and addressing issues and problems, many of which are of long duration. Addressing the issues will require continuing attention and a sustained financial commitment from the University. The designation of \$500,000 in recurring funds for classroom renovation for FY01 and beyond is a welcome and much-needed move; it will send a strong message to the University community that we are committed to providing classroom facilities appropriate for a highly-ranked research university.

The members of the Committee put a lot of time into working together to produce this report and we'd like to thank them for their efforts, contributions and insights. The Committee was divided into subcommittees and we'd like to thank the chairs of the subcommittees (Kenneth Bain, Stephen Fisher, John Thomas and Paul Weller) for their efforts in bringing their groups together and leading the discussion. We would also like to thank Michael Maysilles, Assistant Registrar, for his exceptional efforts in obtaining and compiling data on class scheduling from the various University systems. Thanks are also due to the staff in Facilities Management Operations, for surveying the physical state of the University's classrooms; Academic Technologies, for assistance with the Web-based faculty survey; and the Searle Center McCormick Fellows classroom committee, for helping develop the recommendations on teaching methodology.

cc: Classroom committee members

University Classroom Committee

Report To the Provost

June, 2000

Committee members

Kenneth R. Bain, *Searle Center for Teaching Excellence*

Roger C. Boye, *Medill School of Journalism*

Carole K. Cahill, *J.L. Kellogg Graduate School of Management*

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Paul A. Loach, *Biochemistry, Molecular Biology and Cell Biology, WCAS*

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Ronald Nayler, *Facilities Management (co-chair)*

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Robert L. Taylor, *Academic Technologies, IT*

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Paul B. Weller, *Facilities Planning, Facilities Management*

Lonnie R. Williams, *Operations, Facilities Management*

Introduction

The Classroom Committee was charged with evaluating classroom use and quality and recommending to the Provost and the Deans policies on classroom utilization, priorities for assignment, scheduling and improvements. This report and conclusions, drawn from committee discussions and a faculty survey, document a number of issues of significant impact for the university. The importance of flexible and quality classrooms cannot be overemphasized--our classrooms are primary learning facilities, the sites in which most of our students obtain the vast majority of their instruction. It is not overstating the case to argue that the most important impressions on our primary constituencies are made in that environment. And it is crucial that these encounters reflect the best of our attitudes and approaches to education.

Classrooms that truly enable learning are an essential component of the educational mission of Northwestern University; we cannot be a great university with substandard classrooms. It was thus troubling to the committee that there seemed to be no vision for Northwestern's classroom facilities. There has been little systematic planning for classroom use, construction, renovation, or upgrading to modern technological standards. The committee feels strongly that Northwestern should have a classroom infrastructure that could be benchmarked against the best in the cohort of universities with which we compete for students and faculty. One example will suffice--Northwestern has fourteen "smart" classrooms; Stanford has fifty-four. Northwestern should commit to a vision that elevates classroom construction, maintenance, and technological infrastructure to the equal of the best in the country.

The committee identified a number of particular issues that require attention. First, the faculty survey, reinforced by the committee members' personal observations, shows a very wide-spread dissatisfaction with a wide-range of "low-tech issues:" defective heating and cooling systems; a lack of overhead and slide projectors; missing chalk, broken podiums; dirty and littered classrooms; and missing chairs and other usual tools of the classroom. The lack of attention to maintenance and equipment needs in classrooms can clearly have an impact on the quality of education at Northwestern.

Second, the role of technology in the classroom has expanded dramatically in the past five years. Faculty expectations have risen dramatically and while that is encouraging for the faculty-student experience, it demands a careful investment in information technology. For example, the faculty survey reveals that most faculty expect that a classroom should have an Internet connection and computer and projection capabilities. The need for information technology extends beyond the large lecture rooms and into a wide array of classroom settings, including seminar and small classrooms.

Third, there are a number of issues related to the scheduling and utilization of classroom space. In some cases there is a mismatch of classroom and class size or needs; for instance, professors who don't use media but require smart classrooms simply because they are the only rooms that accommodate their class size. In other instances, desirable

classrooms are underutilized because faculty and students are interested in teaching and taking classes during a select period of the day. A review of utilization standards nationwide by MGT Consultants for the State of California revealed that most public universities have a standard of a minimum of 30 hours of scheduled classes per week in each room. In addition, our own research on private universities revealed that most have the same standard. NU's average utilization is 26 hours per week. Improving classroom utilization is a difficult issue to address but could provide opportunities for the university to meet a diverse set of objectives.

The committee concluded that much of what is deficient about Northwestern's current classroom situation is the result of many years of inattention and consequent inadequate funding. We found no record of a standing university classroom committee or indeed any sustained effort to provide quality classrooms to support Northwestern's educational experience. As a consequence, not only is there a need to improve the classrooms, but a need for a mandate to bring them all up to the standards of our competitors. The Committee recommends creating a standing classroom committee as a necessary first step to solving these problems.

Committee Process

The committee, which included representatives from the schools, the Searle Center for Teaching Excellence, the Provost's Office, Academic Technologies, Facilities Management, and the Office of the Registrar, pursued a broad range of issues. To ensure that all issues were addressed effectively, the committee was divided into four subcommittees, focusing on teaching methods/technology; classroom quality; classroom utilization; and Chicago campus classrooms. An overview of each subcommittee's work, and its recommendations follow in Sections I, II, III, and IV.

The subcommittees began by gathering data on classroom utilization and quality. Data on classroom utilization for Winter quarter '00 were obtained from the Office of the Registrar, a task that required significant effort of staff in that office. The Office of the Registrar uses two software packages (Schedule-25 and PeopleSoft's SES), neither of which is precisely consistent with the other, and neither of which provides data that can readily be manipulated for analytic studies without substantial and time-consuming efforts. Thus, data on classroom utilization have been gathered for Winter quarter only, at this point, with the goal of subsequently procuring data for Spring and Fall quarters. Nonetheless, the data provide a useful illustration of patterns in classroom usage throughout the day and week.

To obtain data on the physical quality of classrooms, Facilities Management Operations did an inventory of all University-scheduled classrooms, both to ascertain their contents and to rate their physical condition.

The committee sought input from faculty teaching on the Evanston campus, who were invited, in early May, to complete an on-line survey about their experiences with, evaluation of and preferences for classrooms on the Evanston campus; they were also asked to speculate on what significant changes they foresee in the way they would teach in the next five to eight years. Almost 20% of the 1500 faculty contacted responded to the survey. On the Chicago campus, classrooms are maintained and scheduled by the individual schools, rather than centrally. If Chicago campus classrooms are jointly scheduled in future, then a similar survey of faculty on that campus would be appropriate.

The results from this survey are being reviewed and analyzed, a process that will continue over the summer. Student input on similar issues is being gathered with the assistance of ASG's vice president for student affairs, Sameer Gafoor.

Section I. Teaching Methodology/Technology

Subcommittee members: Kenneth Bain (chair), Roger Boye, Kenneth Janda, Robert Taylor

Overview

This subcommittee worked jointly with Searle Center committee on teaching (Jian Cao, Penny Hirsch, Barbara Schwom, David Uttal) to define classroom needs and standards, and to establish some general principles that they believe should guide the design and levels of technology in the University's classrooms.

Recommendations

1. All classroom designs and the technologies that go into them should flow from considerations of learning needs and good pedagogy rather than the other way around. The introduction of any advanced technologies into classrooms should not interfere with basic pedagogical and learning considerations or with the goal of maintaining flexibility in classroom arrangements.
2. In general, classrooms should be designed and maintained maximize functionality and flexibility. Their design should permit rearrangements of the room (furniture and work spaces) and, perhaps, the division of rooms into smaller spaces. From the perspective of both functionality and comfort, classrooms should not be overcrowded and there should be adequate aisle space for moving about.
3. Certain minimum requirements should be met in every classroom. These minimum standards should be set with a variety of technologies in mind, including the following: adequate seating and work spaces; heating and cooling; ventilation; lighting; adequate numbers and types of writing boards, tack boards, sounds systems (for larger rooms), door hardware, noise insulation, switches to control lights, heating, cooling, etc., electrical outlets (grounded plugs), clocks (placed so that students and faculty can see them easily), overhead and slide projectors, and at least one networked computer.
4. The University should develop models for several different types of classrooms, each with its own particular combination of technologies. Presently, we've limited ourselves to one type of advanced technology classroom, the so-called smart classroom. The kinds of advanced technologies that might be maintained in any one type of room might be similar to some of the advanced technologies maintained in another, but each type should be defined to create a particular kind of learning environment to match the learning objectives of particular disciplines and classes.
5. Advanced technology classrooms of various types should be distributed across classroom buildings, with different kinds of technologies available in different

sizes of rooms. It's not possible or desirable to offer identical technological capabilities in all classrooms, beyond the minimum requirements discussed above.

6. The University should rely more on some types of portable equipment and should make that equipment available for each building. Because technologies are changing rapidly and because the needs may change with each class using the room, it may be more effective to maintain, in a central location in each classroom building, an easily moveable cart containing some combination of technologies. This might include a computer, or laptop, that could be plugged into the Ethernet connection on a classroom, as well as a TV/VCR, or some other set of tools.
7. The standing classroom committee should review and consider the implications of the University maintaining at least one experimental classroom that contains the most advanced technologies and provides faculty with opportunities to experiment with use of that technology to improve learning environments or to pursue more ambitious learning objectives.
8. The standing classroom committee should review and comment on all ~~classroom~~ designs for modifications to existing classrooms or for construction of any new classrooms.
9. Training should be provided to faculty in the use of technology present in classrooms, as well as in the use of technology to improve learning environments. The Searle Center for Teaching Excellence should play a strong role in providing guidance to faculty on the latter topic.

Section II. Quality of classrooms

Subcommittee members: Stephen Fisher (chair), Irving Rein, Joseph Schofer, Lonnie Williams

Overview

Classroom quality is a multi-faceted characteristic and the survey of faculty was constructed to elicit responses to those many aspects, from general room features to low-tech equipment to high-tech features required in the best smart classrooms. Additionally, Facilities Management conducted a walk-through survey of the physical condition of each classroom on campus. The results of both surveys reveal that the quality of classrooms across the campus is highly varied. There are substantial problems in a majority of the classroom spaces running the gamut from irritating inconveniences to major infrastructure issues. For example, the simple lack of overhead projectors creates problems in a number of buildings while in other buildings there is poor control of heating and ventilation. Nearly all classrooms are missing some small features that could

create a better teaching and learning environment; fixing these multiple small issues in many classrooms may be as high a priority as addressing some major issues in a smaller number of classrooms. It is clear that the \$500,000 recurring allocation for classroom improvements is the minimum investment needed. Smart classrooms are in high demand and the quality of the equipment in the older smart classrooms is not acceptable.

Recommendations

1. Develop a comprehensive plan to upgrade the quality of centrally scheduled classrooms.
 - Monitor the quality of all technology (low tech and high tech) in the classrooms and provide repairs and improvements on a timely basis.
 - In collaboration with IT, review the need to upgrade existing smart classrooms and the need for additional new smart classrooms. Develop priorities for smart classroom additions/upgrades and make funding recommendations to the Provost.
2. Review the options available to reach the goal of having one phone number to call for any classroom problem and make recommendations for implementation. In the interim, the current Facilities Management's phone number and e-mail address to which faculty and staff can report the need for minor repairs (e.g., replacing burned out lights) should be posted on the web sites of both the Office of the Registrar and Facilities Management.

Standards should be developed for (1) response times to various categories of classroom problems and (2) feedback mechanisms and times to respond to the people reporting problems. Feedback should identify that (a) the problem has been fixed or (b) a projected time by which the problem will be fixed or (c) an explanation of why the problem cannot be fixed in the near future.

3. Facilities Management should review:
 - supervision and training of the custodial staff to be sure that the "Standards" for classroom care and maintenance are consistently met and
 - calls and e-mails (work requests) to Facilities Management this year (since September '99) on classroom problems to determine if any patterns (rooms or problems) appear; in addition, these data should be compared to the data to be obtained from our survey.
4. The Office of the Registrar and Facilities Management should continue their scheduled quarterly sweep of all classrooms to determine the need for (relatively minor) repairs and have that work completed in a timely fashion.
5. Information Technology and Facilities Management should conduct an annual evaluation of all classrooms to determine the need for larger scale repairs, equipment replacement and possible renovation and then determine priorities and

a timetable for completing this work in consultation with the Classroom Committee.

Section III. Utilization

Subcommittee members: Carole Cahill, Paul Loach, Michael Maysilles, Paul Weller (chair)

Overview

The Evanston Campus has 115 registrar-scheduled classrooms totaling 92,000 nsf and 108 classrooms totaling 75,000 nsf that are controlled by individual departments. It should be recognized that many classrooms exist within schools and departments for which little information on usage is available. While an accounting of these 108 classrooms would be administratively useful, it might be difficult to obtain accurate data since, in many cases, records are not kept and usage is spontaneous and variable. Additionally, new classrooms and lecture halls will be constructed over the next few years as follows: one lecture hall in the Block Museum; three classrooms in Anderson addition; two classrooms in the McCormick Tribune Foundation Building; and one lecture hall in the Pancoe-ENH Life Sciences Pavilion.

Classroom utilization data was gathered for Winter quarter 2000; from analyses of the utilization of the 115 classrooms scheduled through the Office of the Registrar, several general conclusions can be made. The overall utilization between the hours of 9 A.M. and 5 P.M. is 65% with the highest usage on Wednesday (71%) and the lowest on Friday (58%). Significant variation exists with regard to the utilization of classrooms according to location. Tech and Kresge have the highest utilization (78% and 72%, respectively) and they also have the greatest number of classrooms (e.g., 42% of all classroom space is in Tech). Classrooms are heavily scheduled from 10am to 3pm (with a drop in utilization from noon to 1pm); classroom scheduling drops off sharply as start times become earlier than 10 am and later than 2pm. Fewer than half the courses taught are on a standard schedule (fifty minute blocks on M-W-F and eighty minute blocks on T-T); this complicates the scheduling process and leads to inefficiencies.

The question of what the optimal percentage of classroom utilization is, while maintaining a balance of flexibility and enablement of learning, may not easy be to decide. One might initially assume that our classrooms having the highest utilization (for example, Tech at 78%) represent a goal toward which the scheduling of other classrooms might move, providing there are not significant problems reported on overcrowding and limited flexibility (e.g., in the faculty survey of May 2000, a number of complaints were registered regarding the close spacing of seats and inability to get up and down aisles). Improving classroom utilization could meet the following potential needs of the university: (1) accommodating additional new courses without adding new classrooms; (2) alleviating overcrowding in classrooms where it may exist; and (3) converting

classroom space to alternative uses to meet current or emerging needs. Improving classroom utilization should not be undertaken just for the sake of improving utilization; it should be undertaken to meet clearly identified needs.

The Committee made an effort to inquire about classroom utilization at other private universities that have a record of outstanding teaching and research. While this kind of data is not easy to acquire, some useful information was obtained from Stanford. In a comparable study of space utilization performed two years ago, Stanford's utilization profile was found to be quite similar to ours. The Committee also noted that the Stanford classroom study set the utilization standard at a minimum of 30 hours out of a 45-hour week. Standards for classroom and seat utilization have been established and enforced by many state boards of higher education; many private institutions, like Stanford, utilize the standards that have been developed at the public institutions. In general, the higher education room utilization standard has been set at a minimum of 30 scheduled hours per week. Most universities surveyed had a standard scheduling period of at least 40 hours per week (typically 9am to 5pm) and had a standard of a minimum of 30 hours of scheduled classes per week in each room (75% room utilization based on a 40 hour week). Arizona and Texas have established standard scheduling periods of 50 hours per week and the Texas state standard is 38 hours of scheduled classes per week in each room. Northwestern's average room utilization is 26 hours/week (65% utilization based on a 40 hour week). Actual utilization in other universities is varied; sometimes it meets the standard, sometime it exceeds the standard and sometimes it does not meet the standard. In general, most universities seek to improve their classroom utilization as a means to achieving a specific goal (e.g., converting classrooms to needed faculty offices).

Another aspect of effective classroom utilization is seat utilization (the % of available seats occupied during a scheduled class). As described in the MGT study and confirmed by our survey, the higher education seat utilization standard has been set at 65-75%. NU's seat utilization varies by classroom size, ranging from 32% in lecture halls to 63% in classrooms seating less than 21 people. The initial conclusion is that seat utilization, on average, is below the standard described above; additional analysis needs to be undertaken to determine the underlying causes.

Recommendations

1. Review whether there is a need to accommodate an additional number of new courses in the foreseeable future. Current analysis of past course schedules indicates that the number of courses offered has been relatively stable over time (which could be expected given our stable student enrollment). The standing committee should determine whether the number of courses is likely to increase significantly in the future and, if so, recommend appropriate actions and policies.
2. Continuously monitor and evaluate the impact on classroom needs of changes in teaching methodology and technology. Increased flexibility of space may require re-arrangement of seats or some renovation of existing classrooms which could result in a decrease in the number of seats. The fact that seat utilization is low in

many of our classrooms offers us the opportunity to determine if we could remodel these rooms for more flexible usage and still expect to readily accommodate the same class schedule. Simply deleting seats in classrooms with loose seating or renovation of classrooms to increase flexibility will also respond to faculty complaints about the closeness of seats and crowded aisles.

3. Review all information available to determine where classroom overcrowding may be a problem and recommend possible solutions.
3. The Provost's Office should review programmatic space needs of Schools/Departments and determine where conversion of classroom space would meet high priority needs.
4. Review the implications of new classroom spaces to be developed and delineate opportunities for these new spaces to be used in the mix of classrooms that could be scheduled or converted.
5. A list of regularly scheduled classes held in departmentally scheduled space should be provided by each department to the Office of the Registrar prior to the start of each quarter. The Office of the Registrar should ensure that this information is entered in SES, in an effort to provide students with a more complete class schedule.
6. Conduct further review of peer institutions' classroom utilization, standards, scheduling policies, etc. Determine the appropriate mix of classroom sizes based on current and projected demand.
7. Recommend upgrades/modifications to University information systems (such as Schedule 25 and SES) that would permit analytical studies to be accomplished more efficiently (current analyses had to be done by hand).

Section IV. Chicago Classrooms

Subcommittee members: Peter Ferro, Edward Kerros, Amish Thakker, John Thomas (chair)

Overview

Unlike Evanston campus practice, classrooms on the Chicago campus are maintained and scheduled by the schools; there is no central scheduling office. The lone exception to this practice is Thorne Auditorium in the Law School, which is scheduled by Facilities Management. A school may arrange to use a classroom held by another school, either for a fee or at no charge.

This subcommittee included representatives from the four schools: Medical School (Thomas), Law School (Kerros), Kellogg (Thakker), and School of Continuing Studies (Ferro). Representatives from the schools had not met before to discuss classroom issues of mutual interest, so found this a good opportunity to compare notes on their respective schools' policies on classroom usage and scheduling, and to open avenues for collaboration in resolving some common problems.

The first task the subcommittee undertook was to collect data on what classroom space exists within each school, in order to 1) identify the size and characteristics of available classroom space, and 2) identify opportunities for cross-school scheduling of space. The latter issue is complicated by the fact that one of the schools, Kellogg, routinely charges fees for both room use and custodial services. Although both the Law School and Medical School use Kellogg classroom space in Wieboldt under these terms, they would like to see the fee system discussed further, and, if possible, abolished.

The scheduling patterns of the four schools complement each other, with School of Continuing Studies (SCS) and Kellogg scheduling classes primarily in the evenings (6 PM on), and the Medical School and Law School scheduling classes primarily during the day (although the latter two schools offer evening classes, as well). Given the rooms available and these scheduling patterns, it was evident that more opportunities for cross-school use of space existed than schools had thought previously.

The twenty-eight classrooms in Wieboldt Hall, held by School of Continuing Studies, in use almost solely in the evenings, were identified as a resource that could be developed further. Although SCS has recently replaced the tables and chairs in many of the rooms, most need some refurbishing, and improvement of the lighting and/or installation of air conditioning. The Law School and Medical School, in particular, may want to consider partnering with SCS to jointly fund improvement of some of these classrooms, and schedule them in collaboration, in future.

The Medical School is facing a short-term shortage of classroom space, but will gain two lecture halls when the Dental School vacates Olson in 2001, and two auditoria and three classrooms when the Lurie Research Center is completed in 2003.

Recommendations

1. The schools should explore further sharing of classroom space to help meet teaching needs. Each school would retain priority for its space, and, once space has been scheduled, it could not be preempted by the "owner" school, unless by mutual agreement.
2. Fees for classroom rental should be reviewed, toward the goal of developing a coordinated policy.
3. Staff who support classrooms in each school should meet on a regular basis (monthly).

4. The schools that are interested in using SCS classroom space to meet teaching needs should discuss partnering with each other and with central administration to share the cost of improving the classrooms.
5. The schools should investigate joint purchase/development and use of scheduling software, to permit scheduling of classroom space across schools.

Section V. Future Directions

The recommendations contained in this report form the beginning of an ambitious plan for the improvement of classrooms as a learning environment at Northwestern. The recommendations also call for additional analyses to be undertaken (especially the analysis of the faculty survey) in order to provide meaningful data and recommended courses of action to decision-makers. In order to implement the recommendations that are approved and to continue further analysis of classroom issues, we recommend that a standing classroom committee be established. The standing committee's objectives would be:

- Evaluate the condition of classrooms and recommend renovations to be accomplished (annually).
- Review and recommend classroom utilization policies and methodologies.
- Recommend a model for developing classrooms with various levels of technology.
- Review and comment on all classroom designs for modifications to existing classrooms or for construction of any new classrooms.
- Recommend priorities for upgrading existing technology and installing new technology in classrooms.
- Provide an analysis and summary of the faculty survey results to the Provost, the deans, and the faculty.
- Undertake further analyses regarding teaching methodologies, technology, quality, and utilization (both Evanston and Chicago).

The standing committee should report to the Provost and have representatives from the following areas: the faculty, students, the Searle Center for Teaching Excellence, the Provost's Office, the Office of the Registrar, Academic Technologies and Facilities Management. A broad-based committee is necessary in order to consider and analyze the

multiplicity of issues associated with classroom usage. Faculty representatives should be highly effective teachers and should represent diverse pedagogical styles.