University Classroom Committee Report
2014 – 2015

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October 2015
University Classroom Committee Report

2014 – 2015

Executive Summary

- The Classroom Committee approved a total of $497,500 in physical improvements to University general purpose classrooms during 2014-2015. Major improvements funded include:
  - Replacement of movable seating in 16 Tech general purpose classrooms, a total of almost 600 seats.
  - Installation of additional power outlets in three Tech classrooms, to expand coverage to 100% of tables, from 50% (in response to faculty need).

- The Classroom Committee and the Educational Technology Advisory Committee partnered to form a joint workgroup, to explore development of active learning classrooms, focusing (initially) on Evanston north campus.
  - The workgroup identified two Tech classrooms, Tech F281 and Tech M349, as candidates for reconfiguration as active learning classrooms.
  - The Classroom Committee funded the reconfiguration, and these two classrooms are in first use as active classrooms during fall quarter 2015.
  - The workgroup will continue its work during FY2016.

- The new Ryan Center for the Musical Arts (housing the Bienen School of Music and the School of Communication) has added 10 new classrooms to the University’s pool of general purpose classrooms. These rooms are scheduled by the Office of the Registrar, with priority given to Music classes.

- The Classroom Committee has undertaken a review of all general purpose classrooms across the University, inspecting their condition and noting needed repairs and updates. This review, begun in summer 2015, will continue into fall 2015, as classroom schedules permit.

- The Classroom Committee continues the work of identifying additional classrooms that can be reconfigured to support active learning. The Committee understands that reconfiguration typically results in loss of one-third to one-half of existing seats and it must compensate for this impact.
Goals for FY2016

- Assess teaching space needs over the next several years, factoring in the impact of new construction and renovation projects and the need for careful coordination of scheduling:
  - Perform further schedule modeling for 2017 to anticipate planned renovations of Fisk and Deering;
  - Develop scenarios for reuse of classrooms in Jacobs Center, particularly in conjunction with renovation of Fisk;
  - Develop scenarios for reducing seat counts to allow classrooms to function more flexibly, and to respond to seat utilization rates currently in the range of 50% in classrooms with 21 to 120+ seats;
  - Continue to evaluate outcomes during the second year of Kresge’s renovation, including overall scheduling, performance, and utilization of swing-space and leased classrooms in relation to the Registrar’s existing inventory;
  - Assess potential impact of any additional classroom conversions for active learning;
  - Review utilization rates in 10 new classrooms in the Ryan Center.

- Evaluate use of the two newly created active learning classrooms and their impact on teaching and learning (working with the Searle Center and Faculty Support Services).

- Continue to work with the joint Classroom Committee/ETAC workgroup to identify spaces that can be (re-)configured to support active learning.

- Implement guidelines for furnishing University general purpose classrooms as opportunities to construct and renovate classroom spaces arise. (This builds on FY2015 work of the Classroom Committee in developing guidelines, shown in Appendix D.)

- Continue to monitor initiatives arising from Northwestern University’s strategic plan, We Will, especially ones that relate to teaching and learning in Northwestern classrooms, and support these initiatives through the work of the Classroom Committee.
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Section I: Improvements Made to Registrar’s General Purpose Classrooms during FY2015

A. Improvements Funded by the Classroom Committee

The Classroom Committee receives an annual budget allocation of $500,000 to support improvement to the physical condition of the University’s general purpose classrooms, which are classrooms scheduled by the Office of the Registrar. The Committee allocated a total of $497,500 from FY2015 funding. (Any funding remaining is carried forward to the next fiscal year, for use in multi-year and higher-cost improvement projects that would exceed the budgeted amount available in any one fiscal year.)

1. Provided (590) Steelcase Node chairs for Tech LG52, LG62, LG68, LG72, LG76, MG28, L150, L158, L160, L168, L170, A110, M120, M128, M166, M177. These chairs feature large writing surface, ergonomic chair, cupholder, smart tablet holder and have storage underneath. ($235,000 – year one of four-year project)

2. Tech M152, M164, LR4: added dual power outlets to 50% of seats, so students in any seat have access to a nearby power outlet. This was done in response to requests from faculty who teach labs in these rooms, with kits for each student to construct device(s). ($32,000)

3. Renovated Tech F281 and M349 to become active learning classrooms: provided Steelcase Verb tables on casters with personal markerboards, and Node chairs with storage underneath. ($64,000) Recommendation of joint CC/ETAC working group.

4. Upgraded AV services in the following classrooms: Frances Searle 1-441, 2-378; Tech LG52, LG62, LG66, LG68, LG72, LG76, L168, L361, M345, M349; and University Hall 102, 121, 122. As part of these upgrades, provided document cameras in classrooms without them; replaced manual projection screens with motorized screens; and relocated projector power and low-voltage pathways as required. ($100,000)

5. Other physical improvements during FY2015 included:

- **Main Library seminar rooms (11):** provided corner guards to protect walls; these rooms are receiving intensive use while Kresge classrooms are off-line ($6,500)

- **Abbott Laboratories Pancoe Auditorium:** addressed a longstanding concern from users about the complexity of the lighting system through repair of dimming system, re-lamping of room with LED lamps, and providing a simplified five-button switch in front of Auditorium ($20,000)

- **Addition of document cameras** to Frances Searle, Fisk, Tech ($15,000)

6. In addition, the Classroom Committee committed to provide partial funding to install wireless presentation technology in all (33) Tech classrooms. The system allows instructors and students to connect to the projector and display work on tablets, laptops or other devices to the class from wherever they are in the classroom, effectively “untethering” the instructor from the podium. The Classroom Committee and NUIT share the estimated $50,000 cost of this installation ($25,000 charge to Classroom Committee budget). Recommendation of joint CC/ETAC workgroup.
B. Technology Improvements to General Purpose Classrooms

Northwestern Information Technology staff worked on multiple fronts during FY2015 regarding AV technology upgrades and classroom design planning. These improvements included:

1. Northwestern Information Technology worked with the Classroom Committee to implement scheduled AV upgrades to 16 Registrar classrooms during FY2015, using recurring funding for keeping technology services in existing Registrar classrooms up to date. AV investments were made in the following Registrar classrooms:
   - Tech LG52, LG62, LG66, LG68, LG72, LG76, L168, M349, M345, and L361: complete AV technology upgrade, reuse and refinish the existing podiums.
   - Francis Searle 1-441, 2-378, Fisk B17, and Lunt 107: complete AV technology upgrade, refinish the existing podiums.
   - Tech Lecture Rooms 4 and 5: complete AV technology upgrades, including new podiums.

2. The Kresge Centennial Hall renovation is well underway and final designs for new Kresge classrooms are nearly complete. A committee of WCAS faculty began meeting to design a model for the new Kresge classrooms. The committee’s current design incorporates a second display monitor, in addition to the projector and screen, so that two different AV sources could be displayed simultaneously in the new Kresge classrooms. (For example, the classroom projector could display an instructor’s laptop while the second display monitor could show a document camera image.) A demonstration classroom based on this model is being built while Kresge is still under construction so that WCAS faculty can evaluate the classroom design and provide feedback to further refine it before a final model is implemented in the new Kresge classrooms. The demonstration classroom is expected to open this fall and feedback will be gathered during winter quarter 2016.

Other technology being considered for implementation in Kresge classrooms includes the new standard wireless presentation technology (deployed this past summer in 33 Tech classrooms) and infrastructure to support (future) camera, microphone, and web-conferencing capabilities.

3. In addition to aiding the planning process for Kresge, staff have been involved in planning AV classroom spaces in the new Kellogg School of Management building. Planning is also underway for the School of Education and Social Policy’s two new active learning classrooms on the 16th floor of Abbott Hall (Chicago campus).

4. Northwestern Information Technology achieved basic WiFi coverage for all Registrar-scheduled classrooms in FY2014. Work continued during FY2015 in augmenting classroom and other high-density areas with additional WiFi capacity to complete the original three-year capital project that brought coverage to virtually all indoor spaces on the Evanston and Chicago campuses as well as some outdoor areas. In FY2016, Northwestern Information Technology will continue to add extra WiFi capacity to classroom and high-density areas as well as begin to replace access points that are nearing their end of
life. All new access points that have been installed since the end of FY2014 use newer WiFi protocols that offer greater performance.

As mentioned in Section A above, the joint workgroup from the Classroom Committee and ETAC recommended a wireless presentation technology solution for all 33 Tech classrooms scheduled by the Registrar.

Section II: Development of Active Learning Classrooms in the University

In fall 2014, the NU Classroom Committee and the Educational Technology Advisory Committee (ETAC) recommended that a joint workgroup be formed to investigate and report on opportunities for improved classroom designs for the University – particularly in response to the increasing interest by faculty in models of active learning, flipped classrooms and other, blended curriculum approaches to learning. The goal of this group was to identify several classrooms on north campus that could be improved in ways that support active learning (physical reconfiguration, addition of technology to share work, etc.).

The joint workgroup, led by Classroom Committee chair Jean Shedd and ETAC co-chair Bob Taylor, included members from both committees, as well as faculty with strong demonstrated interest in teaching in creative ways, and several students.

Joint Workgroup’s Focus and Priorities

The workgroup considered various classrooms in Tech for active learning improvements:

- The large tiered classrooms do not lend themselves easily to active learning. In addition to the physical complexities (and cost) of reconfiguring a tiered classroom, the work group recognized that changes to these large rooms would reduce significantly the number of seats available, causing scheduling problems and classroom shortages.

- The group identified two smaller classrooms, F281 and M349, reconfiguration of which was funded by the Classroom Committee. This conversion resulted in a reduction of seats in both rooms. Tech M349 now seats 24 (formerly 30 seats); F281 now seats 28 (formerly 40 seats). Based on preliminary analysis, no scheduling complications are anticipated as a result of these changes.

- The performance of Tech F281 and M349 will be monitored in coming academic quarters to identify problems, trends, and guidance for potential redevelopment of other Registrar classrooms into collaborative learning environments.

Supporting Active Learning

The Faculty Support Services (FSS) group of Academic and Research Technologies, headed by Vicky Getis, is working with faculty scheduled in these classrooms during 2015-2016 to support incorporation of active learning techniques in teaching, and to help create a community of faculty that can share best practices. Faculty members will be asked to participate in evaluation of the effectiveness of teaching in these rooms.

In the course of researching active learning classrooms at other institutions, several members (Vicky
Getis, Susie Calkins, Trevor Musolf, Jean Shedd) attended the third Biennial Forum on Active Learning Classrooms, at the University of Minnesota, August 5–7, 2015. This conference offered an opportunity to view and use the active learning classrooms in the purpose-built building on the Minneapolis campus, as well as to learn from colleagues at other institutions how they have incorporated active learning on their campuses.

The CC/ETAC working group will continue its discussions during 2015–2016.

Section III: Classroom Utilization Subcommittee

Summary Report for Academic Year 2014-15

Utilization Subcommittee’s Focus & Priorities

During the 2014-15 Academic Year, utilization studies included the following topics:

- Outcomes during the first year of Kresge’s renovation, including overall scheduling, performance of swing-space classrooms, leased classrooms at Garrett Theological Seminary, and the addition of a classroom in Norris starting Winter Quarter;
- Potential impact of classroom conversions for active learning;
- Initial review of classroom utilization in 10 new classrooms in the Music and Communication Building;
- Schedule modeling for 2017 in anticipation of proposed renovations of Fisk and Deering, and potential additions to the Registrar’s classroom pool after Kellogg vacates Jacobs Center.

Classroom Scheduling during Kresge’s Renovation

For Kresge’s renovation a tremendous amount of scheduling analysis and modeling preceded removal of 19 Registrar-controlled and 13 Department-controlled classrooms. At the beginning of Fall Quarter 2014, 126 General Purpose classrooms were available, which included 26 “swing-space” rooms with a few leased or borrowed or provided only part-time. With some notable complications, this supply of rooms absorbed the regular demand for space along with hours normally scheduled in Kresge’s Department-controlled seminar rooms.

Fall Quarter was the most difficult to schedule, and utilization was very high in some South Campus locations, for example: 88% in Harris Hall, 79% in University Hall, 75% in Parkes, and even 71% in the University Library, which has historically had low rates in the range of 30-35%. The few “donations” of room hours that Departments made before the Fall scheduling process began did not provide much help, but the Registrar did receive welcome assistance from Departments in a number of instances as the schedule was finalized. As reported by Registrar staff, at one point there were no classrooms available during the Thursday afternoon 3 PM timeslot. Winter and Spring Quarters were helped by the addition of a new classroom built out in Norris Center in late December – starting with 35% utilization in the Winter Quarter and ending with 48% in the Spring. In contrast to classroom usage on South Campus and compared to 2013-14, for each Quarter and as an average North Campus utilizations dropped: Tech (72% to 62%), Pancoe (58% to 35%), and Elder (19% to 11%).
The success of swing-space rooms was variable. Locy Hall’s 11 new rooms performed well with 65% utilization. Made available by opening the Visitors Center, a larger room on 1801 Hinman’s 2nd floor was also in this range at 63%. Two rooms built out at 1819 Hinman, however, proved too small to be of much use (19%), and two leased rooms at Garrett Theological Seminary were difficult to schedule due the limited hours during which they were available (8 am to 1 pm; 9%).

Over the course of each day, utilization was generally higher in the morning and the afternoon, with the usual slump across the noon hour. One exception was Friday afternoon when utilization dropped. Overall, classroom utilization was 5% lower compared to 2013-14: a drop from 65% to 60%. Much of this results from swing-space locations with very low utilizations, for example, classrooms in 1819 Hinman, Garrett, Hogan, and the few made available in Crowe (Kresge), plus the decline in use of North Campus classroom.

Music & Communication Building

Spring Quarter 10 new classrooms were opened for activities, though Bienen School of Music had not yet occupied the building. These rooms were utilized at 43% for credit coursework. Additional activities (sectionals, ad hoc lessons, etc.) raised the utilization rate to 53%. Minimally 152 hours of 9 am to 5 pm usage per week remained in the Music Administration Building during Spring Quarter, including regular coursework and other instructional activities (Music Academy, voice, piano). These activities and hours will be incorporated into the new building’s class schedule Fall 2015. Continuing analysis will inform the Classroom Committee about the sufficiency of the new spaces to meet Music’s classroom needs, as well as any opportunities for other Registrar-scheduled use.

Anticipated Classroom Inventory in Fall 2017

Completion of Kresge Hall’s renovation will return 16 General Purpose classrooms to the Registrar’s pool – three fewer than were previously in the building.

Fisk Hall’s renovation anticipated Fall 2017 will remove three classrooms, including an auditorium with a 329-seat capacity. Locy Hall’s demolition as part of Fisk’s renovation will remove 11 swing-space classrooms created for Kresge’s renovation. Also removed from Fisk will be eight Department-controlled classrooms which, given Medill’s complex schedule of coursework, will not be easily accommodated in the Registrar’s classrooms.

Deering Library’s renovation will require repurposing of up to three General Purpose classrooms in addition to a space that was offered on loan. In previous years, room utilization in Main Library has been consistently low. This year with Kresge’s renovation underway it has ranged from 71% in the Fall to 56% in the Spring. Any schedule modeling for 2017 assumes that the Library’s classrooms will continue with heavier usage. With fewer Registrar classrooms in Kresge and the increase in the number of language courses offered, the loss of three Library rooms has more significance than might otherwise have been the case.
As the new Kellogg Building comes online and inventory becomes available in the Jacobs Center, up to 14 potential classrooms on the lower two floors may be available. There are multiple competing priorities for reallocation, including opportunities for absorption into the Registrar-controlled classroom pool. Various scenarios are under consideration as plans are formulated to address all needs. One scenario is that some portion of these classrooms would be necessary to temporarily meet Medill’s coursework needs during Fisk’s renovation; another would have some, if not all, reserved for eventual swing-space use while Norris undergoes renovation and construction.
A summary of inventory changes and potential options for meeting scheduling needs in 2017 is as follows:

**General Purpose Classroom Pool: 127 Rooms**

(Note: 119 General Purpose classrooms existed prior to Kresge’s renovation; Music’s classrooms were excluded from the pool of classrooms scheduled by the Registrar; Kresge also had 13 departmentally scheduled classrooms)

- **+101** General Purpose rooms from previous allocations
- **+16** new Kresge classrooms (3 fewer than pre-renovation Kresge)
  (Note: Along with these 16 General Purpose classrooms, 17 WCAS seminar/classrooms available for scheduling)
- **+10** new Music & Communication Building General Purpose classrooms primarily to be used for Bienen School of Music’s classes and events

**Classrooms removed for Anticipated Renovations**

- **-3** Library classrooms offline for Library use during Deering’s renovation
- **-3** Fisk Hall rooms removed for Fisk Hall’s renovation (including one large room: 329 seats)
  (Also note: -8 Fisk Hall classrooms departmentally scheduled through Medill)

**Potential Swing-Space Options**

- **+7** Kresge renovation swing-space rooms potentially still available
  (Note: 1 at 1801 Hinman; 1 at 555 Clark; 3 in Tech; 2 leased at Garrett Seminary)
- **+0-14** swing-space rooms under consideration in Jacobs
- **+1** large space @ ~250 seats in Lutkin Hall (shared use with Student Affairs under discussion)

**Kresge Swing-Space Classrooms removed from the Inventory**

- **-11** swing-space rooms removed with Locy’s demolition
- **-1** loaned classroom in Main Library (LIB4646) returned to the Library for Deering’s renovation
- **-1** loaned Norris classroom returned to Student Affairs
- **-2** rooms in 1819 Hinman reallocated
- **-1** room in Crowe Hall reallocated
## Appendices

### APPENDIX A:

#### CLASSROOM RENOVATION ACCOUNTS:

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Budget</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSL 2-378, Fisk B17, Tech L168, M349</td>
<td>Provide new document cameras (approximately 2k each); in 4 or 5 rooms. A&amp;RT will fund millwork and install as part of their room refresh. This replaces idea to reuse Kresge doc cameras, which will remain for use as spares. (sched. Allison 1021 in this group)</td>
<td>$15,000</td>
<td>$15,000</td>
</tr>
<tr>
<td>FSL 1-441, 237B, Tech LG52, LG62, LG66, LG68, LG72, L168, L361, M345, M349, Lunt 107, Fisk B17, Parkes 223 &amp; 224, University Hall 102, 121, 122</td>
<td>FM to work to support A&amp;RT technology upgrades in 18 classrooms. relocate projector power &amp; low voltage pathway, speakers, install new motorized screens in all rooms except Lunt 107. Reuse 12’ motorized screen from L211 in L361. Motorized screens recommended by A&amp;RT &amp; FM because breakage and damage are minimal compared with manual screens. Screen project costs are for aid for electrical; 2k for carpeting bid; 20k screen costs. additional funding of 20k over 80k initial estimate is needed</td>
<td>$100,000</td>
<td>$115,000</td>
</tr>
<tr>
<td>Library seminar all rooms corner guards. 11 rooms</td>
<td>completed</td>
<td>$8,500</td>
<td>$12,150</td>
</tr>
<tr>
<td>Tech G level (240 seats); Tech 1st flr (350 seats).</td>
<td>approved May, 2015</td>
<td>$235,000</td>
<td>$356,500</td>
</tr>
<tr>
<td>Pancoe Auditorium</td>
<td>completed</td>
<td>$20,000</td>
<td>$376,500</td>
</tr>
<tr>
<td>Tech M152, M164, LR4</td>
<td>May, 2015: Tech only</td>
<td>$32,000</td>
<td>$408,500</td>
</tr>
<tr>
<td>Tech MF281 &amp; M349</td>
<td>approved May, 2015</td>
<td>$64,000</td>
<td>$472,500</td>
</tr>
<tr>
<td>all 33 Tech classrooms</td>
<td>May, 2015: approved for all Tech rooms. A&amp;RT to let CC know cost split.</td>
<td>$25,000</td>
<td>$497,500</td>
</tr>
</tbody>
</table>

## FUTURE PROJECTS FOR DISCUSSION:

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Budget</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harris 107</td>
<td>Harris 107: add outlets to 3 more rows of seats = 72 seats, which brings means that 120 of 225 seats or more than 50% have outlets: 52k &amp; needs 3 weeks. Each additional row costs about 17k &amp; has 20 to 24 seats. 52k=3+ more rows of outlets.</td>
<td>$52,000</td>
<td>$52,000</td>
</tr>
<tr>
<td>Tech L361 or M345</td>
<td>ETAC proposal: discussed at May meeting: keep on list. add (28) 4x4’ markerboards along 3 walls</td>
<td>$15,000</td>
<td>$67,000</td>
</tr>
<tr>
<td>classroom rounds</td>
<td>continued discussion</td>
<td>tbd</td>
<td>tbd</td>
</tr>
<tr>
<td>Fisk 114 (30 seats); Lunt 90 seats, Frances Searle (205)</td>
<td>FY year 2 of 4-tablet armchairs</td>
<td>$120,000</td>
<td>$187,000</td>
</tr>
<tr>
<td>Tech L122,3,4,5, M152, M164, L341, M435 - 2 year project</td>
<td>Year 1 / 5 lighting projects</td>
<td>$150,000</td>
<td>$337,000</td>
</tr>
<tr>
<td>University Hall (236 seats), Parkes (182 seats)</td>
<td>FY year 3 of 4-tablet armchairs</td>
<td>$150,000</td>
<td>$487,000</td>
</tr>
<tr>
<td>Tech L122,3,4,5, M152, M164, L341, M435 - 2 year project</td>
<td>Year 2 / 5 lighting projects</td>
<td>$150,000</td>
<td>$637,000</td>
</tr>
<tr>
<td>Tech L122,3,4,5, M152, M164, L341, M435 - 2 year project</td>
<td>FY year 4 of 4-tablet armchairs</td>
<td>$150,000</td>
<td>$1,344,500</td>
</tr>
<tr>
<td>Lunt &amp; Annenberg all rooms</td>
<td>Year 3/5 lighting proj.</td>
<td>$200,000</td>
<td>$897,000</td>
</tr>
<tr>
<td>Frances Searle</td>
<td>Year 5/5 lighting proj.</td>
<td>$150,000</td>
<td>$1,197,000</td>
</tr>
<tr>
<td>University Hall, FSL, Pancoe, Tech Lev Aud, Lunt, Fisk classrooms</td>
<td>millennium - electronic access equipment</td>
<td>HOLD: costs $3500 to $5500 per door in 2014.</td>
<td>tbd</td>
</tr>
</tbody>
</table>
Appendix B. Educational Technology Advisory Committee & Classroom Committee Collaboration

Appendix B1. Joint CC-ETAC Workgroup members  
(Classroom Committee members’ names appear in bold)

Jean Shedd, Co-Chair; Chair of Classroom Committee  
Associate Provost, Office of the Provost

Bob Taylor, Co-Chair; Co-Chair of ETAC  
Senior Director, NUI Academic & Research Technologies

Jason Arnold  
Undergraduate Student, McCormick

Steven Bennett  
Undergraduate Student, WCAS

Susie Calkins  
Associate Director, Searle Center for Teaching Excellence

Jaci Casazza  
University Registrar

Vicky Getis  
Manager, Faculty Support Services, NUI Academic & Research Technologies

Jen Koh  
Project Manager, NUI Academic & Research Technologies

Trevor Musolf  
AV Systems Engineer, NUI Academic & Research Technologies

Michael Peshkin  
Professor, Mechanical Engineering, McCormick

Andy Rivers  
Distinguished Senior Lecturer, Physics & Astronomy, Weinberg

Joel Trammell  
Associate Dean of Facilities & Planning, Administration, Weinberg

Katrin Voelkner  
Senior Lecturer, German, Weinberg

Carrie West  
Assistant Director Facilities Planning, Facilities Management
Appendix B2: Summary of Joint CC-ETAC Workgroup Meetings

January 26, 2015
- Background on the Classroom Committee’s work
- Overview of technology in Northwestern classrooms
- Joint CC-ETAC Workgroup’s objectives
- Changes in teaching and learning at Northwestern
- Overview of learning spaces currently in use at Northwestern
- Pain points and possible solutions related to current learning spaces

February 16, 2015
- CC-ETAC Workgroup’s charter
- Educause Learning Institute conference report: Peer classroom designs
- School report: Emerging faculty interests for classroom designs at Medill
- School report: Emerging faculty interests for classroom designs at Kellogg

March 16, 2015
- Steelcase briefing for Northwestern on March 30
- SESP’s emerging design models for active learning classrooms
- Active and flipped classroom activities in Mechanical Engineering

March 30, 2015 (at Steelcase)
- What is Steelcase Education
- Research and methods, applications and case studies: What others have done
- Products: Current and future
- Active Learning Ecosystems (ALES): Review the intended outcomes

April 20, 2015
- Observations and group discussion of Physics and Astronomy classes in Tech
- How updated classroom design could improve group learning in Intro BioSci 215
- Debrief on Steelcase visit

May 7, 2015
- Preview photo tour of Northwestern Law’s blended learning classroom
- Searle Center perspective the Joint CC-ETAC Workgroup’s progress to date
- Discussion and feedback on the Joint CC-ETAC Workgroup’s initial recommendations for new classroom designs

May 19, 2015
- Overview of the classrooms the Joint CC-ETAC Workgroup will recommend for conversion during summer 2015
- Review plans and discuss options for recommended classrooms
Appendix B3: Joint Classroom Committee and Educational Technologies Workgroup Initial Recommendations, May 2015

Although the Joint CC-ETAC Workgroup’s work is not yet complete, the following initial recommendations were presented to and approved by the Classroom Committee in spring 2015.

I. Recommendations for experiments with flat floor Tech Classrooms (FY2015, FY2016)

Replace tablet arm chairs with seating that allows for:

- Presentations/interactions from multiple points in the room
- Group work
- Reconfigured groups
- Use of a computer
- Use of books, tablets, equipment
- Sightlines to all displays in use in the room

Experiment in some of the smallest classrooms with smaller, portable whiteboards that allow for:

- Work at table or group of chairs, or
- Hanging on a rack on the wall, or
- Cell phone (or other) capture/photography of work in progress

Experiment in some classrooms with whiteboard walls or glass surfaces, which some studies have shown is particularly useful for student group work and for brainstorming sessions. Pay attention to classroom support issues that may emerge for cleaning of these expanded writing surfaces, from one class to another.

Equip two classrooms in differing flexible configurations (fixed tables/movable tables, instructor display/multiple student displays, etc.) and compare their usage, reception, and contribution to learning.

- Include somewhere in the room diagrams of possible room configurations.
- Use color to make rooms engaging and inviting.

Explore the possible use of low-profile power systems (for laptops, mobiles, and project devices) like Steelcase’s “Thread,” or similar.

Expand implementation of wireless sharing technologies (e.g., WePresent or Air Media) to Tech classrooms so students and instructors can display from tablets, laptops, or other devices without being tethered to one spot. These wireless technologies have been proven during the last four years in SESP classrooms, for “untethering” instructors from the podium and for allowing the use of specialized educational applications that are designed specifically for tablets.
II. Recommendations for experiments with midsize, tiered-floor Tech Lecture Halls

Note: Mid-size Tech lecture halls in Tech (45-120 seats) with tiered floors include: LR4 (91 seats), LR5 (91 seats), L361 (102 seats), M345 (102 seats), L251 (55 seats), L221 (45 seats), and L211 (171 seats).

- Replace fixed tablet arm chairs with seating and workspace that allows for:
  - Presentations/interactions from multiple points in the room
  - Group work
  - Use of a computer
  - Use of books, tablets, and equipment
  - Instructor(s) movement around the classroom

- Replace single screens with multiple displays that allow for:
  - Different inputs
  - Different display sources

- Ensure that displays/screens:
  - Have good sightlines from all vantage points in the room
  - Are appropriately lit
  - Do not obscure the blackboards/whiteboards

- Ensure that the acoustics:
  - Allow students to hear and be heard, no matter where they are seated
  - Include lavaliere microphone and “audio out” from the resident computer

- Explore use of annotation software for tablets, laptops, and resident room computers so that instructors can annotate a presentation while presenting.

- Explore equipment and costs necessary to facilitate recording classes (e.g., Mediasite services, or similar).

- Explore installing displays to showcase student work.

- Explore whiteboard walls to facilitate group work.

- Expand implementation to Tech classrooms of wireless sharing technologies (e.g., WePresent or Air Media) so students and instructors can display from tablets, laptops, or other devices without being tethered to one spot.

III. One Button Studio

Construct self-service studios in which faculty can record a lecture in part or fully. Integrate the One-Button Studio model that was pioneered at Penn State University with the Peshkin Lightboard system, which was originally created at Northwestern.

We should start with one of these studios at Northwestern as soon as possible. If successful, there may be a need for multiple studios located in the future on the Evanston campuses (both north and south) and the Chicago campus.
IV. Expand Campus Discussions Regarding Classroom Experiments and Teaching

Offer training on using newly redesigned classrooms, but do not make usage contingent on the training.

Gather feedback from instructors and students who use the new classroom designs, and share assessments of the classroom experiences in these redesigned spaces with the campus community.

Start a “Grand Rounds” tradition for these classrooms so that faculty who are assigned to use them share their innovations, frustrations, and discoveries with their colleagues on a regular basis. This “Grand Rounds” series could be sponsored by both the Classroom Committee and by ETAC. This might also expand on Searle’s existing offerings, which include for example, workshops on creating lectures that engage students, engaging students through small group work and discussion, letting students lead the class, and problem and inquiry-based learning.

Carefully subject any proposed classroom technology that lies beyond the “standard” set to user experience testing to ensure that it is as intuitive as possible.
Appendix B4: Summer 2015 Classroom Updates in Tech

Mersive Solstice

In May, the Educational Technology Advisory Committee (ETAC) and the Classroom Committee recommended and approved a wireless presentation technology solution for all 33 Tech classrooms. This mobile teaching devices project was co-funded by Northwestern Information Technology and by the NU Classroom Committee.

The need to provide untethered presentation capabilities for faculty and student groups resulted in the research and testing of multiple wireless presentation solutions. Northwestern Information Technology selected the Mersive Solstice technology based on user interface, network reliability, and a superior feature set. The presentation device may be selected through the Crestron control system that displays the IP address of the Mersive Solstice device on the screen. After entering the IP address into a browser, the presenter is prompted to download and install an application that will allow the wireless presentation to be seen on the projector. The limit on connections displaying content is over 20 however the limited screen size in the room will determine the number of effective connections.

Northwestern Information Technology is preparing a proposal to further increase the Mersive Solstice presence in Registrar classrooms during summer 2016.

Mersive Solstice will untether Northwestern faculty from the teaching podium and allow them to display their content wirelessly on the projection screen from most mobile devices (iOS, Windows, and Android). It will allow for faculty like Andy Rivers in Astronomy to display exciting app content that is only available via iPad app during their lectures.

Mersive Solstice will also support students’ presentations and facilitate group collaboration. Because it can simultaneously display multiple sources on the projection screen, Mersive Solstice will enable peer project review and other pedagogical teaching methods.

Additional Classroom Updates

In addition to the Mersive Solstice upgrade, two of the classrooms in Tech, M349 and F281, were outfitted with wheeled tables and chairs to support multiple configurations of the classroom furniture. The furniture can easily be grouped into pods to allow for an active learning setup or moved into rows or a U-shape for lecture-style teaching.

The classroom walls were covered with chalkboards and whiteboards to facilitate group work. Additionally, each room contains a mobile cart with a collection of small whiteboards for students to use individually or in small groups.
Appendix B5: Active Learning Environments Faculty Group

In collaboration with the Searle Center for Advancing Learning & Teaching, Northwestern Information Technology, Academic & Research Technologies, Faculty Support Services (FSS) established the Active Learning Environments (ALE) Faculty Group to provide technical and pedagogical support for instructors who are being exposed to active learning techniques at the time when their classrooms become active learning environments.

Active learning environments (ALEs) are interactive, interdisciplinary spaces where information and technology can promote effective student learning. ALEs support peer learning, case-based learning, and group problem solving. These spaces are created to encourage faculty to experiment with student-centered pedagogies.

The first members of the ALE Faculty Group were recruited from the roster of instructors scheduled to teach in two new active learning classroom spaces—Tech F281 and M349—during the 2015 fall quarter. Participating faculty were asked to take part in a quarter-long set of activities that involved learning about active learning techniques, choosing one or more techniques to try in the classroom, classroom observation and coaching, assessing the success or failure of the active learning techniques, and sharing their experiences with colleagues in regular group meetings.

FSS will run the program for each quarter of the 2015-2016 academic year. If the ALE Faculty Group is successful both in fostering an atmosphere of experimentation and excitement, FSS will expand the program—perhaps along with an expansion in the number of active learning classrooms—for 2016-2017.
Appendix C: Overview of Registrar Classroom Utilization

ACADEMIC YEAR 2014-15

Below is the summary of information for the Fall, Winter and Spring Quarters, and compared with classroom utilization data from previous years:

**Daily Utilization for all Classrooms scheduled by Registrar:**

**Comparison of Fall, Winter and Spring Quarters 1999 to 2015**

Utilization based on rooms scheduled for Fall, Winter & Spring (2014-15): average of 60.3% 9 to 5 daily;

Comparison: utilization between 1999 to 2014 dropped from 65% ('99-00), down to 59% ('02-03), down to 57% ('03-04), down to 55.5% ('04-05), but subsequently increased to 57.4% ('05-06), up to 60.8% ('06-07), up to 63.1% ('07-08), up to 63.3% ('08-09), up to 63.2% ('09-10), decreased to 59.0% ('10-11), increased to 66.1%* ('11-12), increased to 66.3% ('12-13), decreased to 65% ('13-14), and decreased to 60.3%.

Compared to previous years based on rooms scheduled 9 to 5 daily ('99-00 vs. '02-03 vs. '03-04 vs. '04-05 vs. '05-06 vs. '07-08 vs. '08-09 vs. '09-10 vs. '10-11 vs. '11-12 vs. '12-13 vs. '13-14 vs. '14-15):

- **Fall Utilization:** dropped from 66% to 61% to 58.1% to 57.8%, increased to 59.3 to 63.2% to 64.1%, dropped to 63.3%, increased to 64.5%, decreased to 62.0%, increased to 69.7%*, decreased to 69.6%, decreased to 67.5%, and decreased to 61.2% in Fall ‘14.

- **Winter Utilization:** dropped from 65% to 60% to 52%, increased to 58%, decreased to 57.5%, increased to 61.9%, to 63.9%, to 66.8%, decreased to 66.6%, 60.2%, increased to 66.1%*, decreased to 65.9%, increased to 67.3%, and decreased to 62.6% in Winter ‘15.

- **Spring Utilization:** dropped from 65% to 56% to 54% to 51%, increased to 55.5% to 57.3% to 61.3%, decreased to 59.8%, to 58.3%, decreased to 54.8%, and increased to 62.4%*, increased to 63.3%, decreased to 60.3%, and decreased to 57.4% in Spring ‘15.

For 2014-15 classroom utilization was highest during the Fall and Winter Quarters. Relative to trends and previous years, utilization for the Fall Quarter is down 6.3% and utilization for the Winter Quarter is down 4.7%. Spring Quarter utilization is down 2.9%. Overall average utilization decreased 4.7% from '13-14.

Since Academic Year 2010-11, all quarters through Academic Year 2014-15 have shown uneven distribution throughout the day, with utilization pressure being higher during the 10 to noon and 1 to 3 time periods.

**Room Utilization by Building 9 to 5 daily†:**

In buildings with multiple classrooms scheduled by the Registrar, Harris Hall, University Hall, and Lunt are the three building with the highest overall utilization: Harris Hall at 84.1% (compared to 77.1% in '13-14), University Hall at 79.1% (compared to 75.4% in '13-14), and Lunt at 76.1% (compared to 68.6% in '13-14). Kresge, which consistently had been the building with the highest utilization is currently offline for renovation; only a few rooms in Crowe were available in ‘14-15. In buildings with only one classroom scheduled by the Registrar, utilization decreased: Coon Auditorium (Lev. Aud) to 61.4%, (from 62.4% in ‘13-14); Swift Hall Lecture Room 107 to 68.8% (from 71% in ‘13-14); and Panoce Auditorium to 35.3% (down from 57.5% in ’13-14).

*All room utilization comparisons with years prior to Fall 2010 are likely impacted by an apparent ~5% increase due to implementation to X25, and as reported in the Classroom Utilization Report from Academic Year 2011-12.

† For this section, only calculations from X25 were used.
Room Utilization Based on Size of Room Scheduled: Up to 20 seats; 21 to 80 seats; 80 to 120 seats:

- **'99-00**  '02-03  '03-04  '04-05  '05-06  '06-07  '07-08  '08-09  '09-10  '10-11  '11-12  '12-13  '13-14  '14-15
- **Up to 20 (39 Rms):**  52%  46%  43%  39%  45%  46%  48%  47%  49%  42%  52%  46%  53%  59%
- **21 to 80 (67 Rms):**  65%  62%  60%  61%  66%  67%  66%  67%  68%  67%  75%  72%  68%  61%
- **21 to 40 (47 Rms):**  70%  71%  66%  58%
- **41 to 60 (16 Rms):**  70%  75%  76%  69%
- **61 to 80 (4 Rms):**  76%  77%  71%  69%
- **81+ (18 Rms):**  62%  64%  61%  56%  64%  65%  63%  66%  70%  67%  70%  69%  71%  70%

Compared to Academic Year 2013-14, utilization increased 6% in the smallest rooms (20 seats or less), decreased on average roughly 7.4% across mid-sized rooms (21 to 80 seats), and decreased a slight 1% in the largest classrooms (81 seats or more).

Seat Utilization based on the Size of Scheduled Classrooms:

Seat utilization represents the percentage of seats occupied when a room is used. While average seat utilization for rooms scheduled from 9 to 5 daily peaked in '03-04 and again in '11-12 (54% representing the highest utilizations), seat utilization has generally been low. Seat Utilization in 2014-15 decreased in mid-size rooms (21 to 80 seats) over the previous few years, but the smallest rooms (up to 20 seats) showed an increase of 7%.

- **'99-00**  '02-03  '03-04  '04-05  '05-06  '06-07  '07-08  '08-09  '09-10  '10-11  '11-12  '12-13  '13-14  '14-15
- **Up to 20 (39 Rms):**  61%  57%  65%  66%  64%  64%  64%  66%  64%  62%  59%  68%  57%  52%  59%
- **21 to 80 (67 Rms):**  47%  45%  53%  49%  45%  47%  48%  49%  50%  48%  52%  52%  53%  50%
- **21 to 40 (47 Rms):**  52%  52%  53%  50%
- **41 to 60 (16 Rms):**  52%  53%  52%  50%
- **61 to 80 (4 Rms):**  48%  48%  48%  51%
- **81 to 120 (11 Rms):**  48%  51%  56%  53%  44%  46%  45%  46%  48%  50%  57%  58%  53%  51%
- **120+ (7 Rms):**  39%  39%  44%  43%  40%  41%  43%  44%  42%  42%  40%  41%  39%  55%
- **Average:**  45%  47%  54%  53%  48%  50%  51%  51%  50%  54%  53%  50%  52%
AVERAGE CLASSROOM UTILIZATION BY TIME OF DAY

9:00AM to 5:00 PM - Monday through Friday
UTILIZATION BY TIME OF DAY AND DAY OF WEEK
Fall 2014 – 9:00 AM to 5:00 PM – Monday through Friday

**Monday:**

Room Utilization: 69.4%
Seat Utilization:
52.8% Number of Classes: 594 Avg.
Class Minutes: 60
Total Meeting Hours: 592.81 Contact Hours: 16,623.27

**Tuesday**

Room Utilization: 62.5%
Seat Utilization:
54.1% Number of Classes: 467 Avg.
Class Minutes: 60
Total Meeting Hours: 546.82
Contact Hours: 16,663.38

**Wednesday**

Room Utilization: 68.5%
Seat Utilization:
53.5% Number of Classes: 576 Avg.
Class Minutes: 61
Total Meeting Hours: 585.82
Contact Hours: 16,576.95

**Thursday**

Room Utilization: 64.1%
Seat Utilization:
52.8% Number of Classes: 489
Avg. Class Minutes: 69
Total Meeting Hours: 558.65
Contact Hours: 16,814.70

**Friday**

Room Utilization: 55.3%
Seat Utilization:
51.4% Number of Classes: 527
Avg. Class Minutes: 52
Total Meeting Hours: 455.65
Contact Hours: 12,219.03
# Average Weekly Seat Utilization by Room Size:
## Fall 14 - Spring 15

<table>
<thead>
<tr>
<th>Room Size</th>
<th>Fall 2014</th>
<th>Winter 2015</th>
<th>Spring 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cap 1-20</td>
<td>57.6%</td>
<td>59.0%</td>
<td>59.9%</td>
</tr>
<tr>
<td>Cap 21-80</td>
<td>48.2%</td>
<td>53.2%</td>
<td>49.6%</td>
</tr>
<tr>
<td>Cap &gt;80</td>
<td>49.4%</td>
<td>49.9%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Cap &gt;120</td>
<td>41.1%</td>
<td>39.7%</td>
<td>40.0%</td>
</tr>
</tbody>
</table>
Appendix D: General Purpose Classroom Guidelines

GENERAL NOTE: everything specified for General Purpose Classroom spaces must be compliant with NUFM & NUIT Construction Standards and all applicable building codes: current City of Evanston codes and all other governing authorities. These guidelines have been reviewed with and are endorsed by the Classroom Committee. The purpose is to document how general purpose classrooms are furnished. Departmental or School controlled classroom or seminar rooms may vary from these guidelines.

CLASSROOM CATALOG, view photos of all General Purpose classrooms at: http://www.northwestern.edu/fac/occupational/classroom-catalog/index.html

SIGNAGE: provide room ID sign for each General Purpose Classroom that includes the room name, “Classroom”, the student capacity, Academic & Research Technologies (A&RT) help phone number, x77666, and Facilities Customer Service phone, x15201 on all room signs. (i.e., separate lines: CLASSROOM, cap. 35, AV help: 847-467-7666 or x76666, Facilities help: 847-491-5201 or x15201). On a case-by-case basis, provide wayfinding signs, too. Also provide an 8x10”, “Please return furniture to this room” sign, inside the room, above the light switch with image(s) and/or diagram showing how furniture is to be rearranged.

WALLS: paint; color per building standard or project.

FLOOR: carpet tile – larger tiles, stain hiding patterns preferred. Rubber or linoleum is encouraged under fixed seating, may be used in classrooms, too. Provide rubber/vinyl base at corners and on steps.

HVAC: All classrooms require air conditioning.

CONVENIENCE POWER OUTLETS: required in new classrooms in new buildings. Preferred in existing classrooms but recognizing there may be power distribution limitations that limit how many or if any can be added. Quantity needed is based on whether a few are needed to charge devices or many if they are needed to support the curriculum in a particular classroom.

ACOUSTIC PANELS need to be provided in rooms with pronounced echo. Panels may be located on ceiling and/or walls. Quantity, size and material are specific to the room layout.

LIGHTING, LIGHTING CONTROLS: LED (2015 campus standard), 4100K color; consult with Academic Technologies to help determine how the lights are switched. In larger rooms with new lighting systems, the lights should be controlled at the wall switches and through the AV system (Crestron). Light fixtures should include direct/indirect lighting, dimming and 5-year warranty. Fixtures must be designed and installed so bulbs are able to be changed without tools to access the bulbs. Fixtures should have a closed design or be designed in a way as to not admit flying insects.

BLINDS: classrooms with windows need working blinds. Type varies by building. Occasionally motorized shades are funded by a project. Coordinate motorized shade installation with Academic Technologies so motorized shades may be controlled at podium (if desired). In order of preference, shades may be woven, slatted mini blinds or roller shades. Amount of blackout is specific to the school or department need.
DOOR: provide window in door; size is whatever is standard for that building. A window adjacent to the door is also acceptable. The goal is to have some window area at the entrance so that someone heading into the room knows if it is occupied and also to provide a little more openness to the classroom.

LOCKS AND LOCKING SCHEDULE: Many General Purpose Classrooms are unlocked 24 hours/day, Monday–Friday, and are open for 9 or more hours a day on weekends. Sometimes Millennium electronic access specified, but it’s typically specified to have classrooms unlock reliably, not to be lock reliably. Because classrooms are open for such long hours, the audit trail feature of millennium can’t be counted upon. Even there is a record of a locked door being open, it is very possible that someone could have been opening the door for someone else. All new General Purpose classrooms with electronic access should have lock hardware that ‘fails safe’ so that for most malfunctions, the room will unlock, rather than lock (fail-secure). This is to avoid having students be locked out of classes or times they are booked to use the classrooms. The Office of the Registrar sets the locking schedule for General Purpose Classrooms. The Office of the Registrar will email the Lock Shop an update whenever a change in schedule is needed.

POWER, DATA, LOW VOLTAGE RACEWAYS FOR AV EQUIPMENT: all classrooms have smart equipment that needs power, data and low voltage pathways. There will be a monitor or projector that requires a dedicated 20A power outlet and a raceway for low voltage wires from the projector to a location on the wall nearest to the podium. The podium holds Crestron touch panel, cords to connect a laptop to the monitor/projector, speakers, document camera and a Blu-ray player. Typically, the podium will require a dedicated 20A outlet. Registrar classroom technology is specified by NUIT Academic & Research Technologies. Systems can be more elaborate than described above and those will require more power and data. Some rooms require a remote AV closet for AV equipment, too. Provide a campus only wall phone (with cord long enough to reach podium) in all Registrar classrooms to call A&RT for technical support. Verify with A&RT how many data outlets are necessary but most classrooms with loose furniture need 4 data jacks plus a campus access wall phone. The projector or monitor typically does not need a data line (verify with A&RT).

PROJECTION SCREENS: manual: Dalite model C with CSR (controlled screen release). Screens need to be installed in such a way as to allow them to be replaced without rebuilding a drywall enclosure. Pocket screen with enough room to remove and reinstall. Motorized screens: Dalite, Draper or Christie non-tension only with built in low voltage switch, low voltage connection to podium and wall switch. Screen material, size and aspect ratio per Academic & Research Technologies recommendation.

SECURITY FOR PODIUMS AND PROJECTORS: FM installs security cables and locks for the projector, monitor and podium. A&RT installs audible alarms at each projector, monitor and podium.
MARKERBOARDS/CHALKBOARDS: either is fine; the specifier is to find out which is preferred for that room. Custodial supplies chalk but purchasing/providing markers is the responsibility of the faculty to provide. Whichever surface is provided should have a lifetime warranty for the writing surface. Providing multiple walls with boards is encouraged. Install at 34-36” to the bottom edge of the board. Recommended manufacturers are AARCO, Quartet – chalkboards and Polyvision for markerboards. Other manufactures are fine as long as they have a lifetime warranty for the writing surface.

CLOCK: provide (1) American Time and Signal 12” clock AllSet battery operated clock in back of classrooms up to 1500sf. Use 15” diameter in large rooms. http://www.atsclock.com/files/pdf/Sect5BatteryClocks.pdf. Other clocks are acceptable if they have minimum 5-year battery life and be atomic (self-righting for correct time and daylight savings).

TABLET ARMCHAIRS: 1st choice: Steelcase Node tablet armchairs, with cup holder and tablet holder, higher back style. 2nd choice: Steelcase Node, mid-back, without accessories. The writing tablet on Node chairs is large enough to be equally well suited for left and right handed students. Other acceptable tablet armchairs: KI Torsion on the Go (poly back upholstered seat, nesting chair on casters). From 2000 to 2013, the standard tablet armchair was the KI Piretti chair and there are many in working condition on campus but we are updating tablet armchairs on campus over the next few years, so these are being phased out. Replace all non-fixed classroom furniture every 12-15 years.

TABLES & CHAIRS: minimum 10-year warranty. Adjustable height chairs with tables preferred. The goal is to continue to replace all classroom furniture every 12-15 years. At least 1 table in each room with tables and chairs to be height adjustable. Casters are recommended, or a combination of casters on 1 side and glides on the other.

FIXED SEATING: KI Strive post and beam, no upholstery. Theater seating: KI Concerto, fabric to have minimum 200,000 double rubs and stain resistant coating (nano-tex or equivalent). Writing tablet to have a wider style, 12% to be left handed. Minimum 10-year warranty. The goal is to provide ongoing service and repair so all fixed seating it lasts 20-25 years before replacement is necessary.

TEACHER FURNITURE: provide a small table and chair, and a mid-height stool with a back at the front of each classroom for faculty use. Minimum 10-year warranty. Replace every 12-15 years.