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Annual Report: Fall 2014-Summer 2015 – The Design, Implementation, & Assessment of Nexus Learning Hubs

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The Center for Teaching Innovation & Nexus Learning
Annual Report:
Fall 2014 – Summer 2015

*The Design, Implementation, &
Assessment of Nexus Learning Hubs*

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Executive Summary

Literature suggests that active and collaborative pedagogies, as compared to traditional lecturing, may enhance student engagement, motivation, retention, learning, and achievement. While Philadelphia University's faculty members have embraced these Nexus Learning pedagogies that facilitate active and collaborative learning, the built environment of our traditional classrooms, and their associated technologies, have often limited the effectiveness. Philadelphia University began an initiative aiming to radically transform existing traditional learning spaces into intentionally designed learning environments that aim to minimize the physical and technological limitations of some of our traditional classrooms and maximize the beneficial evidence-based approaches of active, collaborative, real world pedagogies.

This annual report summarizes the processes of design/implementation, assessment results, and lessons learned from this first year of the Active Learning Space Initiative. The planning process included key campus stakeholders under consultation with external experts in learning space design. The fall 2014 semester saw the unveiling of two Nexus Learning Hubs intentionally designed to offer more seamless transitions from different modes of active learning, enhance versatility in furniture configurations to optimize active and collaborative interactions, and couple appropriate technologies with vibrant and modern spaces to allow students to co-create and critique information in an aesthetically motivating space. The Nexus Learning Hubs have provided an experimental space offering a no-risk, highly versatile environment in which faculty members can amass evidence-based approaches to optimizing the interconnectedness of the built learning space, pedagogies, and technology. To assess the effectiveness of these spaces, and identify weaknesses or oversights (lessons learned), we used direct and indirect methods such as the Active Learning Post-Occupancy Evaluation, ethnographic data garnered from classroom observations, periodic faculty and student surveys, and summaries from two faculty feedback sessions.

Nexus Learning: Philadelphia University's Unique Approach to Teaching & Learning

Nexus Learning is a simple quick phrase to describe our philosophy and our practice of education at Philadelphia University. Nexus Learning is about our commitment to our students and about our actions and goals for teaching and student learning. Nexus Learning is the way we describe a university which believes learning can only happen when students are constantly using their knowledge, manipulating ideas, employing equations, and applying concepts, while creating new interpretations of material they have learned and using the skills they have acquired. Nexus Learning is about using information, not memorizing it. Nexus Learning is something we all, as a whole community of scholars and learners, are responsible for. Nexus Learning is active and engaged learning, collaborative inquiry, multidisciplinary and integrative explorations, experiential and service learning, based on real world problems, and strongly integrates the liberal arts and sciences with professional disciplines. Nexus Learning encompasses these approaches as the key elements of a student's engagement with intellectual challenges and personal development.

“Nexus Learning is active and engaged learning, collaborative inquiry, multidisciplinary... based on real world problems, and strongly integrates the liberal arts & sciences with professional disciplines.”

The Evolution of Active Learning Spaces at Philadelphia University

Philadelphia University faculty members use a suite of multiple, effective pedagogies and methodologies that embody the tenets of Nexus Learning. However, we became aware that, at times, the physical and technological constraints of some of our learning spaces may limit the effectiveness of these teaching and learning practices.

The Evolution of Active Learning Spaces at Philadelphia University (con't)

In 2009, a University task force, the Signature Learning Task Force, was created to bring stakeholders together to thoughtfully reflect on how existing spaces could both negatively and positively affect active and collaborative pedagogies and methodologies. At the same time, Philadelphia University's unique approach to teaching and learning, now called Nexus Learning, was formalized and plans for a Center to support and facilitate faculty member's implementation of these methodologies was conceived. With the founding of the Center for Teaching Innovation and Nexus Learning (CTinL) in the spring of 2011, rethinking the physical and technological parameters that would more mindfully align Nexus Learning pedagogies and practices was included as part of the CTinL's initial goals.

In late 2011, Marion Roydhouse, Director of the CTinL, and Tom Schrand, Dean of the College of Liberal Arts, began creation of a template for existing classroom learning spaces that would optimize Nexus Learning's active, engaged, real world methodologies. This ad hoc pair was expanded to include Tom Becker and Rick Waligora, both from Physical Plant, and Jeff Cromarty, Vice President of Administration and head of the Space Planning Committee.

In May of 2012, a survey, aimed to identify faculty member's concerns about traditional classrooms, was distributed to both full time and part time faculty. The results were collated, summarized, and discussed to campus wide state-holders, resulting in modifications to classrooms in Downs Hall, Hayward Hall, Tuttleman Center, and later Lawrence N. Field DEC Center. Pilot level successes in transforming traditional spaces to active, collaborative learning areas informed this process as well. For example, through funding from NASA, a traditional laboratory space was converted in active learning spaces to accommodate teaching chemistry in a studio-style approach where seamless toggling between short lectures (lecturettes) and active and collaborative learning practices were facilitated. Other smaller scale but highly impactful experiments where learning environments were redesigned to enhance learning were made.

The Evolution of Active Learning Spaces at Philadelphia University (con't)

During the summer of 2012, Downs Hall was renovated. Tom Becker and Rick Waligora from Physical Plant consulted with Marion Roydhouse of the CTinL to improve the functionality of Downs Hall's classrooms, then overcrowded with desks, having screens that covered blackboards when used, and greatly lacking in writing spaces on the walls. With the cooperation of Julia Aggreh, Philadelphia University's Registrar, class numbers were fixed to acceptable numbers considering size of the rooms while excess desks were removed from classrooms, rectifying the problem of faculty and students piling extra desks in the back of classrooms and in the halls.

In the late summer of 2012, an email was sent to the faculty and staff outlining all the changes made in response to the faculty classroom survey. This was well received and faculty commented on the concrete responses to their concerns. That fall semester, presentations were made highlighting survey results and the subsequent outlining of what an ideal classroom at Philadelphia University would look and feel like. The Space Planning Committee, the faculty and staff composing the University's Academic Resource Committee, and finally attendees at one of the monthly full faculty meeting were all informed to these changes and further recommendations for classroom space accommodations that would support Nexus Learning pedagogies and methodologies. At the full faculty meeting, faculty endorsed the outline of what was needed.

The recommendations for the 'ideal' Nexus teaching and learning space at Philadelphia University, drafted by Marion Roydhouse, were as follows:

- Classrooms to be designed more as a studio than a traditional classroom – the ideal a “studio-classroom”
- Attain 26 square feet to 30 square feet per student is an industry standard. 30 square feet may be needed for easy movement of students and faculty in a room. This is required for active, engaged learning.

The Evolution of Active Learning Spaces at Philadelphia University (con't)

- Whiteboard and tackboards/magnetic boards – there should be as much wall coverage as possible. Basically, writeable walls. Of all the options, glass might be the best for “white board” writing.
- Small podia and technology to be as unobtrusive as possibly works best. Classrooms need LCD access, a computer, one or more screens, preferably both students and teacher to control LCD screens. Models for intensive technology classrooms have students grouped around tables, not in rows.
- Electrical outlets for student/faculty access to charge laptops.
- Sound and HVAC systems designed such that every student should be able to see and hear each other. Heat and air have an enormous effect on learning. Spaces should not be too hot or too cold. Evidence supports that learning is harmed by over-heated rooms.
- Natural light, and consideration of light and variable light are key. Students ask for adequate light when polled on learning spaces/ collaborative and informal learning spaces. Light controls should easily managed, and variable light possible.

As Tom Schrand made apparent to the full faculty meeting, and as our Nexus Learning initiatives made clear, “space defines how we teach.” Nexus Learning must include full consideration of effective learning spaces, and their associated technologies, for its successful implementation and use.

During this time period, Marion Roydhouse met with Philip Parsons, Philadelphia University’s space planning consultant, who endorsed the list and recommended the space per student for active learning as at the least 26 square feet per student. It was recognized that not all our classrooms were meeting this limit. In February of 2013, during Celebrate Teaching Week, a further workshop with faculty was held on the “Ideal Teaching Spaces” to further solicit ideas to forge improvements in learning spaces and gauge the success of the improvements made thus far.

The Evolution of Active Learning Spaces at Philadelphia University (con't)

As with most university campuses, resources limit what changes can be made but by the end of 2013, Philadelphia University had a revamped learning building (Downs Hall), constructed the DEC building, and posted templates on classroom walls which aimed to eliminate the traditional static classroom where furniture was difficult to move. Whiteboards had been installed in most classroom buildings to support student collaborative group work in class. Excess furniture in the classroom had not been eliminated, but the problem had been addressed to a significant degree.

Under direction from the Provost's Office, the Interim Director of the Center for Teaching Innovation and Nexus Learning, Jeff Ashley, took the lead of the newly named Learning Spaces Initiative during the fall of 2013 and the spring of 2014. This initiative was conceived in December of 2013 when Executive Deans from the three Colleges, Provost Swearer, President Spinelli, and the Interim Director of the CTinL visited the corporate headquarters of Steelcase to gain further inspiration and knowledge regarding how furniture and space contribute to more effective active and collaborative learning experiences. Inspired by this visit, and subsequent discussions/visits with the Steelcase Education design team, Philadelphia University submitted a proposal to Steelcase for funding of an "Active Learning Hub" that catalyzed the rethinking of the functionality and optimization of learning spaces on our campus. Under periodic guidance from Steelcase Education (and Corporate Interiors), a University team composed of the Interim Director of the CTinL, the Director of OIR, Director of Physical Plant, the Provost's Office, and the Registrar's Office, met regularly in the spring of 2014 to begin discussions of transformation of two spaces on campus under the project entitled "Nexus Learning Hubs".

“Space defines how we teach.”

- Tom Schrand

Nexus Learning Hubs: Optimizing Nexus Learning Through Innovative Space and Technology

In the spring of 2014, Philadelphia University had formally proposed the creation of Nexus Learning Hubs (catalyzed by a grant from Steelcase, contributions from Dr. and Mrs. Spinelli, and Board of Trustee member, Eileen Martinson), learning spaces on campus that would act as the catalyst for pedagogical training, nurturing, and experimentation; a novel rethinking of the classroom space that allows the learning facilitator (the faculty member) to be less encumbered by the physical constraints of space and furniture and one that would ultimately enhance learning.

The goal of these Nexus Learning Hubs would be to create a series of exemplary teaching and learning spaces unique to our campus, ones that minimizes the physical and technological limitations of our current physical classrooms and allows for maximizing the benefits of active, collaborative, and real world based pedagogies. For example, the Nexus Learning Hubs would allow for seamless interactions and transitions from different modes of active learning. The Hubs would facilitate collaborative involvement of students through flexible furniture and appropriate technologies to foster co-creation and sharing of ideas.

The intention was to create a network of Nexus Learning Hubs across our campus that would act as experimental spaces offering a no-risk, highly versatile environment in which faculty members would begin to amass evidence-based approaches to optimizing the interconnectedness of the build learning space, technology and Nexus Learning pedagogies. Our faculty members, while being experienced Nexus Learning-based educators who use active and collaborative pedagogical methodologies, are also cognizant of the importance of robust, meaningful assessment of students' outcomes. To that end, a robust set of assessment measures were conceived to evaluate how the Nexus Learning Hub reached the goal of optimizing Nexus Learning pedagogies with innovative space, furniture and technology. The University committed to the creation of a Nexus Learning Hub Coordinator, Jeff Ashley, to oversee the process of design, implementation, and assessment of these learning spaces. The Coordinator worked closely with Associate Provost Susan Frosten throughout the process.

Nexus Learning Hubs: Optimizing Nexus Learning Through Innovative Space and Technology

By coupling Steelcase's approach to assessment of students' gains using the Active Learning Post Occupancy Evaluation (AL-POE) ¹(Scott-Webber et al., 2013) with other quantitative and qualitative assessment tools (e.g., other surveys, classroom observations, student and instructive observations), the Nexus Learning Hub initiative aimed to amass significant data sets and subsequent analyses to further support the notion that mindfully crafted built environments, when coupled with evidence-based pedagogical methods for active learning, positively impact behaviors and attitudes.

For the fall semester of 2014, Philadelphia University unveiled two overhauled classrooms, Hayward 111 and Hayward 211, known collectively as the Nexus Learning Hubs, to encourage active and collaborative teaching and learning methodologies within spaces that would more readily facilitate them. These classrooms, located in Hayward Hall, were the result of a year of planning and research to create spaces that facilitate active pedagogies in ways that traditional classrooms fell short of.

“ . . . the Nexus Learning Hub initiative aimed – to further support the notion that mindfully crafted built environments, when coupled with evidence – based pedagogical methods for active learning, positively impact behaviors and attitudes. ”

¹Built Environments impact behaviors : results of an active learning environment.

The Design Process of the Nexus Learning Hubs

Hayward Hall is one of the most heavily utilized buildings on the Philadelphia University main campus. Dating back to mid-century, it is a art-deco revival, industrial space used by a variety of programs such as various science disciplines, fashion design, textile design, engineering, industrial design, and graphic design. Many of the traditional classrooms in this building are modest in size with desks and chairs arranged traditionally in rows/columns facing an area that is clearly recognized as the front of the classroom.

Hayward 111/109 (Figure 1) and Hayward 211 (Figure 2) were selected to undergo renovations as part Nexus Learning Hubs initiative.



Figure 1. Hayward 111 prior to the renovation.



Figure 2. Hayward 211 prior to the renovation.

The Design Process of the Nexus Learning Hubs

In the summer of 2014, Hayward 211 was renovated (e.g., new paint, new lighting, new furniture, new cabinetry, new whiteboards, an ENO Board - Figure 3) to create a Nexus Learning Hub facilitating science and health disciplines/courses. Hayward 111 was more extensively renovated by combining two smaller classrooms (previously designated Hayward 111 and 109) into one large classroom and re-purposing the adjoining hallway's display cases (Figure 4) to create an open and highly visible new learning space.



Figure 3. Hayward 211 post renovation

“ I really enjoy the layout design of the classroom because it makes discussion and class involvement more available during class time. ”

- Anonymous

The Design Process of the Nexus Learning Hubs (con't)



Figure 4. View from exterior hall facing Hayward 111 before (top) renovation and after renovation (bottom).

The Design Process of the Nexus Learning Hubs (con't)

Hayward 111 (Figure 5) was transformed into a large, natural-light enhanced room equipped with bright, modern furniture that was movable and multi-purposed, easily accommodating near effortless transitions from various configurations to meet the needs of instructors' pedagogies (Figure 6). Small clusters of collaborative seating, as well as a lounge seating, were designed to give students the opportunity to spread out and work in an environment that would feel comfortable to them while facilitating team based and collaborative learning approaches. The "X" configuration, set as the default or reset configuration, was implemented to facilitate collaborative learning as well as to maximize sight lines to content displayed on one of four monitors/screens. However, two other configurations (a more traditional auditorium style arrangement with a clear 'front of the classroom' and a configuration clustering four students around two desks) were posted on the wall of Hayward 111 to provide examples for users (both instructors and students) of the room (Figure 6).



Figure 5. Hayward 111 post renovation.

The Design Process of the Nexus Learning Hubs (con't)



Figure 6. Three furniture layouts made possible by flexible furniture

The Design Process of the Nexus Learning Hubs (con't)

Two Media:Scape monitors (Figure 7) were included to allow for co-creation of digital material amongst groups. Up to four devices may be connected and, with the push of the “puck”, content from a user’s device may be shared amongst group members by viewing the large movable monitors. A large interactive (touch screen) SHARP monitor (Figure 8) in the lounge area facilitates high-resolution display from up to four devices and acts as a third Media:Scape, providing more opportunity for collaborative and interactive co-creation.



Figure 7. Professor Evan Laine and students utilizing a Media:Scape while facilitating collaborative learning.



Figure 8. SHARP monitor shown adjacent to the lounge seating area

The Design Process of the Nexus Learning Hubs (con't)

The ENO Projection System allows instructors to project digital material onto a writable magnetic white board. Using a Bluetooth-enabled stylus coupled with a touch sensitive magnetic strip, lecture notes and annotations are easily captured as electronic files as well as allowing the instructor to roam throughout the room while remotely operating the computer-driven media presentations.

The importance of the analog creation and dissemination was included. Each student is provided with a personal white board (huddleboard) allowing analog creation and communication. Boards may be displayed by hanging them on the wall mounted hooks or on movable displays carts (Figure 9). These boards can also be used as privacy dividers to separate students during test taking or create more intimate environments for group work (Figure 10). The room is also equipped with two full walls of whiteboard space for teachers and students.



Figure 9. Students utilizing personal whiteboards for sharing ideas during collaborative learning.

“The mini white boards are nice to have—I’ve used them for a couple of different things, to have small groups share some of their work.”

- Faculty Member

The Design Process of the Nexus Learning Hubs (con't)



Figure 10. Students utilizing personal whiteboards for sharing ideas during collaborative learning

In the inaugural year of the Nexus Learning Hubs, various opportunities to coach faculty in their uses and assess their effectiveness were implemented and assessed. The following outlines this suite of activities, with particular attention on the goals of each and the critical assessment of whether these experiences met the objectives and goals, with recommendations for future iterations.

Nexus Learning Hub Workshop (August, 2014):

Faculty and staff were introduced to the Nexus Learning Hubs in August of 2014, a week before classes were schedule to commence. Representatives from Steelcase and Corporate Interiors led a four-hour workshop to acquaint those who would be teaching in the classrooms with all the features the rooms have to offer (technology, furniture, space, and pedagogy). The workshop began with a basic, 'need to know' introduction to the technological aspects of the room including the ENO Board, Media:Scapes, and SHARP Monitor and then transitioned into an overview of the pedagogies and strategies for which the room facilitates and how the furniture can be reconfigured to support active learning.

The Design Process of the Nexus Learning Hubs (con't)

In retrospect, while the workshop was well intentioned, participants verbally surveyed indicated that there was too much information to cover and process in four hours. Those who attended the workshop were eager to learn about the new classrooms and hopeful that they would leave confident in their ability to use the technology and space in a way that supported and elevated their teaching styles; however, there was some tension regarding which aspect took precedence: pedagogy or space or technology. Therefore, not as much of the planned agenda was covered.

In the future, it is recommended that workshops be broken up into smaller and more focused sessions. Although pedagogy, space, and technology are inherently connected in the Nexus Learning Hubs, each aspect needs to be addressed separately before it can drawn together. Technology has been one of the most intimidating factors for faculty and staff when it comes to using the Nexus Learning Hubs; therefore, short, intimate, and interactive sessions on technology may be more productive for getting users up to speed and feeling confident.

Implementation and Assessment of the Nexus Learning Hubs

Many of those instructors who did not attend the August workshop asked for one-on-one technology assistance from Jeff Ashley, Sally Dankner and/or OIR. It is recommended that these 'nuts and bolts' of technology be made available on-line (e.g., short videos) as well as in print hand-book form for users to make use of throughout their learning curve of use of these spaces. It may be that sessions on pedagogy and utilizing space are much easier to realize once the technology is understood. These too could be made available by on-line resources or periodic webinars throughout the semester.

Monthly User Meetings (Fall 2014):

Monthly user meetings were used throughout the fall semester to, in part, solicit candid and personal responses from the faculty and staff who used the Nexus Learning Hubs. The intention was also to create a community of practice through sharing of 'practices that work for you' that were not discipline specific but rather process oriented.

Implementation and Assessment of the Nexus Learning Hubs (con't)

Although quantitative assessments of these spaces were important to garner (e.g., what furniture items were being used, what technology was daunting, etc), the feelings and opinions of the users were gauged to be equally as important. These monthly meetings were instrumental in pinpointing these emotional and qualitative aspects. At these meetings, users shared insights on the Hubs, which would have otherwise gone unknown (Appendix I). In general, the flexibility and comfort of the furniture ranked very high with users, while the technological abilities of the room ranked lower. Personal white boards (huddleboards) were ubiquitously heralded as great instruments for engaging students in active and collaborative learning. However, attendance was about 30 to 40% of all users. Though these face-to-face meetings were productive, other ways of creating this community of practice need to be developed. This may mean that creating an on-line supplement to mirror or augment the face-to-face experience would be of great value, especially to part-time faculty members.

Users were asked to come to the meetings with narratives of the difficulties they were having adjusting to the Hubs, but also the successes they had experienced. As noted, although participation in these events feel consistently below 50%, there were enough participants to get a representative understanding of the trials of the users in these spaces. These meetings provided an outlet for trouble-shooting, where users could discuss problems they were having in the spaces and hear how other people had handled similar problems (Figure 11). It was also an opportunity to learn about innovative ways that users were teaching in the space and draw inspirations from these stories. It was successful in creating a sense of community in these users.



Figure 11. Monthly faculty meeting to discuss the learning hubs.

Implementation and Assessment of the Nexus Learning Hubs (con't)

At the first meeting there was confusion, frustration, and a general air of skepticism regarding the Nexus Learning Hubs. Many users found the technology to be confusing at first and were unsure of how to adjust long-standing course designs and pedagogies to the new space. In an effort to engage in active teaching methods, many instructors felt that the students were getting lost and the class was not getting through as much material as they needed to. At this point, many teachers admitted to returning to their “tried and true” methods of lecturing, a place where they felt safe and in control. Many also admitted to feeling the need to be constantly using active and collaborative methods because the space now facilitated that. Users were reminded that their involvement in these Hubs was to be ‘risk free’ and ‘experimental’. This alleviated some of the pressure to constantly feel that the room necessitated the use of active and collaborative pedagogies at all times. One faculty member stated his mid-semester ‘ah-hah’ moment succinctly by saying that “I stopped letting the room control my teaching and let my teaching control the room”.

Some of the physical limitations of Hayward 111 and 211 were also brought up at these monthly meetings. Hayward 111 is a very large room (comparatively to other learning spaces on campus) with fishbowl visibility, especially by those walking or standing in the corridor. In addition, Hayward 111’s ‘elephant in the room’ seemed to be the structural column positioned near the middle of the learning space. At the first meeting, many users commented on the potential for distraction from the windows; however, when asked for a show of hands, only a couple users truly thought it was a distraction to their students (or themselves). On-the-other-hand, it was unanimous that the structural column in Hayward 111 was a serious problem for sightlines and isolated the students who sat behind it. However, using configurations other than the X, or potentially moving the ENO board to the window side, may resolve this issue. For future use of Hay111, the consideration of moving the ENO board to the window side of the room should be considered. This may also diminish the concern centered on the potential distractive qualities of the hallway’s fishbowl glass viewing area.

Implementation and Assessment of the Nexus Learning Hubs (con't)

In Hayward 211 there were different problems. The room is comparatively smaller than Hayward 111 and the scale of the furniture is quite large; therefore, with a full class of 24 students many users felt it was very crowded. Users felt that there was limited space for students to stow their belongings and limited opportunities for students to spread out. However, many instructors did not remind students of the storage space below their seat. Developing these habits of mind and behavior should be considered when coaching users of these rooms. This room also serves as additional space as a science lab and can at times be dirty and cluttered, according to faculty surveys. This issue was resolved by mid-semester by more fully using storage cabinets and realizing that there are non-science classes being taught in this space.

While the rooms were difficult to transition to in some ways, there was an overwhelming number of positive responses through faculty sharing events. By October of 2014, many users and their students had found their 'pedagogical groove' and appreciated the capabilities and aesthetic finishes of the space. One of the first overall responses to the rooms was how bright and energetic the spaces feel; many said that the color and lighting, in combination with the movement and flexibility that the furniture, allowed the whole class to stay attentive and invested for the entire class period.

In connection with the furniture, users also commented on what an instrumental difference the orientation of the desks and chairs make when it comes to students engaging with one another and small group work. Because the furniture arrangement is so easy to manipulate and reconfigure, users found it easy to lecture for part of class and quickly transition into group activities. Users were surprised at how useful and engaging the personal white boards were; they provide opportunity for students to work critically through problem solving, share ideas, take notes, and be active, all from their desks. Working on personal whiteboards kept students in a constant state of engagement, noting many instructors.

Implementation and Assessment of the Nexus Learning Hubs (con't)

The third meeting of users was much more light-hearted and enthusiastic. By December, users acclimated to the Nexus Learning Hubs and had learned to harness and attempt to optimize the possibilities of the room as opposed to getting bogged down or intimidated by the space. For many, this transition resulted in classes focused on group work and a migration from an instructor centric class to one centered on students and learning. One user found that when students were engaged and facilitated in peer groups, they had the opportunity to learn from each other and peer tutoring was enhanced. Strong students challenged their skills by aiding their classmates, while weaker students benefited from immediate assistance. Group work also created ample time for the instructors to work one-on-one with students, which is difficult in a traditional lecture based curriculum.

Other users commented on the way small groups allowed students to express themselves more freely while learning how to collaborate. With the lounge space and other seating options in Hayward 111, students felt empowered to define their own niches and carve their own learning and sharing spaces. Media:Scapes, the SHARP Monitor, and ample whiteboard space allowed students to learn in their own way, at their own pace. One user mentioned that he has learned from his experience teaching in Hayward 111 and now utilizes small group work in his other classes in more traditional classrooms. He often allows students to spread out throughout the classroom (or entire campus) in order to spend valuable time with their groups instead resorting to 'meeting' via email.

User meetings were a valuable means of reaching out to users in a collaborative setting. The change in the attitudes of the users from the first meeting to the second meeting was exciting to witness; however, in future it would be beneficial to hold more of these meetings in order to reach more users, and/or create that same community of practice and sharing of ideas through digital/on-line means.

Mid Semester Use of Space/Furniture/Technology Surveys:

Aside from the 'User Meetings,' users were also asked to complete a comprehensive, mid-semester (fall 2014) survey regarding space and furnishings, technology, pedagogies, and overall opinions on the spaces.

Implementation and Assessment of the Nexus Learning Hubs (con't)

This survey revealed crucial information regarding how well Hayward 111 and 211 were functioning for their users. Each section of the survey began with a set of questions on a Likert scale asking users to rank how often they utilized certain aspects of the space, furniture, and technology. Questions like this allowed us to understand what aspects of these classrooms are actually being used on a day-to-day basis, and what aspects were not being used. For example, the survey revealed that while the personal white boards are used regularly, display hooks and carts for the personal white boards were used rarely if at all. In the spring semester, observing the use, or under use of these furniture items, infused the design process of the scaling up of these Hubs (summer 2015).

Although many users commented on physical limitations of the room and difficulty using or utilizing technology, the successes found in these rooms were more abundant than the challenges. Participants shared a variety of different success stories. Several users lauded the ease of engaging students. While others commented on the versatility of the space and the technology for presentations, projects, watching videos, and small group work. While the survey revealed that users were still somewhat apprehensive about using the technological aspects of the space, it also suggested that the overall experience supported and elevated their pedagogies. For a full summary of the survey see Appendix II.

Observations of Instructor and Student Behaviors:

Another key aspect of our research was a series of ethnographic observations made in various classes throughout the semester. The goal of these observations was to get a perspective on how the Nexus Learning Hubs function in situ. Before deciding that ethnographic observations were the best way to do these studies, we tested several other methods of observation.

Initially we hoped to derive quantitative data from these observations; however, after several test studies it became clear that this kind of data set was highly random, difficult to quantify for the observer, and not very telling of what truly transpires in these classrooms.

Implementation and Assessment of the Nexus Learning Hubs (con't)

Because there are so many variables (time of day, day of the week, instructor, group of students, number of students, subject) and no true control group, any quantifiable data obtained from observing classes in Hayward 111 and 211 was deemed speculative at best.

More interesting we surmised, was being able to observe big picture issues of space and pedagogy usage rather than quantifying 'time on task' issues and other finer details. Sally Dankner, the Graduate Assistant for Nexus Learning Hubs, conducted 12 class observations in the fall semester of 2014. She made a checklist of the different features in the room (such as personal whiteboards and under-seat storage) and if that feature was used, she checked it off the list. This checklist helped allowed an understanding of whether or not the different technological and spatial aspects of the room were actually being utilized, especially important when considering recommendations for further iterations these Hubs on campus. As Sally stated "sometimes with these observations it is easy to get lost in the content of the class and not realize how much of the classes' successes and failures were really due to the room—the checklist helped to keep this in mind while still tuning into the pedagogy."

These observations nicely complimented the user meetings and survey. In some instances, observations aligned with the issues users mentioned in the meetings; however, there were other instances where these observations shed light on what was actually happening in the spaces and not brought up in public discussions. For example, beginning in August, many users were concerned that the large display windows in Hayward 111 would be distracting to students; however, in all of the classroom observations, it was rarely noticed that any students were looking out the display windows into the corridor of Hayward 111 (the issue of this being a distraction to students). Moreover, if someone did look out the fishbowl windows, they would almost instantly return to their work.

Classroom observations also shed light on the way the flow of many courses developed, and evolved, within the Nexus Learning Hubs. While some professors did lecture or work through problem sets in a traditional way, many adjusted their classes to include new, active techniques of teaching.

Implementation and Assessment of the Nexus Learning Hubs (con't)

For example, in one class, the observer reported “the professor broke the students up into groups and used the Mediascapes and SHARPMonitor to allow students to collaborate and write a blog post that addressed a current event”. In another class, the observer stated that “the professor had the students rearrange the classroom in a “courtroom” in order to role-play a scenario from a trial”. And in another, the observer witnessed “students using the Eno board to give presentations: many of their classmates watched on the Mediascapes in order to get a better view of the PowerPoint”. These are just a couple of examples of the innovative “practices that work for me” that instructors began to experiment with in the Nexus Learning Hubs. For full summaries of the observations, see Appendix III.

Administering the Post-Occupancy Evaluation Survey: We concluded the fall semester (mid to late November of fall semester 2014) with a 10 minute survey entitled the Active Learning Post-Occupancy Evaluation (AL-POE) (Scott-Weber et al.) which asked professors and students to reflect not only on their experiences in the Nexus Learning Hubs, but also to compare these experiences with those they had previously had in other classrooms. This survey, created and analyzed by Steelcase Education, was optional but highly encouraged. Through this survey, we were able to poll a large percentage of faculty, staff, and students (N>500) who utilized Hayward 111 and 211.

The results from the survey were extremely promising, significantly (at $P<0.05$) demonstrating that that space, furniture, and technology can enhance Nexus Learning pedagogies (active, collaborative and real world) and significantly enhance the teaching and learning experience of teachers and students, compared to traditional classrooms (e.g., Figure 10). For Steelcase’s full analysis of these surveys see Appendix IV and Appendix V.

“This room is truly the laboratory to foster and facilitate that sense of pedagogical exploration.”

- Faculty Member

Implementation and Assessment of the Nexus Learning Hubs (con't)

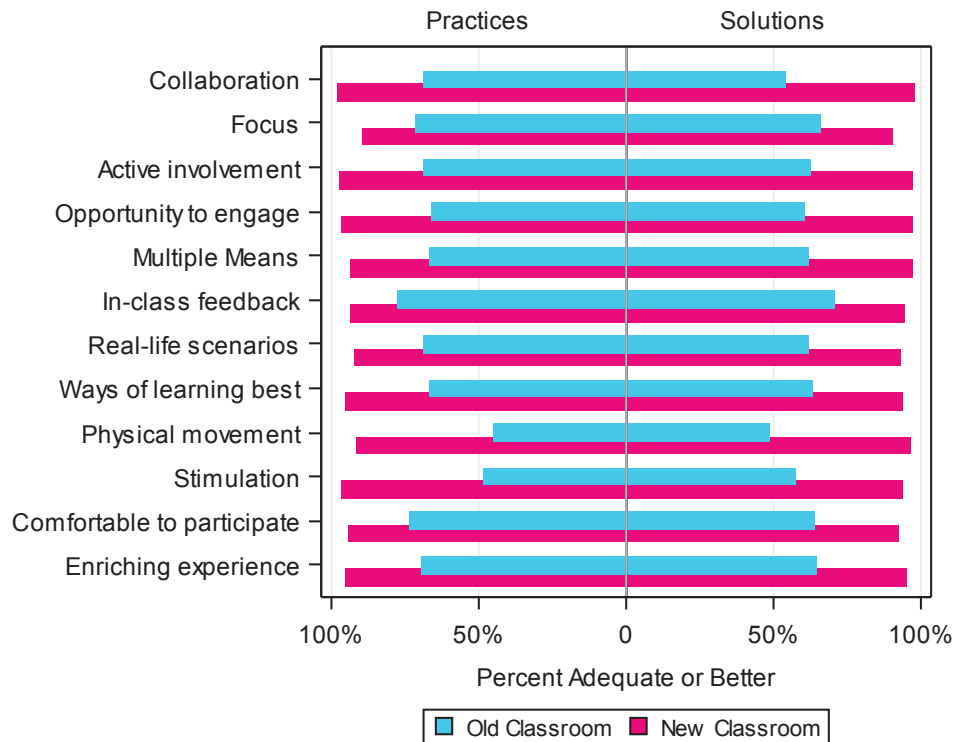


Figure 12. Example of Steelcase’s AL-POE survey results quantifying student gains in a variety of experiences in the Nexus Learning Hubs (‘new’) to our traditional classrooms (‘old’).

Compiling Faculty Vignettes of Best Practices in Nexus Learning Hubs

In the early spring semester, faculty members were asked to submit their “Best/Innovative/Successful Teaching and Learning Practices” vignettes. They were asked to write a short narrative outlining a major success in their practice or experience in the Nexus Learning Hubs. The intention was to compile these success stories (“Nexus Learning Hub Narratives”) to act as inspirational kick-start to practices that future users of these spaces could use.

The following were collated and will hopefully be added to with the goal of compiling a resource for future users.

Compiling Faculty Vignettes of Best Practices in Nexus Learning Hubs (con't)

1 Ryan Long – Ethics

“I always used the ability to move backwards and forwards through the written notes (in the Eno board “notebook” application). This is really useful. Before class I create 4-5 different pages with headings. Then during the conversation I write more detail and work through them in order. When the discussion references earlier slides you can quickly bring it back into view. In other rooms I frequently have the experience where I, or a student, references material that I had to erase. This system works really well for people who are used to writing on the blackboard/dry erase board.

The students really like the little whiteboards. I put the students into groups and gave them some short selections from a difficult text. The selections were very literary and the students had to write an interpretation of the content. Multiple groups wrote on the same selection. It was easy for them to move the boards next to each other to directly compare their work. For some reason they just like writing on these things.”

2 Frank Wilkinson (Hay211) – Genetics

“Great learning moments occurred in Genetics class in room H211 as a direct consequence of the furniture arrangement. The students took responsibility for their learning as a group. **The arrangement of seating** as a collection of small groups (4 students) **led to many instances of peer-level coaching and explanations.**

Much of the learning had little to do with me in those instances, I was content to let the students discuss among themselves. Of course, I would intermingle to make sure they did not lead themselves astray, but **the need for intervention on my part was at a minimum.** The individual white boards were frequently used as shared work places for the students to compare and contrast their problem solving approaches.”

Compiling Faculty Vignettes of Best Practices in Nexus Learning Hubs (con't)

3 Jeff Klemens (Hay111) – Systems Thinking

“Students in our systems thinking classes often spend class time drawing systems diagrams, and it’s the nature of those that you often find yourself revising, redrawing, adding elements, and moving elements around. So **whiteboards are a great tool** for that. In the new room I really enjoyed how the small whiteboards combined with the abundant large whiteboards to make possible a process of small group drafting which could then be easily transitioned to a whole class presentation. I have found that at times students are nervous about working at the class whiteboards, particularly groups that are struggling with basic concepts of systems diagramming, and of course they are the ones who most need the practice. So **the small whiteboards allow them to go through the drafting process “in-private” with their group**, and only once we have gotten them to something they are happy with do they have to put it up in public view for class critique. It also helped remind me how nerve-wracking it can be for some students to work at the board and the implicit comparison with other groups that that entails.”

4 Lisa Farkas (Hay211) – Developmental Psychology

“I was teaching a Lifespan Developmental Psychology course. **The arrangement of tables in quads of 4 individuals allowed me to do some group activities.** For example, one day I brought in a bunch of infant/toddler toys and asked each group to answer a variety of questions regarding how infants/toddlers would use the toys to advance their cognitive development. I also tried to use the individual white/wipe boards to ask students to give examples from their own lives of some issue or topic we were addressing. **I definitely think that the active component of writing on the boards increases focus on the lecture.** Rather than asking a question and waiting to see if anyone volunteers to answer, asking them all to write something down forces them to stay “in the moment”. Feedback from students was positive and in the course evaluations that I handed out to **students**, many **said they enjoyed the activities and wished we had had time for more.**”

Compiling Faculty Vignettes of Best Practices in Nexus Learning Hubs (con't)

5 Harvey Lermac (Hay111) – International Management

“During Fall 2014, I taught a International Management course in Room H111. Each of 3 teams was assigned two projects – first a global company to study, and then a training session on a country’s culture. For both, the teams worked during class to research and share information for their project. **Using the desks in a modular team setup, they were able to share and discuss information on the monitors at each team location. This was the favorite technology use among the teams.** In addition, they were able to move around the room to develop their approach, share information, and plan their presentation delivery.

I will elaborate on the second project. Each team was assigned a different company and country, and told to develop 2 training programs for HR Managers who were planning to move with their family to that country. For example, one team worked with Sony, planning to train executives who would be moving from Japan to work in Vietnam. The other two teams addressed executives moving to Chile, and to Poland.

The first training session was intended to teach the HR Managers (the remainder of the class, the instructor, and visitors), about the cultural basics of the country – for example, schools, living conditions, basic cultural rules, etc. - that their family would need to understand before moving to that country. The second session, conducting during the following class, was intended to teach the HR Managers about the cultural basics of which they needed to be aware when they fulfill their responsibilities as HR Managers in the country – that is, planning, recruiting, interviewing, hiring, training, and assessing performance of new employees.

There were few guidelines about the delivery methods, so each team used a different set of technologies and guides to conduct the training within the classroom. **The physical layout & technologies helped to make the sessions very interactive & effective.**

Compiling Faculty Vignettes of Best Practices in Nexus Learning Hubs (con't)

All in all, I think that everyone would agree that the students were able to be much more creative by taking full advantage of the unique new facilities. And, by conducting training programs, they were not only able to learn about the countries and companies, but also to practice very important managerial skills – making effective presentations, and conducting training sessions. This was made possible by the space, layout, and technologies in the room.”

6 Tom Schrand (Hay111) – Sustainability

“One of my most interesting projects in the Nexus Classroom was a series of poster sessions that we did, using the multiple monitors in the room. A poster assignment (an idea borrowed from our colleague Chad White) has some advantages over student presentations, since it requires students to combine text, images and design in an effective way and the rest of the class can read the posters at their own pace, evaluate them, and post comments. The “critiques” that follow give students immediate feedback on their work, and then they can have a chance to make revisions before they submit a final version for a grade. **Having four monitors in the classroom meant that students could design their “posters” using PowerPoint, which is a low-threshold technology for non-designers.** No large-format printing was required and the class could move from monitor to monitor to read the posters and then to have the designer give a short presentation and answer questions. We used the **whiteboards or easels near each monitor** to post comments in two categories: “What I liked” and “Suggestions.” Each student had to post one comment in each category for each poster. This really **increased the level of engagement versus a typical student presentation**, where only a handful of students might speak up or ask the presenter a question. These sessions were an interesting change of pace and took advantage of the space in the classroom to get students moving around to view and comment on each poster.”

Compiling Faculty Vignettes of Best Practices in Nexus Learning Hubs (con't)

7 Anne Bower (Hay211) – Biology, Medicinal Plants

“Using mini-wipe boards in H211 for collaboration of the whole class for teachable moments. The 24 students in freshman biology fill every seat in H211, but they can still collaborate effectively by using the mini-wipe boards and hanging and re-arranging them on the walls. For our careers module, each student researched a dream job, salary, benefits, and feedback from an interview with a professional that had that career currently. Students wrote the information on their wipe boards and then started sorting, arranging and discussing them on the walls. The students first sorted by salary (surgeons make more than \$500,000 per year and EMT make \$25,000), but then rearrange to be best thing about the job (nutritionists loved seeing changes in their patients and Physician Assistants had the most hands-on daily contact with patients). They then sorted by the worst thing about the job (paperwork and record-keeping across the board). **Using the mini-wipe boards is a wonderful way to engage the entire class in critical thinking and discussion!**”

Getting the Word Out: Disseminating the First Year Successes of the Nexus Learning Hubs

Much of the first year efforts were centered on attempting to successfully implement the use of these Hubs to the cohort of users teaching in these spaces and adequately assessing the success of these new learning spaces (e.g. workshops, monthly user meetings, surveys, observations). However, efforts to highlight the utility of these spaces as “Nexus Learning Optimized” spaces to our entire faculty, students, campus stake-holders, and potential funders of these spaces was made. Working with our Public Relations office, these spaces were highlighted in our campus wide periodic dissemination through @PhilaU postings. Several report outs to the entire faculty/staff were made at monthly faculty meetings, aimed at updating the implementation of these spaces and/or highlighting their successes.

Getting the Word Out: Disseminating the First Year Successes of the Nexus Learning Hubs

The University's Board of Trustees were informed on the successes of these transformative learning space initiatives and successes by two major events – one occurring before the Hubs were created (highlighting the space/furniture configurations needed to implement active and collaborative learning environments) and one in the spring of 2015 highlight our successes with the implementation of the two Nexus Learning Hubs. Faculty members were invited to teach in these Hubs in both the fall and spring of 2014-2015 through a series of email notices and faculty meeting updates. As part of the CTinL's Celebrate Teaching Week in Feb of 2015, a workshop entitled "Cavalcade of Nexus Learning Hub Stories" was given to increase the faculty's awareness of the Hubs and their ability to facilitate active and collaborative learning pedagogies. The intention was to highlight the suite of success stories from Hub users with the capabilities of the learning spaces.

In May of 2015, an ad hoc committee consisting of individuals from OIR, Provost, Physical Plant, CTinNL, faculty was formed to lead the efforts to make recommendations for the scaling up:scaling out of Nexus Learning Hubs on campus. Two additional learning spaces were proposed and a call for proposals was given to two competing parties (Corporate Interiors/Steelcase and KI). The bid was awarded to Steelcase based on their superior concepts for the two additional classrooms, and the past year's collaboration with them to ensure that users were trained, supported, and nurtured through their experimentations with the spaces.

Along with internally disseminating our successes with implementing Nexus Learning Hubs, we also began to externally tell our story through various means. In January of 2015, Jeff Ashley, Susan Frosten and Sally Dankner presented a poster outlining the PhilaU's successes and lessons learned with respect to the design, implementation and assessment of these two Nexus Learning Hubs at the 13th Annual Temple Teaching Conference. In January of 2015, an abstract to present this work at the Lilly Conference on Teaching International Meeting was accepted and presented in Bethesda, MD.

Getting the Word Out: Disseminating the First Year Successes of the Nexus Learning Hubs

Planning, Implementation, and Assessment of Learning Spaces that Optimize Active and Collaborative Pedagogies

PhilaU
Jeffrey Ashley, Susan Frotten & Sally Danleer
Center for Teaching Innovation & Nexus Learning - Provost's Office
Philadelphia University

Background
At Philadelphia University, the term *Nexus Learning* describes our faculty's active, real world, and collaborative pedagogical approach to teaching and learning. While Philadelphia University's faculty members have embraced these various pedagogies, the full implementation of many of our traditional classrooms, and their associated technologies, have often limited their effectiveness.

Assessment
To assess the effectiveness of the hub, and faculty awareness of insights (classroom-based), we used direct and indirect surveys such as the *Active Learning Classroom Evaluation (ALICE)*, among other data generated from classroom observations, periodic faculty and student surveys, & comments from the faculty members.

Planning

2011-2013	Dec 2013	Jan 2014	Feb - Mar 2014	May 2014	May - Aug 2014	Aug 2014
Learning Space Committee Formed = Faculty Needs Survey Given	Site Visits to Gather Instructional/Info/ Data for New Learning Spaces that optimize Nexus Learning	Identifying Support Project + Collaboration with CH/On Campus Designers/ Educators	Selection of Traditional Classrooms to be Transformed - Idea Share on Tech/Space Needs	Two "Traditional" Classrooms Merged to One Space (see above)	Weekly Stake Holder Meetings Concurrent with Construction/ Redevelopment	Faculty Identified and Trained w/ Pedagogy, Technology, and Space

Implementation
The fall 2014 semester saw the unveiling of the Nexus Learning Hub (Room 1111), a learning space that offered more seamless transitions between modes of active learning, provided furniture which can easily be reconfigured to optimize active and collaborative interactions, and coupled appropriate technologies with vibrant and modern spaces to allow students to co-create and critique information in an aesthetically pleasing space. Over 15 courses were placed in the hub in the inaugural semester.

Assessment
In the ALICE survey, students (n=270) were asked, "Thinking what you know now about using this traditional versus Nexus Learning Hub learning space, rate the following characteristics by the L1001 TO MATCH THE SPACE." All characteristics were perceived as significantly higher in the hub versus traditional classrooms (p < .001, n=270).

Lessons Learned

- Faculty use of analog whiteboard surfaces high in more extensive technologies (lecture capture, pens and projection, digital learning curves a more training may require this)
- Faculty need time (and training) to adjust their courses to the capabilities of the new space
- Treat the learning space changes as "interruption" and a chance to "experiment", elevating instructor's feelings to use of the Tech and addition of the learning space
- Comfort and aesthetics go a long way in instructor's and students' attitudes toward learning spaces
- Active feedback from students and instructors at regular intervals
- Instructors need to develop protocols for students' behaviors in these non-traditional learning

Figure 13. Poster presented at the Lilly Conference

The poster presentation garnered attention from those wishing to learn about the process of implementing active learning spaces on their campuses. It reiterated the notion that our design and implementation of these learning spaces on our campus was novel and the interest level in our process of campus wide buy-in was high.

The Nexus Learning Hubs have added to our University's must see list for potential students and visitors from other campuses. For example, in the spring of 2015, visitors from local institutions such as Widener University and the Pennsylvania College of Health Sciences came to our campus specifically to see our active learning spaces. Jeff Ashley met with PhilaU's Rambassadors and Admissions to share the narrative of the Nexus Learning Hubs successes and the intentionality of these learning spaces.

A double-sided fact sheet was created in the summer of 2015, to be used in the future to describe the intentionality in the design of the spaces and how they align and further optimize our Nexus Learning approaches to teaching and learning at Philadelphia University.

Getting the Word Out: Disseminating the First Year Successes of the Nexus Learning Hubs

To reach a wider audience and to highlight our significant steps in creating novel active learning spaces, our Nexus Learning Hubs were highlighted in the publically accessible Flexible Learning Environments eXchange website called FLEXspace. It contains high-resolution images and related information that describes detailed attributes of active learning spaces from institutions across the globe. Philadelphia University's Nexus Learning Hubs are now part of that inventory. The added incentive for participation and web-presence in FLEXspace is that it allows us to showcase our innovative design solutions to teaching and learning spaces in addition to simultaneously being open to peer review ranking and comments. Though already populated with some of the major institutions of learning space reform, we feel as more contributions are received, as the website states, the repository will emerge into a very useful planning resource for education and supporting entities at multiple levels.

The final dissemination of first year successes with our Nexus Learning Hubs is this report which will be used for multiple purposes from enhancing our faculty's understanding of our intentionality of this process and spaces, to providing high-level assessment of the strategic goal of providing our students with an effective and innovative approach to engaging students in the process of Nexus Learning. Based on the reception of the poster presented at the International Lilly Conference in Bethesda and the reaction from many visitors to the Hub, it is the goal to ultimately disseminate our process and successes through a peer-reviewed publication.

Lessons Learned: Garnering Information for the Next Iteration of Nexus Learning Hubs

Much information from multiple assessment methods was gleaned this past year. This following summarizes most of these:

- All faculty members found the use of the personal white boards increased active methods to engage students in course content and skills. These boards proved to be the 'low hanging pedagogical fruit' that many easily gravitated towards, resulting in some of the most memorable and successful teaching and learning moments.

Lessons Learned: Garnering Information for the Next Iteration of Nexus Learning Hubs

- Faculty found the ‘higher tech’ capabilities of the room (using the Eno board, Media-Scapes for co-creation, collaborative methods) more challenging due to learning curve and difficulties getting reliable and consistent functioning of the system (especially the Eno board). Increase efforts to train faculty through face-to-face workshops and on-line supplemental information should be made.
- Creating a sense of cohort, or community of practice, amongst users proved beneficial in sharing ideas and discussing common challenges.
- Having a coordinator of active learning spaces (and graduate assistant) to engage all stakeholders in the process of design, implementation and assessment was beneficial.
- Gathering all stakeholders into the process of design of these learning spaces was positive and enriching.
- Rethinking means of faculty development and training to accommodate those who cannot be present for workshops must be expanded. Although a subset of users were active in monthly ‘share’ meetings, many could not attend but continued to personally hone their skills over the semester.
- Continued efforts to disseminate the benefits of teaching in these environments to faculty should be continued and evolved.
- It is critical that faculty and students understand the intentionality of these learning spaces and how the capabilities of the room, both space and technology wise, aim to optimize Nexus Learning approaches across all disciplines.
- Capitalize on the successful experiences of those using the Hub spaces to build an excitement about using these spaces. Highlight these leading-edge faculty members by giving them a platform to share their experiences (e.g., workshops, inclusion in Board of Trustees’ meetings, etc.).

Lessons Learned: Garnering Information for the Next Iteration of Nexus Learning Hubs (con't)

- Encourage a risk-free, 'experimental' attitude that allows users to work at their own comfort level in exploring how their pedagogical methods can be enhanced by the space, furniture and technology of these Hubs.
- Recognize that faculty need to experience these spaces in-situ and live – no matter what 'training' is given, it cannot replace the value of experience these spaces over a semester.
- Flexible and comfortable furniture in spaces where student density was low were found to be instrumental in allowing faculty to experiment with active and collaborative teaching

“I absolutely love the layout of this classroom. I feel much more comfortable here than I do in standard classrooms. The bright layout also helps me stay focused...My ability to pay attention is significantly better, and it provides a less stressful, and more engaging class period.”

- Anonymous

APPENDIX i

Summary of Faculty's Thoughts on
Nexus Learning Hub (Hay111) & the Science and
Health Nexus Classroom (Hay211)- Week 2 (Sept 5, 2014)



“It is a jolly room – good light, fresh colors, flexible seating, tables and views – these create a relaxed atmosphere which I believe helps **students** learn; I think they **are more apt to ask a question** if they are comfortable and less likely to be distracted.”

“This was the first full day of class, so this is the first time they came in post-video lecture and just jumped right into an activity (see photos). I had to encourage them to move the furniture; the natural tendency was to move the chairs but leave the tables alone. The **engagement level was high**. What I noticed was not the ability to get them going - which didn't really differ from an active learning lesson in a normal classroom - but the way that getting them into comfortable working conditions helped them sustain the engagement over the course of the class period.”

“...the X configuration results in many students being remote from each other and me and creating a theater in the round environment. I believe this can be solved by reconfiguring the desks to a series of pods and then having inner and outer groups. This will lead to recapturing the intimacy and will stop my SPINNING”

“**The mini white boards are nice to have**—I've used them for a couple of different things, to have small groups share some of their work. The column really breaks up the classroom and the sight lines. I tried to form a semi-circle in front of the projector, and the column disrupted that, too. The display windows haven't been as distracting as I feared they would be.”



“Although I’m noticing that my students are seemingly more attentive and engaged in the learning and “doing” process of my courses I facilitate in this room, I’m even more struck by how much my enthusiasm, verve and energy levels have all increased by merely being a space that is so bright, modern, clean and accommodating to all the various teaching/learning methods I use. I’ve always been an experimentalist in the classroom but **this room is truly the laboratory to foster and facilitate that sense of pedagogical exploration.** In only two weeks, I’ve failed a couple of times but more often, thankfully, I’ve had some ‘ah hah’ teaching moments that could only be accommodated by the flexibility of the space, the technology in it, and the physical space to maneuver in it. The room begs for, or rather insists, that instructors push beyond their comfort levels and try new approaches to being active and collaborative. Other rooms on campus simple don’t have that.”

“So far the space is working out well for my narrative class. I find it is challenging me to experiment more with space and technology. My students, so far, have had no complaints. Another professor using this room and I chatted about how he is playing with the furniture, and I’m going to try it out.”

“On a positive note, almost all the **students said they liked this room** compared to other rooms on campus, largely because it is colorful and feels vibrant (which means we should make our other classrooms on campus appropriately colorful and inviting...they look pretty dull and boring now). They are also excited by the technology but we really have not used it that much. Another positive note is that I am okay with using the magic pen and the ENO board. Having a PC in the room really helps. On a neutral note, I would say that distractions because of the glass wall were a problem during the first few classes but we are getting used to the glass wall now and both the students and I have learned to tune out outside influences.”

“Thank you for including me in your experiment! I am an interior designer and work in a firm that specializes in academic design. I was truly thrilled to see the room transformed. My class may be somewhat different from the others. I do set up the room in both group and “U” shape configurations and the table mobility works really well for this. Not sure I have need for the small white boards, but I know they will be of great use for other instruction. **Thanks again for creating such a high tech, aesthetically pleasing room!**”

“**The classroom is fantastic** - particularly for lectures. I’ve had the group gather around the big TV in what I’m referring to as the “lounge”. It really spurs more conversation and promotes interactivity among the students. I really haven’t had a huge opportunity to use the rest of the classroom as of yet, but as we get further along into our big project, I plan on having them work in small groups and utilize the whiteboards as much as possible. I’m really looking forward to that.”

“So far, we are really enjoying H111, even though we are a small class. Some thoughts:

- We have connected computers at the 2 tables and lounge, and worked and given presentations. That works great.
- We should have monitors at all 4 tables. We have 3 teams; the one team that doesn't have one has to move around, and can't share documents, etc.
- The glass is a distraction. I still think it's worth it, but during the brief lectures / discussions, everyone's eyes wander. During team work, it impacts us much less.
- I haven't really used the monitors and the magic boards too much, as I don't do lectures. **The board worked fine** when I did use it. I will probably show videos in the near future, but don't expect that will be any problem.”

“**I LOVE THE ROOM!** What works really well: Wipe boards everywhere, rolling chairs with storage, moveable tables for all kinds of different group configurations, student enthusiasm”

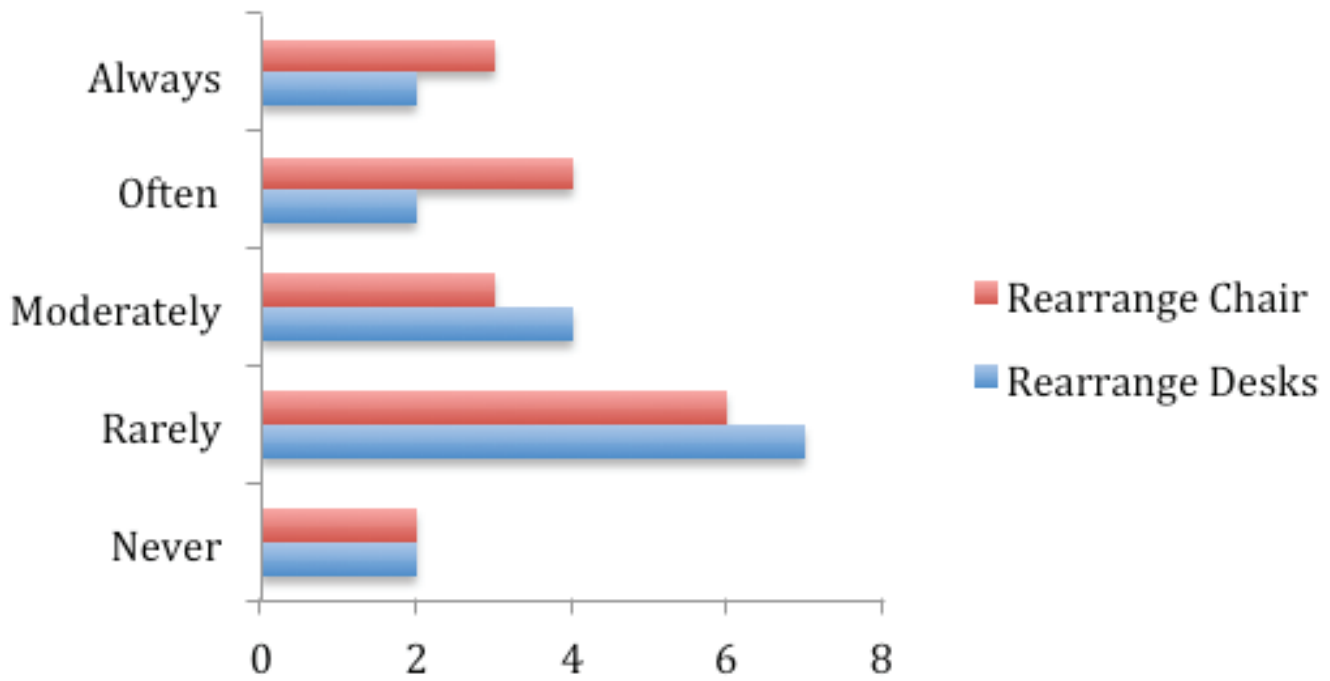
“Just wanted to let you know that **I LOVE teaching in 211 Hayward**. Honestly it's less about the smart whiteboard (which is fine for my PowerPoint presentations and making annotations) but what I find myself using more is the personal whiteboards for the students and the easel/hang-ups for whiteboards. They seem to respond well to those. I'm doing my own personal experimentation. I have the same course (back to back) one without the new technology/analog boards and one with. I'm eager to compare test grades in each section. I will also periodically ask my students to provide feedback about the room and classroom activities. I find myself more energized as well, even though the high tech classroom is my third lecture of the day!

APPENDIX ii

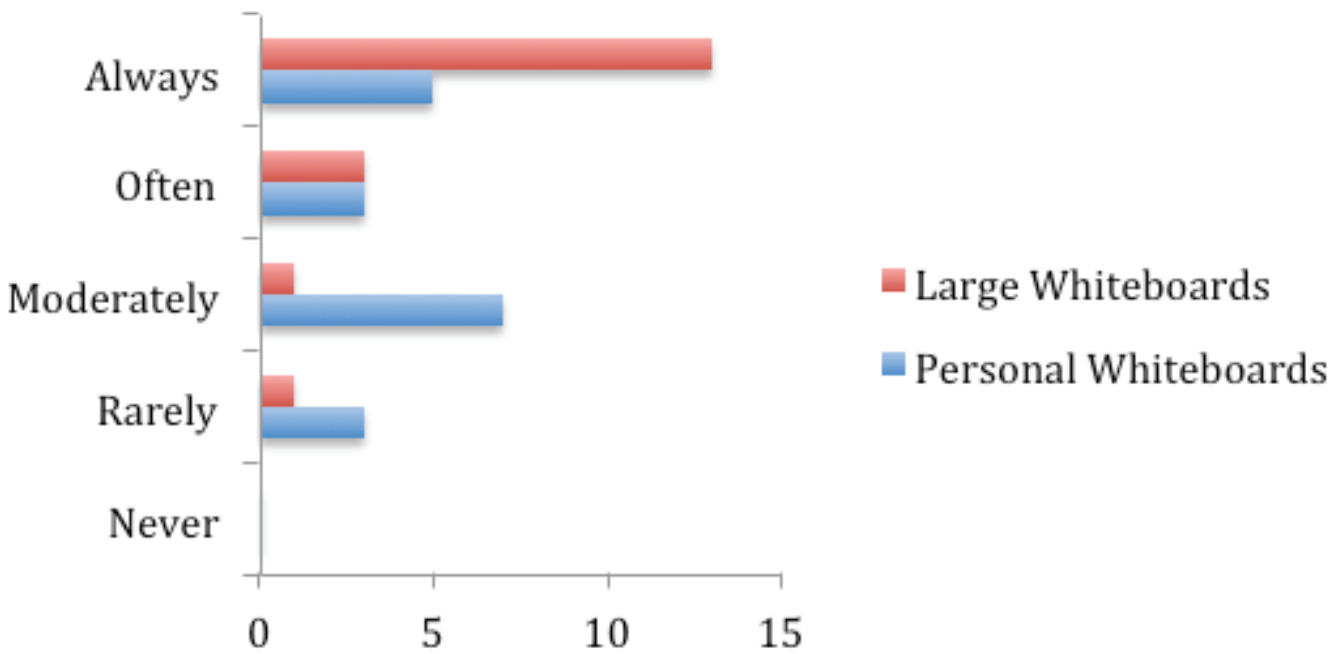
Survey Results from the Mid-semester
User Survey (created by Jeff Ashley and Sally Dankner)

Part I: Space and Furniture

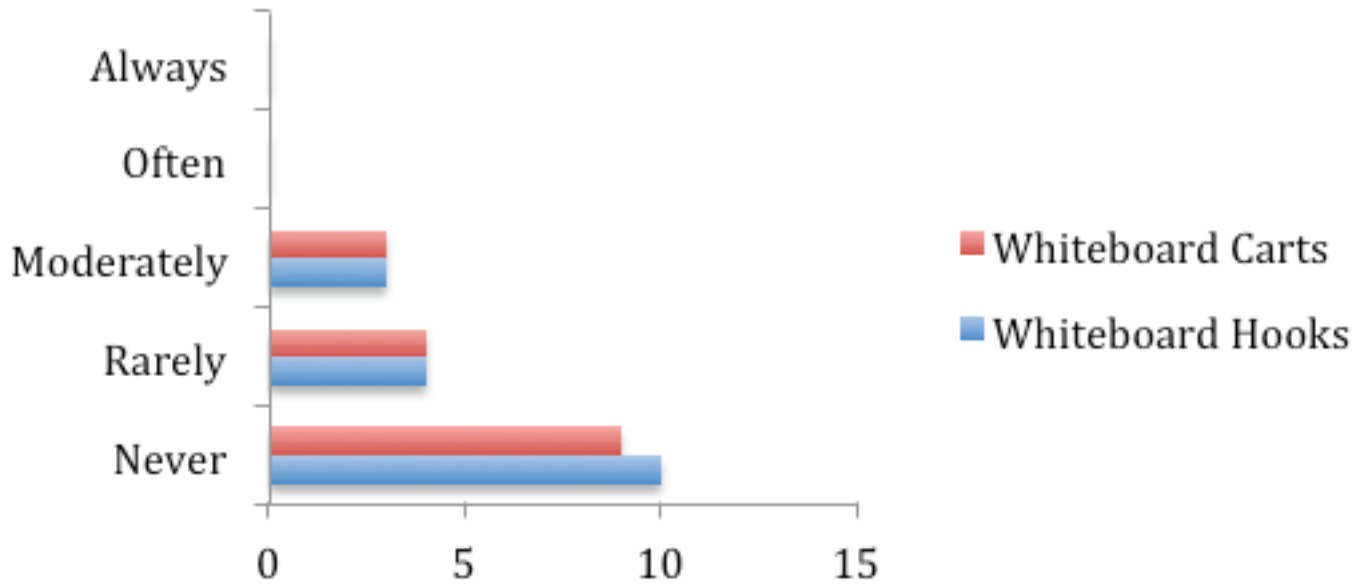
How Frequently do You Rearrange the Furniture?



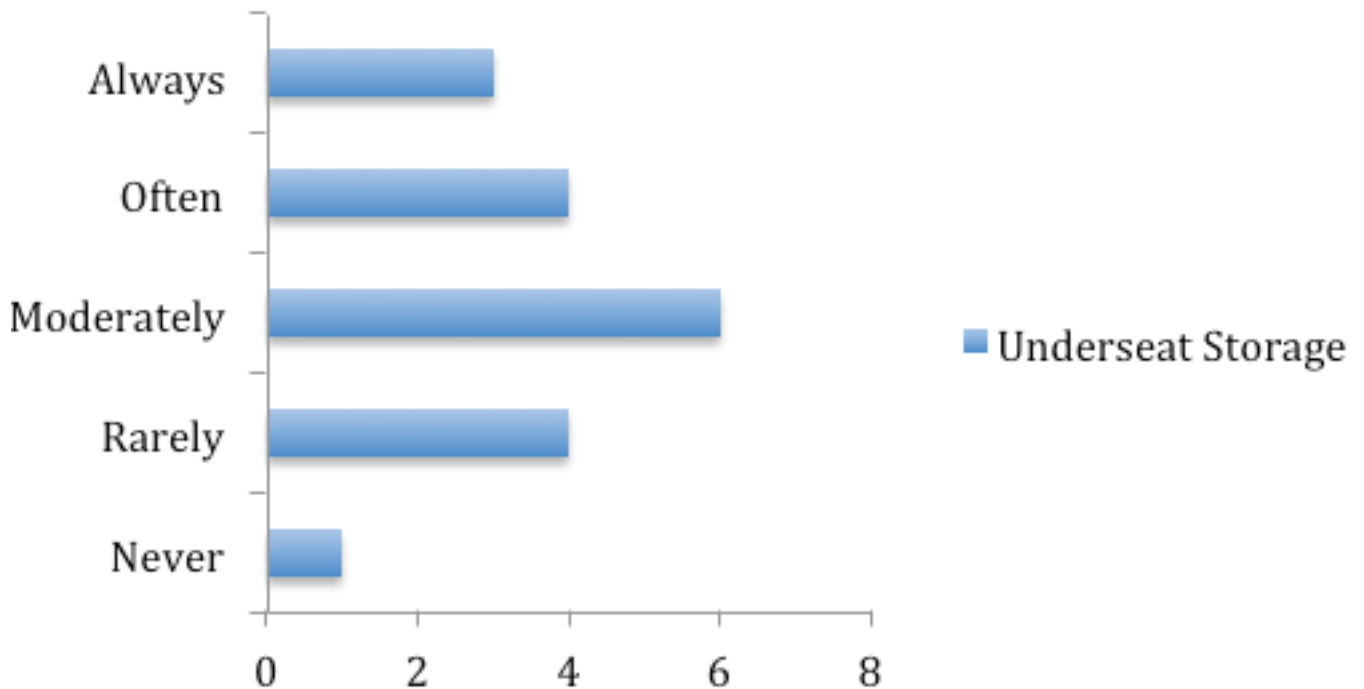
How Frequently do You Use the Whiteboards?



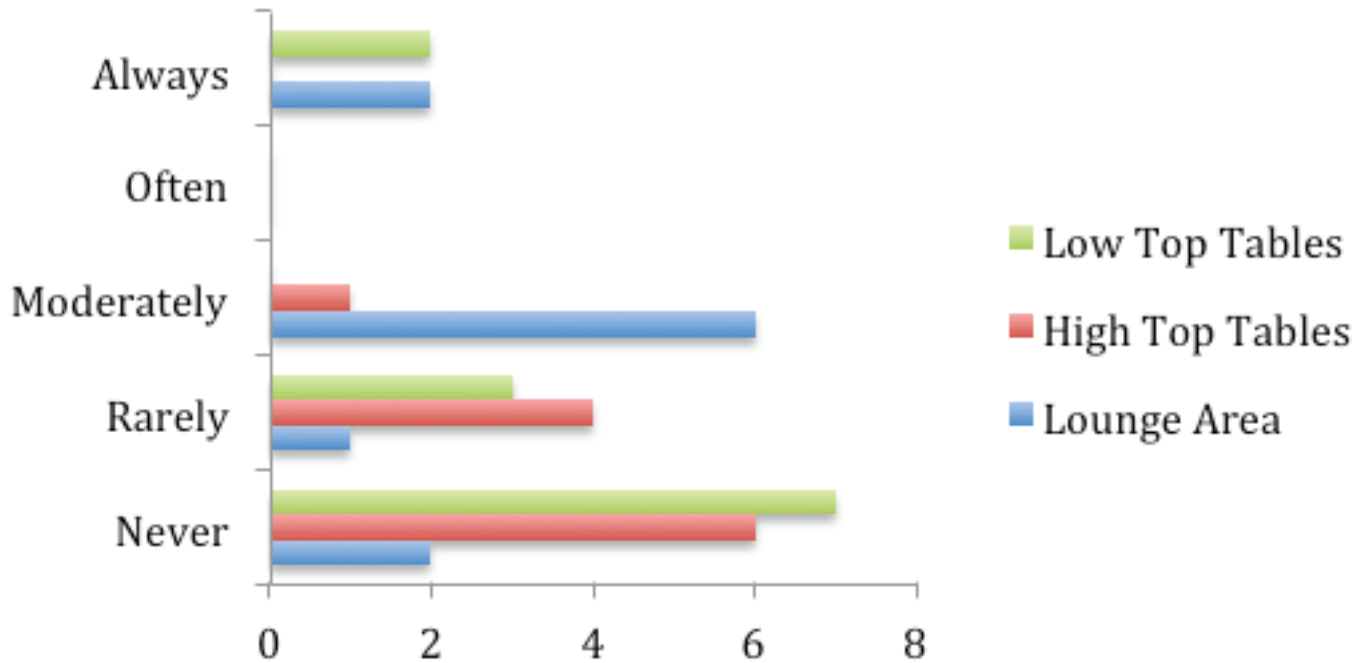
How Frequently do You Use the Whiteboard Hooks and Charts?



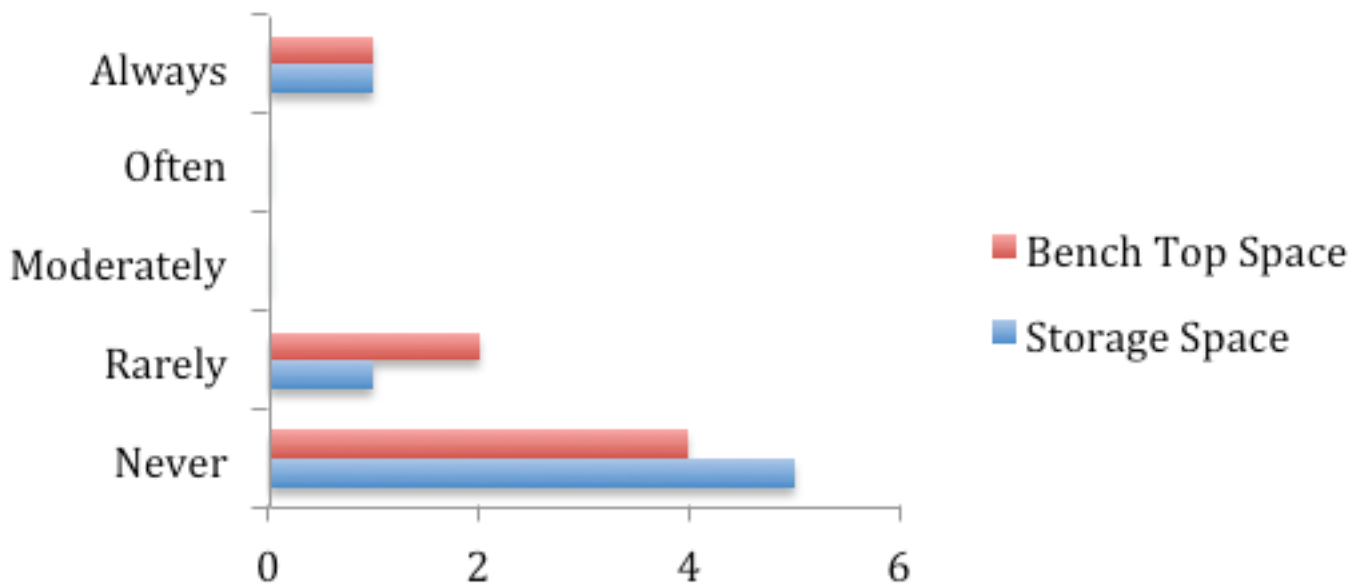
How Frequently do Students Use Underseat Storage?



How Frequently do You Use the Various Breakout Spaces in Hay111?



How Frequently do You Use the Storage and Bench Space in Hay211?



Question 1: Do you reconfigure the furniture arrangement in your classroom? If so, what has your experience been like? If not, why not?

Comments were varied; however, there seemed to be a general consensus that although it was very nice that the tables and chairs could be rearranged, professors rarely had time or desire to do it.

Question 2: How often do you reconfigure the chairs and tables in your classroom and what configuration do you use?

Most Professors leave the tables where they are saying the standard X configuration suits their teaching methods. About 25% of those who answered say they plan to reconfigure more as they get more comfortable in the space.

Question 3: Do you feel that the classroom is properly supplied (dry erase pens, post its, etc)? If not, what is lacking/missing/often running low?

Nearly all participants agree that the room is properly supplied with dry erase pens, but several survey takers comment on the fact that computer adaptors for the students, faculty, and staff would be a nice addition.

Question 4: In Your opinion, are sightlines a problematic issue in the classroom? Is the Room too big or too small as far as sightlines are concerned?

For those professors teaching in Hay111 there was a unanimous opinion that the structural column situated near the middle of the room created difficulty as far as sightlines were concerned. In 211 the were mixed comments: some said that the room was fine and others mentioned that the long narrow shape of the room made it difficult for students on the far end of the classroom to see the board near the door.

Comments were also varied when it came to the size of Hay111 and Hay211. While some had very little to say about the space, 50% of teachers in Hay111 found the room to be too large. Many seemed to have found ways to cope with this issue, such as “[moving] around a lot.” The issue seems to be the opposite in Hay211, where several teachers stated that the room was too small for the scale of the furniture.

Question 5: For H111, is the pillar an issue to you/your students? If so, what have you done to reduce the impact of it in your class?

As was concluded in the previous question, 100% of participants agree that the structural column in Hay111 is an issue. Although many have found solutions, such as walking around, moving tables, and assigning students seats away from the column, it remains an issue.

Question 6: Is the room too large/too small/ perfect for the needs of your class?

Over 60% of participants using Hay111 agree that it is a great size for their class’s needs; however, others still feel that the space is too large and that they have to find ways to make it smaller.

In Hay211 many feel that the room is too small, partially due to the fact that the furniture is too large for the space. With a full class the room can feel crowded and get very warm.

Question 7: Are the display case windows distracting to you? Are they distracting to your students? If not, do they benefit you or your students in any way?

Although many participants expected the display case windows to be a distraction, the survey suggests that this was not the case. Over 75% say that the windows are not a distraction to them or their students and of the remaining 25%, only 10% felt strongly that they were distracting.

Although many participants did not see much benefit in the windows, some commented on the light and feeling of openness they provided, while others said that it allowed passersby the opportunity to see what was going on.

Question 8: What is your opinion on the materiality and colors of the space (floors, ceiling, wall color, color of the furniture, etc.)?

Over 94% of participants were impressed by the colors, furniture, and lighting used in the space. Comments described the room as “stimulating,” “cheerful,” “modern,” and “bright.” Participants also mentioned that students loved the chairs. The only negative observation was that the tables often get dirty due to the whiteboard markers and erasers.

Question 9: How are the acoustics in the room? Can students hear you? Can you hear the students? Are noises from inside or outside the classroom an issue?

There were mixed reviews regarding the acoustic quality in Hay111 and Hay211. Although some said that the acoustics in Hay111 were great, others commented on the loud HVAC system and the high noise level when many groups were talking at the same time. In Hay111 and Hay211 some participants said that the sound system worked great while some mentioned that it was too quiet.

Question 10: If you could change one thing about the space and furniture, what would it be?

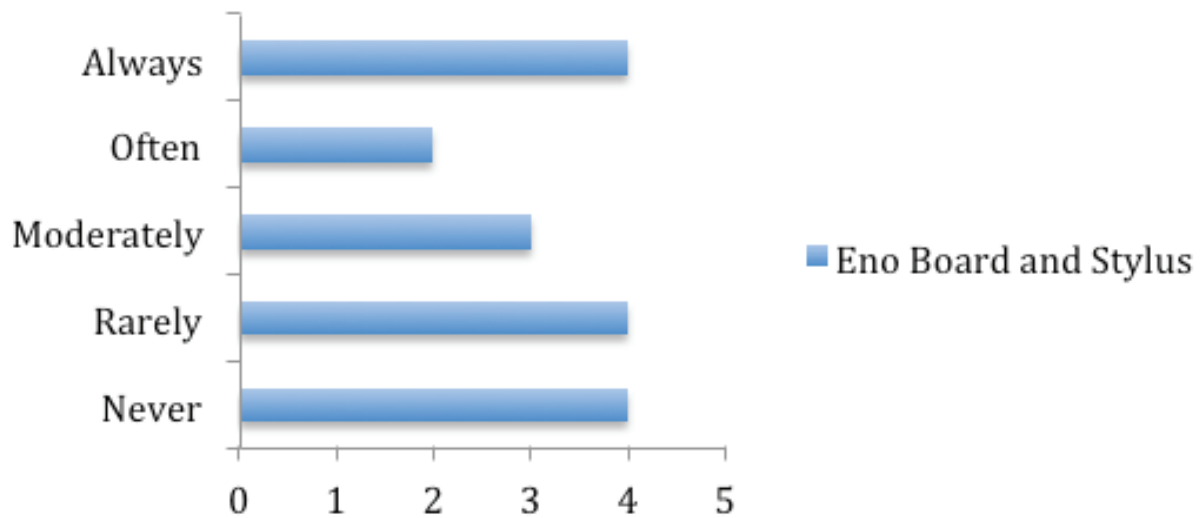
60% of users in Hay111 agree that they would remove the structural column from the room if they could. Other comments included making the room smaller and painting the wall a different color. In Hay211 several participants mentioned that the room could be bigger or that the furniture could be smaller and that they had no where to put their things. Some thought they layout of Hay211 was a big strange.

Question 11: Please include any further comments or suggestions regarding space and furniture here:

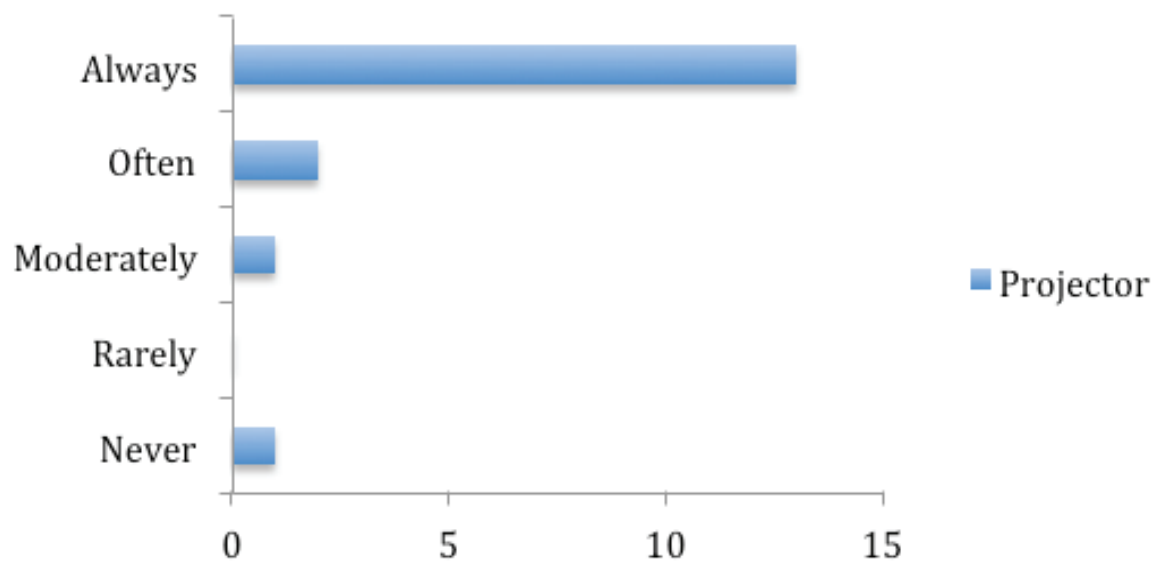
Additional comments included: the fact that the white tables often look dirty, it would be beneficial to have a Mediascape at each station, and the breakout spaces in Hay111 are not utilized often.

Part II: Technology

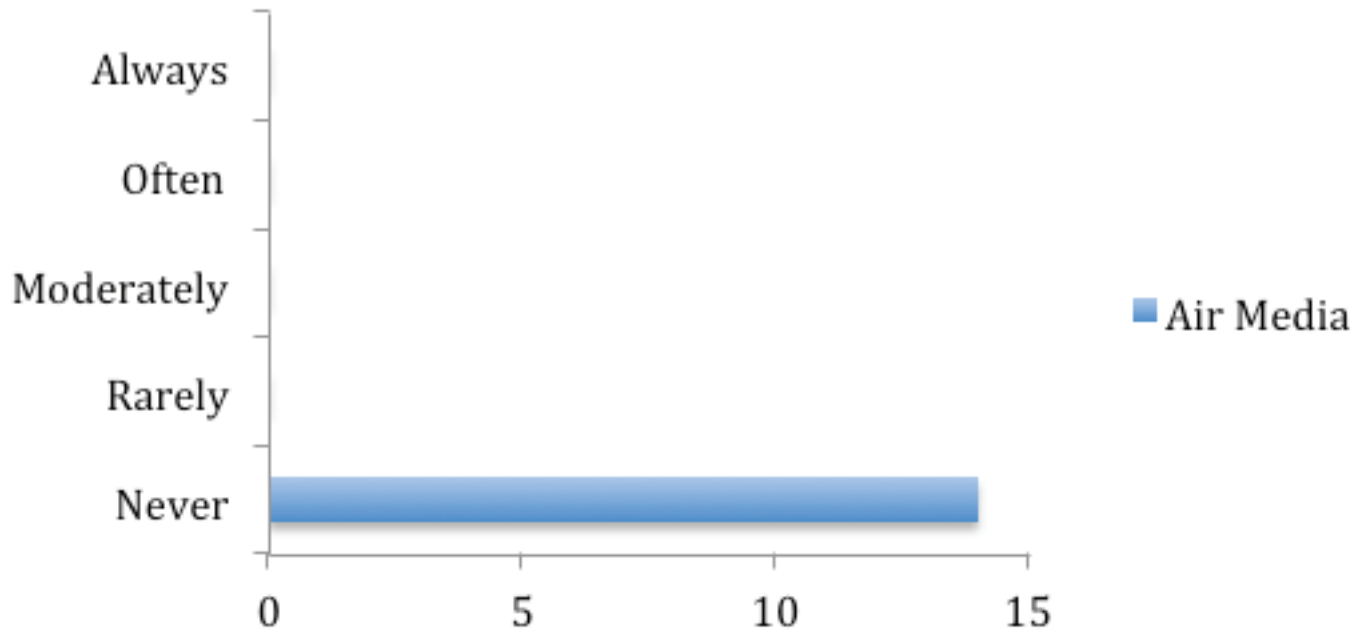
How Frequently do You Use the Eno Board and Stylus?



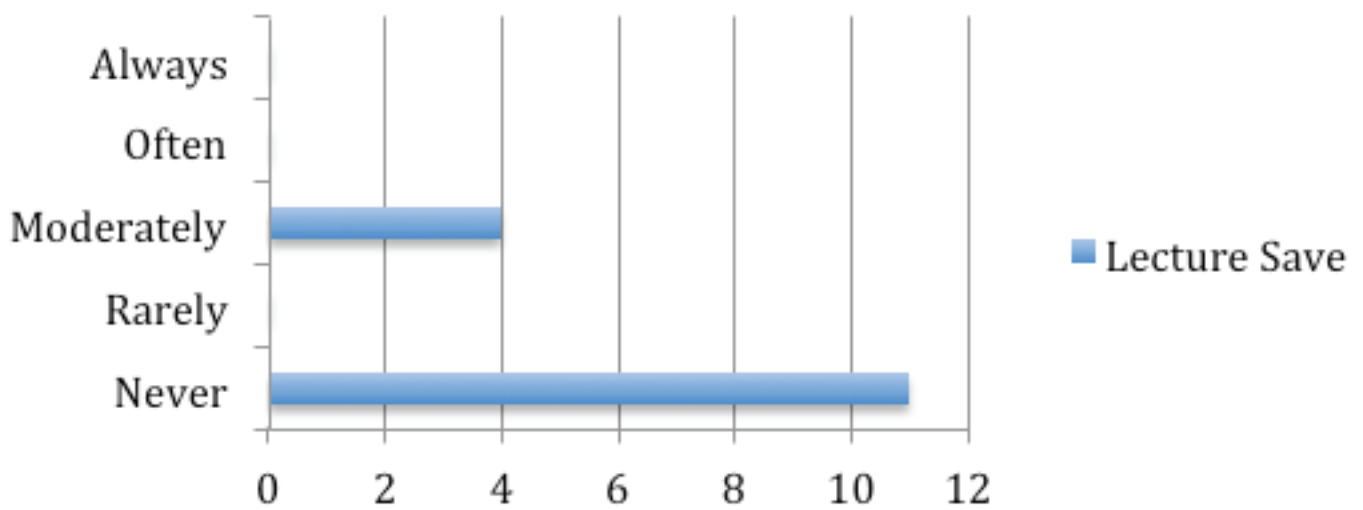
How Frequently do You Use the Projector?



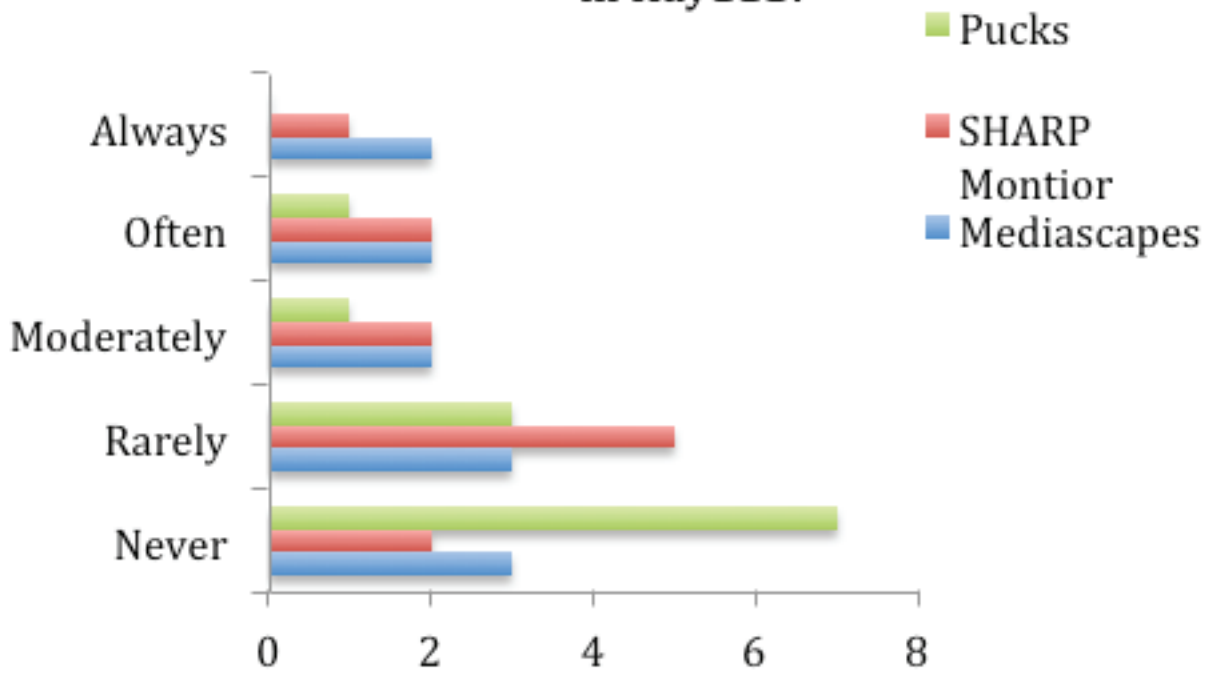
How Frequently do You Use Air Media?



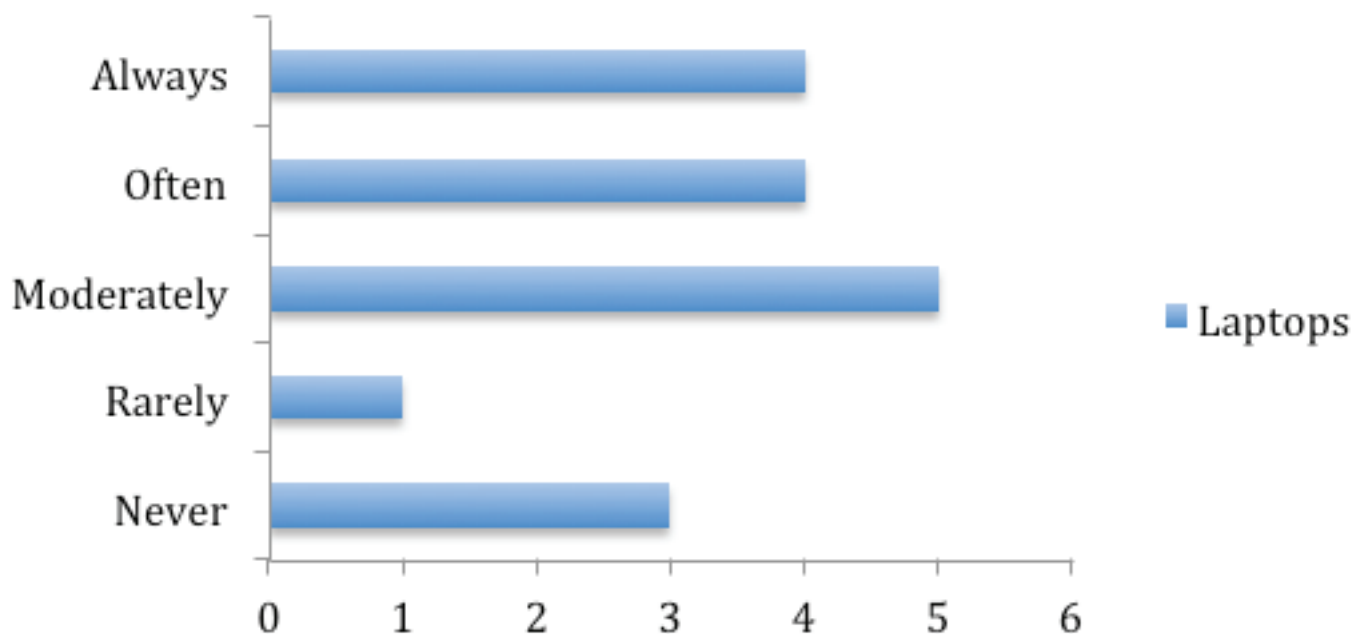
How Frequently do You Use the Lecture Save Option on the Eno Board?



How Frequently do You Use the Advanced Technology in Hay111?



How Frequently do Students Use Personal Computers During Class?



Question 1: Have you experienced any issue with the technology?
Please explain.

40% of users express that they have not had issues with the technological aspects of the room; however, minor issues, such as, audio issues, difficulty syncing the Eno Stylus, difficulty calibrating the Eno board, and need for more suitable adaptors were mentioned.

Question 2: How is the audio quality when using speakers (e.g., is it too quiet)? Do you wish that each station had its own audio?

Comments varied for both classrooms with this question. Some said the audio was too loud, some too quiet. Comments were also varied regarding the necessity of having speakers at every station.

Question 3: Are students bringing their personal computers to class? Do they have them charged before class or do they charge them during class? Have you asked them to charge their computers before class?

Of the participants who allow their students to have their computers in class only 25% request that the students charge their computers before class. Several participants noted that students are at school all day and it would be unrealistic to expect that they would have their computers charged before class. One mentions that students love to have chargers available during class.

Question 4: If a Document Camera was installed, would you use it? Is there any other form of technology you would like to see in these rooms?

Although 57% of participants feel that a document Camera would be unnecessary in these rooms, several other technological aspects were mentioned, including: Ipads, VHS, an additional Mediascape, and AirMedia that was properly hooked up.

Question 5: If you are not using the technological aspects of the room, why not?

Although many of the participants said that they are not currently using all of the technological aspects of the room, 60% of users say they plan to expand their usage, as they get more comfortable. Several participants mentioned that if they had a bit more training they would be more apt to use the technology.

Question 6: What would help you use the technology to a greater extent (further technology training workshops, one-on-one help, etc.)?

Of the participants who responded, 72% indicated that they would benefit from some form of additional training. Whether it be on a particular piece of technology or just a workshop “where faculty can explore together and share experiences.”

Question 7: Please include any further comments or suggestions regarding technology here:

Additional comments included everything from ‘thanks’ for the support in the classroom to frustration with the Eno board and Stylus.

Part III: Pedagogy

Question 1: Does the technology in this classroom support your pedagogies?

Of the participants who responded, 85% said, “yes” the technology in the room did support their pedagogies. The room provides the opportunity “to do a total flipped classroom” and to bring “content to life.”

Question 2: Does the space and furniture in this classroom support your pedagogies?

Over 90% of participants agree that the furniture in these classrooms support their pedagogies. One user noted that “having the freedom to change from desks to couch is really fun and I think the students are able to learn in a comfortable environment.”

Question 3: What challenges have you faced with regard to using your set of pedagogies in this classroom?

Although several participants mentioned challenges they have faced with regard to teaching in Hay 111 and 211, they also commented on how they overcame these challenges. For example, several participants mentioned that the room was too large; however, they also commented that it made the room flexible and that they could adjust to it.

Question 4: What successes have you had with regard to your pedagogies in this classroom?

The successes of this room are even more abundant than the than the challenges. Participants shared a variety of different success stories. Several participants applauded the ease of engaging students. While others commented on the versatility of the space and the technology for presentations, projects, watching videos, and small group work.

Question 5: What has been the biggest surprise with regard to working in the classroom?

Of the participants who answered, over 80% were pleasantly surprised with the classroom. 30% mentioned that the new whiteboards were surprisingly useful. Others commented on the energy and life that the colors and light bring to the space.

Question 6: What are your overall feelings about the space (please also include any further suggestions)?

Over 90% of participants had an overall positive experience in the room.



APPENDIX iii

Summaries of Class Observations

Class One: PROFESSIOR #1 (Hub: Hayward 211)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: Standard configuration where all tables are aligned in groups of 8

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: N/A

Use High top tables:N/A

Use Low top tables:N/A

Use of storage space:No

Use of bench top space:No

Use Eno Board/ Stylus:Yes

Use Projector:Yes

Use AirMedia:No

Use SHARP monitor:N/A

Use Mediascape:N/A

Use Pucks:N/A

Plug in to outlets: Students had their computers plugged into the wall which made that space impossible to walk along.

Students use personal computers:All

Professor Captures and saves material:No

Distraction from exterior:No

Pedagogy: Teacher used a mixture of Video, Lecture, question, discussion

Summary: The class watched a video while taking notes on personal white boards, then they worked through a stock and flow chart together using the whiteboards as a means of working through it. Very little advanced technology was used. The teacher says she sometimes uses the stylus but mostly writes on the board, especially when time is short. Students often photograph their work on the white boards and send it to her to grade. The class is structured so that the students watch a lecture at home and are ready to do activities when they come to class. The teacher walked back and forth in front of the class, but not among the students because there was no room.

Observations: The room seems too small for the class, every seat was taken and the room felt very congested. None of the students were using the storage provided under their seats, which may have made things feel less crowded. Given that all of them had to bring their own computers that took up even more space. The students and teacher agreed that the personal whiteboards are the best aspect of that classroom. They enjoyed the colors as well. On a whole it seemed like this class may have been better suited in a larger classroom with similar furniture, it seemed to rely very little on advanced tech; however, after class I showed the professor a little bit more on how to use the stylus and how it might be useful when using one of the computer programs used in the class

Observation style: for this class I observed the teacher, students, tech, and furniture for two minutes each in a cycle □ too much unimportant detailed information

Class Two: Professor #2 (Hayward 111)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: X Configuration

Use Personal Whiteboards: No

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: No

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: No

Use Projector: No

Use AirMedia: No

Use SHARP monitor: No

Use Mediascape: No

Use Pucks: No

Plug in to outlets: No

Students use personal computers: No

Professor Captures and saves material: No

Distraction from exterior: No

Pedagogy: Teacher used a mixture of Lecture, question, discussion, 101 assistance

Summary: *Note: professor injured leg so she rolled around in chair when normally she might have walked around more, she also normally uses Eno/Stylus but couldn't because of injury
The class consisted of the Professor reviewing problems, covering new content, assigning problems, reviewing problems.... she moved from table to table assisting students.

Observations: Students in the back of the classroom seemed to get easily distracted and talk amongst each other: It is possible that the classroom was too large for a class of this size, although she did have good control over the class. This class could easily have survived without advanced technology based on the pedagogy. It seemed like the students were working their way through their textbook. Some students did not have their textbook, therefore it may have been nice if there had been a document viewer (teacher specifically mentioned this) then students would not have had to share books.

Observation style: For this class I attempted to compare five students actions to the actions of the teacher in 2 minute segments. This was too detailed and not on point at all.

Class Three: Professor #3 (Hayward 111)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: Three groups of 8 and two groups of 4 next to each mediascape

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: Yes

Use High top tables: No

Use Low top tables: No

Use of storage space:N/A

Use of bench top space:N/A

Use Eno Board/ Stylus: Yes

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: Yes

Use Mediascape: Yes

Use Pucks: Yes

Plug in to outlets: Yes

Students use personal computers: Yes

Professor Captures and saves material: No

Distraction from exterior: Rare

Pedagogy: The class was broken into groups to write a blog post about a given region of the world before the class was done. Students work in small groups, while professor walks around to help.

Observations: The class was generally engaged in their task, although some were distracted by their computers/classmates. At first students seated at lounge and mediascapes were not sure how to use the technology; however, they figured it out quickly for themselves. (I assisted the professor with one aspect of how to turn on the monitor. Some students plugged into outlets at mediascapes/lounge. Some students utilized personal whiteboards to share individual findings with their groups. Given that there were six groups, they definitely needed a room that big but the students seemed distracted by internal distraction. The assignment seemed to push the students out of their comfort zone a bit, however, so it seemed like a good trade off. The room (monitor and mediascapes) was very useful for this kind of assignment; although, the professor says this is not something they have tried before.

Observation style: general observation

Class Four: Professor #4 (Hayward 111)

Rearrange Desks: Yes

Rearrange Chairs: Yes

Configuration: Groups of Six

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: No

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: No

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: Yes

Use Mediascape: Yes

Use Pucks: No

Plug in to outlets: No

Students use personal computers: No

Professor Captures and saves material: No

Distraction from exterior: None

Pedagogy: The class was divided into two parts. Part one consisted of two students giving individual mini presentations. They stood by the computer and played video clips for the class to discuss. The mediascapes were on and many of the students, whose views were obstructed by the column, watched the clips on the Mediascape. Students were able to turn their chairs toward each other in order to discuss comfortably. The second part of class was broken into groups of six. Students used mini whiteboards to analyze excerpts from books then photographed them and sent them to their teacher.

Observations: The professor and students moved tables into groups of six at the beginning of the class and labored to lift the tables together until they realized that the tables rolled. Room seems slightly too big for the class in that they did not utilize the lounge space or extra tables. The professor says that activities including the mini white boards are not a regular component of their class. However, they did seem to facilitate the class in an engaging manner. The professor moved around the classroom quite a bit. This seemed to be a reaction to the size of the room and the students whose sight lines were impaired by the column. He also seemed to not want to stand in one place too long because he almost created a second column. However, he was able to move freely from table to table during small group work, which seemed beneficial.

Observation style: general observation

Class Five: Professor #5 (Hayward 111)

Rearrange Desks: Yes

Rearrange Chairs: Yes

Configuration: 6 desks across the front (students facing the back of the room, backs to whiteboard) and ten desks grouped on other side of room (pillar was in the way of this configuration).

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: rare

Use Lounge Area: No

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: No

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: Yes

Use Mediascape: Yes

Use Pucks: No

Plug in to outlets: No

Students use personal computers: No

Professor Captures and saves material: No

Distraction from exterior: None

Pedagogy: A brief introduction was followed by an activity where the students were assigned to be a lawyer or part of jury. The professor introduced a case and asked the lawyers each to support their side of the case, then the jury gave their verdict. The professor then gave a lecture based on the activity.

Observations: The professor had a commanding control over the classroom. He had the students rearrange the classroom to meet his vision. He then assigned seats to keep the students engaged and focused in the activity. The professor projected powerpoint/ videos on the mediascapes but otherwise technology was relatively unimportant to the class. The students took notes and analyzed evidence on the personal whiteboards. Professor and students have space to move around classroom. The Professor broke up his lecture with video, which kept the students focused the whole class.

Observation style: general observation

Class Six: Professor #6 (Hayward 211)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: Standard configuration where tables were aligned in groups of 8

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No (and she would like to have it removed all together)

Hang whiteboards from tracks on large whiteboards: Yes

Students use seat storage: rare

Use Lounge Area: N/A

Use High top tables: N/A

Use Low top tables: N/A

Use of storage space: No (although they often do)

Use of bench top space: No (although they often do)

Use Eno Board/ Stylus: No

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: N/A

Use Mediascape: N/A

Use Pucks: N/A

Plug in to outlets: No

Students use personal computers: Yes

Professor Captures and saves material: No

Distraction from exterior: None

Pedagogy: The Professor introduced the material for the day and broke the class into several smaller sections. Students followed along with the professor's instructions on Blackboard. Then the students had time to work in small groups. And finally the professor gave a powerpoint presentation.

Observations: The students closest to the windows seemed too far away from the board on the far wall to see what the teacher was writing down. But they were well situated for small group work and all able to see the powerpoint presentation. The room was a fine size on a whole for 14 students. The students seemed engaged the entire time. The professor facilitated this by asking questions throughout the presentation and prompting students to engage. The students turn in chairs to talk to each other and later to see powerpoint.

Observation style: general observation

Class seven: Professor #6 (Same professor as Class six; different Course) (Hayward 211)

Rearrange Desks: Yes (but only to push them out of the way)

Rearrange Chairs: Yes (but only to push them out of the way)

Configuration: scattered tables to allow for activity

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: N/A

Use High top tables:N/A

Use Low top tables:N/A

Use of storage space: Yes

Use of bench top space: Yes

Use Eno Board/ Stylus: No

Use Projector:Yes

Use AirMedia: No

Use SHARP monitor: N/A

Use Mediascape:N/A

Use Pucks:N/A

Plug in to outlets: No

Students use personal computers: No

Professor Captures and saves material:No

Distraction from exterior:None

Pedagogy: Presentation day- Two students present their projects. All other students and teacher help the two presenters prepare their “experiments”.

Observations: The desks did not leave enough space for students to move around and work. This classroom involves a lot of movement to water the plants and work at the black top counter and there is not that much room. It was also an issue that there was only one sink. Several students ended up going to the bathroom to wash dishes needed for the class. Although the furniture allowed the students and teacher to have a comfortable/ casual place to watch presentation from.

Observation style: general observation

Class Eight: Professor #7 (Hayward 111)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: Three groups of 8 and two groups of 4 next to each mediascape

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: Professor sat on stool at lounge bar

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: No

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: Yes

Use Mediascape: Yes

Use Pucks: Yes

Plug in to outlets: No

Students use personal computers: Yes

Professor Captures and saves material: No

Distraction from exterior: None

Pedagogy: For the first part of the class, the professor presented an issue and encouraged discussion about the issue and for the second part of class the students were given time to work in class.

Observation: The professor has divided the students into three groups that they stay in permanently. Two are positioned at mediascapes and one is not- why don't they rotate? Why don't they use the lounge? The professor is bothered by the pillar so much so that he puts his stuff down on a table in the middle of the room and sits at the lounge bar on a stool to face the students. From here he is able to see the whole class and engage with them. Students turn toward him to listen though some seem distracted by their computers. The tables work well for groups of four to work together on their projects. They are all facing one another. Everyone is whispering though, I think they were afraid of being too loud for one another. With only 12 students the room seemed far too large for the group; however, the technology seemed useful for them.

Observation style: general observation

Class Nine: Professor #8 (Hayward 111)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: modified X where group of four behind pillar is pulled to center of classroom so that everyone can see

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: Rare

Use Lounge Area: No

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: Yes

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: Yes

Use Mediascape: Yes

Use Pucks: No

Plug in to outlets: No

Students use personal computers: Yes

Professor Captures and saves material: Yes

Distraction from exterior: Rare

Pedagogy: Professor introduces discussion for the day reviewing several sections of a book they are reading (about 15 minutes), then asks the students to break into groups and analyze further sections of the book, then they all discuss the students findings

Observations: Students seemed quiet, perhaps because of the time of day, but generally engaged in the class. No one seemed distracted by the considerable amount of traffic in the hallway. The students seemed to enjoy the comfort and general flexibility of the chairs: they rocked/swiveled/ and rolled around the room. Students used the personal whiteboards to help analyze the sections of the book but some were just drawing on them. It was interesting to see that while one of the students was drawing she was also answering most of the questions in the class. Although the professor started the class by writing on the whiteboard, he used the time that the students were working in groups to set up the notebook on the ENO board, so that he could record their analysis of each section and save it for the students. (He is the first professor I've observed really using the ENO stylus/software). The professor was able to then walk around the room and help students until they came back together at the end to discuss. The professor did seem a little bit difficult to hear and some of the students were very difficult to hear.

The stylus seems a little broken and the students could really use more big erasers

Observation Style: general observation

Class Ten: Professor #9 (Hayward 111)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: modified X where group of four behind pillar is pulled to center of classroom so that everyone can see

Use Personal Whiteboards: No

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: None

Use Lounge Area: No

Use High top tables:No

Use Low top tables:No

Use of storage space:N/A

Use of bench top space:N/A

Use Eno Board/ Stylus:No

Use Projector:Yes

Use AirMedia:No

Use SHARP monitor:Yes

Use Mediascape:Yes

Use Pucks:No

Plug in to outlets:No

Students use personal computers:Yes

Professor Captures and saves material: No

Distraction from exterior: Rare

Pedagogy: Professor reviewed material with a powerpoint from two chapters encouraging students to work out problems along with her.

Observations: The classroom seems too large for this particular class/teacher. The students “hide” in the back and talk; many are looking at unrelated topics on their computers. The professor generally stayed at the “front” of the classroom and did not walk around the room. Students seem content and comfortable with the furniture. During the powerpoint section students are able to look at the screen closest to their desk. Students turn to face the professor in order to look at the board but it is difficult for people in the front because they are so close to the board and have little choice but to put their notebooks in their laps. It seems like a lecture configuration would be better suited for this class. Some students switch seats in order to see around the pillar and see the board better. Some students ask what is written on the board because they cannot see from their seats. Students are yelling in the hall outside and no one seems to hear/ notice. Unfortunately many students had lost engagement by the end of the class.

*lights turn off often in H111

Observation Style: general observation

Class Eleven: Professor #10 (Hayward 111)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: modified X where group of four behind pillar is pulled to center of classroom so that everyone can see

Use Personal Whiteboards: Yes

Use Large Whiteboards: Yes

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: About half

Use Lounge Area: No

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: Yes

Use Projector: Yes

Use AirMedia: No

Use SHARP monitor: Yes

Use Mediascape: Yes

Use Pucks: Yes

Plug in to outlets: No

Students use personal computers: Yes

Professor Captures and saves material:

Distraction from exterior: Some

Pedagogy: Class began with a quiz, then quiz grading. Then professor presents material with a powerpoint, integrating small group work to drive home concepts and finally students practice equations in small groups

Observations: Professor had projector running and ENO set up before class (he is in this room two periods in a row). To make up for the issue of there being too few large erasers, he hands one out to each table. Students are generally comfortable looking in chairs (swiveling, turning, etc). Students look at Mediascape and Monitor to view powerpoint from the back of the room. Professor is easy to hear and most of the students listen intently (some chat in the back). Several students were distracted by people walking by outside but no one seemed to linger on the distraction. The students were able to pass personal whiteboards around in order to share information during small group work and the configuration made it easy for the professor to walk around the classroom and get to each student. The professor and students used the eno pen to notate the powerpoint and work out problems in the notebook setting.

Observation Style: general observation

Class Twelve: Professor #11 (Hayward 111)
(Professor X had a guest lecturer that day
and was not actually there)

Rearrange Desks: No

Rearrange Chairs: No

Configuration: modified X where group of four behind pillar is pulled
to center of classroom so that everyone can see

Use Personal Whiteboards: Yes

Use Large Whiteboards: No

Display whiteboards on movable carts: No

Hang whiteboards from tracks on large whiteboards: No

Students use seat storage: No

Use Lounge Area: Yes

Use High top tables: No

Use Low top tables: No

Use of storage space: N/A

Use of bench top space: N/A

Use Eno Board/ Stylus: No

Use Projector: Yes

Use AirMedia: He used his own computer, but no?

Use SHARP monitor: No

Use Mediascape: Yes

Use Pucks: Yes

Plug in to outlets: No

Students use personal computers: Yes

Professor Captures and saves material: No

Distraction from exterior:

Pedagogy: *** Professor X had another teacher giving his lecture on this day*** Professor lectured for half of the class then the students worked on group projects for the second half. Lecture is supposedly unusual for this class.

Observations: The Professor had a little bit of trouble setting up his computer for the lecture but he does not normally teach in this room, so that is to be expected; he did end up figuring it out after a couple of minutes. Two girls sat at the lounge section and ate their lunch during the presentation; they seemed to be “hiding” and ended up whispering to each other that they couldn’t really see and looking at their phones. If the Monitor had been on they would have been able to see the lecture. The rest of the class who were sitting in desks were generally able to swivel to see either the mediascapes or projector. Students were generally engaged, but they are not accustomed to lectures in this class. The students were then given 35 minutes to work on group projects. The students crowded around a few tables instead of spreading out. One group used pucks but another crowded around one laptop instead of using the other mediascape. Students also use large whiteboards to work out problems. One student comments that they love the swivel stools. The professor was able to walk around the room and look on with what the students were working on and help them

Observation Style: general observation

APPENDIX iv

ANALYSIS OF STEELCASE SURVEY PROVIDED BY STEELCASE

January 19, 2014

Analysis For Philadelphia University From Fall 2014
 Laura Ring Kapitula, PhD (Steelcase Education)

Data were imported into SAS®. The student data contained 444 records, however some of them had almost all missing responses. After removing records with greater than 20 missing values 402 observations of useable student data were left. For instructors there was a sample size of 34 with useable data (originally 45 records were in the data).

Students were asked about the course they were taking and their overall views of instructor effectiveness and type of instruction. Results are given in frequency tables below.

<i>Course</i>			<i>Cumulative</i>	<i>Cumulative</i>
	<i>Q1</i>	<i>Frequency</i>	<i>Frequency</i>	<i>Percent</i>
<i>(BIOL 103/4) Biology I (1)</i>		50	50	12.47
<i>(WRIT 101/5) Writing Sem. 1: Writing Comm. (2)</i>		16	66	16.46
<i>(ECON 111/1) Principles of Economics (3)</i>		10	76	18.95
<i>(FYS 100/1) Pathways Seminar (4)</i>		6	82	20.45
<i>(MGMT 307/1) International Management (5)</i>		9	91	22.69
<i>(FYS 100/2) Pathways Seminar (6)</i>		20	111	27.68
<i>(CHEM 103/2) Chemistry I (7)</i>		41	152	37.91
<i>(LAW 101/1) Intro Law & Society (8)</i>		23	175	43.64
<i>(DECSYS 208/1) Sustainability & Eco-Innovation</i>		19	194	48.38
<i>(SCI 108/1) Sustainability & Eco-Innovation</i>		3	197	49.13
<i>(MATH 103/6) Intro to Calculus (11)</i>		1	198	49.38
<i>(HUMN 223/2) World Philosophies (12)</i>		22	220	54.86
<i>(COLLST 499/4) Contemp Perspectives (13)</i>		22	242	60.35
<i>(JSLA 302/2) Telling Stories, Sell'n Stories</i>		22	264	65.84
<i>(IDD 510/1) Essentials of Interactive Design</i>		5	269	67.08

<i>Course</i>					
	<i>Q1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>(BIOL 209/1) Medicinal Plants (17)</i>		16	3.99	285	71.07
<i>(ECBIO 301/1) Ecology (18)</i>		14	3.49	299	74.56
<i>(BIOL 103/3) Biology 1 (19)</i>		4	1.00	303	75.56
<i>(BIOL 103/5) Biology 1 (20)</i>		18	4.49	321	80.05
<i>(MATH 102/6) Pre-Calculus (22)</i>		12	2.99	333	83.04
<i>(WRTG 217/1) <u>Wrtg Sem 11: SCI, ENG, TC, HL</u> (24)</i>		6	1.50	339	84.54
<i>(WRTG 217/2) <u>Wrtg Sem 11: SCI, ENG, TC, HL</u> (25)</i>		4	1.00	343	85.54
<i>(DECSYS 208/11) Sustainability & Eco- Innovation</i>		20	4.99	363	90.52
<i>(SCI 108/11) Sustainability & Eco-Innovation</i>		2	0.50	365	91.02
<i>(DECSYS 208/5) Sustainability & Eco- Innovation</i>		10	2.49	375	93.52
<i>(SCI 108/5) Sustainability & Eco-Innovation</i>		1	0.25	376	93.77
<i>(INTD 310/1) Textiles & <u>Mtrls for Arch/Intd</u></i>		5	1.25	381	95.01
<i>(SUST 100/1) Fundamentals of Sustainability</i>		20	4.99	401	100.00
<i>Frequency Missing = 1</i>					

Instructor Effectiveness

	<i>Q4</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Very Ineffective (1)</i>		34	8.52	34	8.52
<i>Ineffective (2)</i>		7	1.75	41	10.28
<i>Somewhat Ineffective (3)</i>		19	4.76	60	15.04

<i>Instructor Effectiveness</i>					
	<i>Q4</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Neither Effective nor Ineffective (4)</i>		14	3.51	74	18.55
<i>Somewhat Effective (5)</i>		42	10.53	116	29.07
<i>Effective (6)</i>		120	30.08	236	59.15
<i>Very Effective (7)</i>		163	40.85	399	100.00
<i>Frequency Missing = 3</i>					

	<i>Q6</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Hayward 111 (1)</i>		260	65.33	260	65.33
<i>Hayward 211 (2)</i>		138	34.67	398	100.00
<i>Frequency Missing = 4</i>					

<i>Overall View of Type of Instruction</i>					
	<i>Q7_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>1 Only teacher</i>		26	6.48	26	6.48
<i>2 Between Only teacher and even mix</i>		56	13.97	82	20.45
<i>3 Even Mix of teacher and group work</i>		270	67.33	352	87.78
<i>4 Between Even Mix and only group work</i>		45	11.22	397	99.00
<i>5 Only group work</i>		4	1.00	401	100.00
<i>Frequency Missing = 1</i>					

Overall View of Type of Instruction

<i>Q7_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Frequency Missing = 1</i>				

View of Engagement

<i>Q8_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>1 Not at all</i>	5	1.25	5	1.25
<i>2 Slightly</i>	35	8.73	40	9.98
<i>3 Moderately</i>	138	34.41	178	44.39
<i>4 Very Engaged</i>	170	42.39	348	86.78
<i>5 Extremely</i>	53	13.22	401	100.00
<i>Frequency Missing = 1</i>				

engagement in this class

<i>Q12_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<u><i>not at all</i></u>	24	5.99	24	5.99
<u><i>low</i></u>	36	8.98	60	14.96
<u><i>moderate</i></u>	123	30.67	183	45.64
<u><i>high</i></u>	172	42.89	355	88.53
<u><i>exceptional</i></u>	46	11.47	401	100.00
<i>Frequency Missing = 1</i>				

ability to achieve a higher grade

ability to achieve a higher grade

<u>Q12_2</u>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<u>not at all</u>	33	8.23	33	8.23
<u>low</u>	45	11.22	78	19.45
<u>moderate</u>	146	36.41	224	55.86
<u>high</u>	134	33.42	358	89.28
<u>exceptional</u>	43	10.72	401	100.00

Frequency Missing = 1

motivation to attend class

<u>Q12_3</u>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<u>not at all</u>	42	10.47	42	10.47
<u>low</u>	26	6.48	68	16.96
<u>moderate</u>	123	30.67	191	47.63
<u>high</u>	140	34.91	331	82.54
<u>exceptional</u>	70	17.46	401	100.00

Frequency Missing = 1

<u>ability to be creative</u>				
<u>Q12_4</u>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<u>not at all</u>	22	5.50	22	5.50
<u>low</u>	38	9.50	60	15.00
<u>moderate</u>	86	21.50	146	36.50
<u>high</u>	172	43.00	318	79.50
<u>exceptional</u>	82	20.50	400	100.00

<u>ability to be creative</u>				
<u>Q12_4</u>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
Frequency Missing = 2				

Students were asked to rate whether the experience in the “new” classroom helped students in their ability to be creative, their motivation to attend class, their ability to achieve a higher grade and their overall engagement. Results are given below in Figure 1.

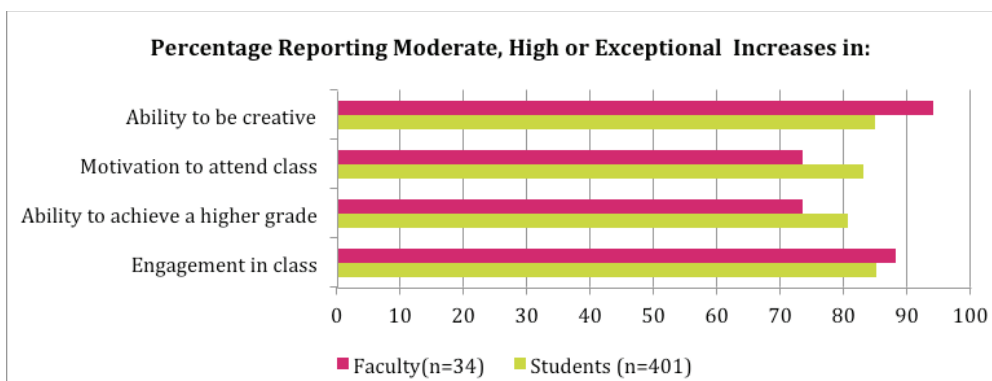
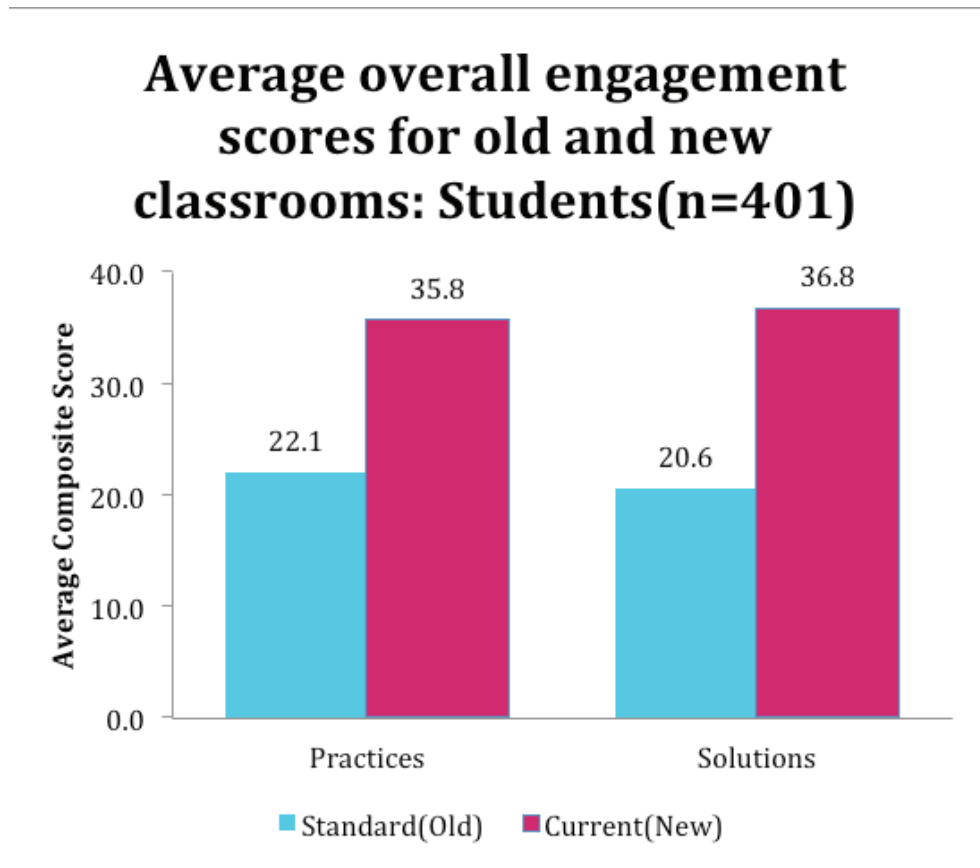


Figure 1

Overall measures of engagement for each of the four conditions were created for each student and faculty who completed the majority of the survey. The overall measures were created by summing all items in that section, so for example the overall practices old condition measure would be calculated by summing all twelve items for that condition resulting in a maximum score of 48 and a minimum score of zero for each condition. The averages for those scores are given below. Paired t-tests were done to test for differences between the averages for the old and new classroom. For students the average differences in composite scores between the pre- and the post- are large and statistically significant, the average difference is 13.8 units for practices with a p-value < 0.0001 and 16.2 units for solutions with a p-value <0.0001. The same pattern holds for instructors, for practices the difference is 10.6, with a p-value<0.0001 and for solutions the differences is 14.2, with a p-value <0.0001.



Individual item analysis for students is given in the tables below.

Table X: Percentage of Students rating each factor as adequate in the old and new classroom, percentage of students rating the new classroom higher than the old, and average improvement in the new classroom. (n=401)

Section=Practices				
<i>Factor</i>	<i>Old Adequate</i>	<i>New Adequate</i>	<i>Rated New Higher</i>	<i>Average Improvement</i>
Collaboration *	69%	98%	74%	1.3
Focus *	71%	90%	52%	0.7
Active involvement *	68%	97%	66%	1.1
Opportunity to engage *	66%	96%	69%	1.3
Repeated exposure to material through multiple means *	67%	94%	61%	1.0
In-class feedback *	78%	94%	51%	0.8
Real-life scenarios *	68%	92%	56%	0.9
Ability to engage ways of learning best *	67%	95%	70%	1.3
Physical movement *	45%	91%	74%	1.7
Stimulation *	48%	96%	76%	1.6

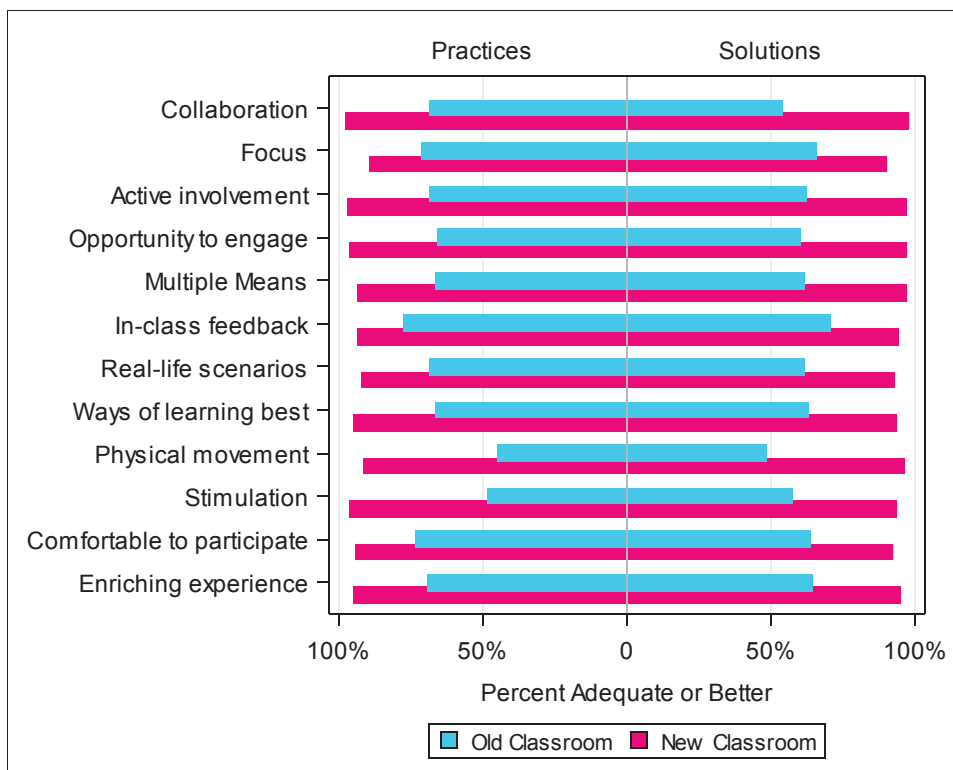
<i>Factor</i>	<i>Old Adequate</i>	<i>New Adequate</i>	<i>Rated New Higher</i>	<i>Average Improvement</i>
Feeling comfortable to participate *	73%	95%	58%	1.0
Creation of enriching experience *	70%	95%	65%	1.1

Section=solutions

<i>Factor</i>	<i>Old Adequate</i>	<i>New Adequate</i>	<i>Rated New Higher</i>	<i>Average Improvement</i>
Collaboration *	54%	98%	82%	1.8
Focus *	66%	90%	60%	0.9
Active involvement *	63%	97%	74%	1.5
Opportunity to engage *	61%	97%	73%	1.5
Repeated exposure to material through multiple means *	62%	97%	74%	1.5
In-class feedback *	71%	95%	57%	1.0
Real-life scenarios *	62%	93%	60%	1.2
Ability to engage ways of learning best *	63%	94%	66%	1.2
Physical movement *	49%	96%	80%	1.9
Stimulation *	58%	94%	71%	1.4
Feeling comfortable to participate *	64%	92%	63%	1.2
Creation of enriching experience *	65%	95%	66%	1.3

** Indicates a statistically significant difference $p < 0.002$. Adequate are Scores of 2,3 or 4 (OK on Two Step Model)*

Figure X: Percent of students rating each factor as adequate or better in the “old” and “new” classroom (n=401) .



Instructor Results

Frequencies for individual variables are given in the tables below.

Course				
Q1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
(BIOL 103/4) Biology I (1)	2	6.25	2	6.25
(WRIT 101/5) Writing <u>Sem 1: Writing Comm.</u> (2)	1	3.13	3	9.38
(ECON 111/1) Principles of Economics (3)	1	3.13	4	12.50
(FYS 100/1) Pathways Seminar (4)	1	3.13	5	15.63
(MGMT 307/1) International Management (5)	1	3.13	6	18.75
(CHEM 103/2) Chemistry I (7)	2	6.25	8	25.00
(DECSYS 208/1) Sustainability & Eco-Innovation	1	3.13	9	28.13
(SCI 108/1) Sustainability & Eco-Innovation	1	3.13	10	31.25
(MATH 103/6) Intro to Calculus (11)	13	40.63	23	71.88
(HUMN 223/2) World Philosophies (12)	1	3.13	24	75.00
(COLLST 499/4) <u>Contemp Perspectives</u> (13)	1	3.13	25	78.13

Course				
Q1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
(JSLA 302/2) Telling Stories, <u>Selln Stories</u>	1	3.13	26	81.25
(BIOL 209/1) Medicinal Plants (17)	1	3.13	27	84.38
(ECBIO 301/1) Ecology (18)	1	3.13	28	87.50
(BIOL 207/1) Principles of Genetics (21)	1	3.13	29	90.63
(MATH 102/6) Pre-Calculus (22)	1	3.13	30	93.75
(PSYCH 213/2) Developmental Psychology (23)	1	3.13	31	96.88
(INTD 310/1) Textiles & <u>Mtrls for Arch/Intd</u>	1	3.13	32	100.00

Frequency Missing = 2

<i>Professional development</i>				
<i>Q3</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Yes (1)</i>	25	75.76	25	75.76
<i>No (2)</i>	8	24.24	33	100.00
<i>Frequency Missing = 1</i>				

<i>pd Effectiveness</i>				
<i>Q4</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Very Ineffective (1)</i>	1	3.85	1	3.85
<i>Ineffective (2)</i>	2	7.69	3	11.54
<i>Somewhat Ineffective (3)</i>	2	7.69	5	19.23
<i>Neither Effective nor Ineffective (4)</i>	1	3.85	6	23.08
<i>Somewhat Effective (5)</i>	8	30.77	14	53.85

<i>pd Effectiveness</i>				
<i>Q4</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>Effective (6)</i>	10	38.46	24	92.31
<i>Very Effective (7)</i>	2	7.69	26	100.00
<i>Frequency Missing = 8</i>				

<i>Room</i>					
<i>Q6</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>	
<i>Hayward 111 (1)</i>	23	67.65	23	67.65	
<i>Hayward 211 (2)</i>	11	32.35	34	100.00	

<i>Overall View of Type of Instruction</i>					
<i>Q7_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>	
<i>1 Only teacher</i>	1	2.94	1	2.94	
<i>2 Between Only teacher and even mix</i>	7	20.59	8	23.53	
<i>3 Even Mix of teacher and group work</i>	19	55.88	27	79.41	
<i>4 Between Even Mix and only group work</i>	5	14.71	32	94.12	
<i>5 Only group work</i>	2	5.88	34	100.00	

<i>View of Engagement</i>					
<i>Q8_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>	
<i>2 Slightly</i>	2	5.88	2	5.88	
<i>3 Moderately</i>	15	44.12	17	50.00	
<i>4 Very Engaged</i>	14	41.18	31	91.18	

View of Engagement

<i>Q8_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>5 Extremely</i>	3	8.82	34	100.00

Engagement in this class

<i>Q12_1</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>not at all</i>	2	5.88	2	5.88
<i>low</i>	2	5.88	4	11.76
<i>moderate</i>	12	35.29	16	47.06
<i>high</i>	16	47.06	32	94.12
<i>exceptional</i>	2	5.88	34	100.00

Ability to achieve a higher grade

<i>Q12_2</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>not at all</i>	4	11.76	4	11.76
<i>low</i>	5	14.71	9	26.47
<i>moderate</i>	13	38.24	22	64.71
<i>high</i>	9	26.47	31	91.18
<i>exceptional</i>	3	8.82	34	100.00

Motivation to attend class

<i>Q12_3</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>not at all</i>	2	5.88	2	5.88
<i>low</i>	7	20.59	9	26.47
<i>moderate</i>	12	35.29	21	61.76
<i>high</i>	9	26.47	30	88.24
<i>exceptional</i>	4	11.76	34	100.00

Ability to be creative

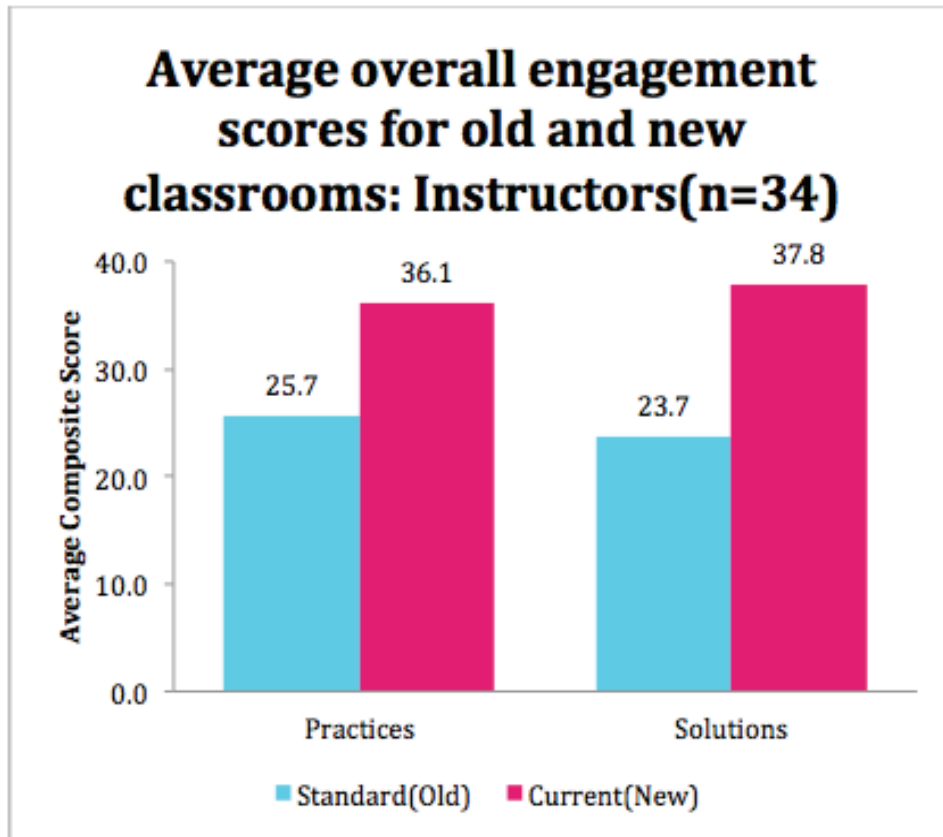
<i>Q12_4</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percent</i>
<i>not at all</i>	1	2.94	1	2.94
<i>low</i>	1	2.94	2	5.88
<i>moderate</i>	8	23.53	10	29.41
<i>high</i>	18	52.94	28	82.35
<i>exceptional</i>	6	17.65	34	100.00

Table X: Percentage of Instructors rating each factor as adequate in the old and new classroom, percentage of students rating the new classroom higher than the old, and average improvement in the new classroom. (n=34)

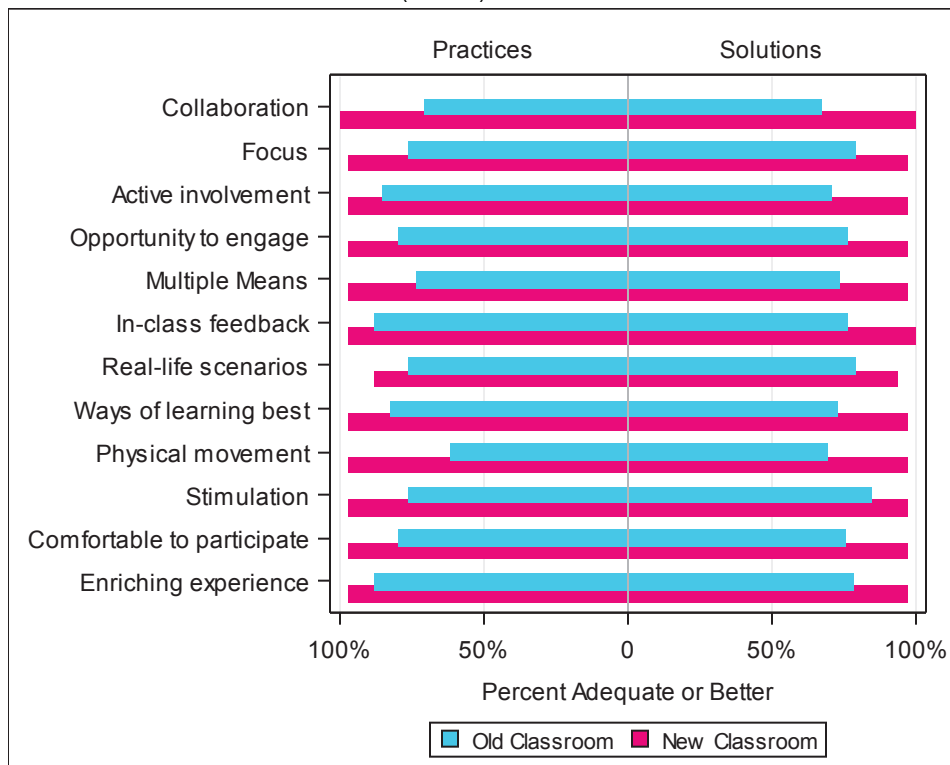
<i>Section=Practices</i>				
<i>Factor</i>	<i>Old Adequate</i>	<i>New Adequate</i>	<i>Rated New Higher</i>	<i>Average Improvement</i>
Collaboration *	71%	100%	85%	1.3
Focus *	76%	97%	53%	0.7
Active involvement *	85%	97%	62%	0.8
Opportunity to engage *	79%	97%	71%	1.1
Repeated exposure to material through multiple means *	74%	97%	65%	1.0
In-class feedback *	88%	97%	58%	0.8
Real-life scenarios *	76%	88%	29%	0.4
Ability to engage ways of learning best *	82%	97%	62%	0.7
Physical movement *	62%	97%	76%	1.4
Stimulation *	76%	97%	73%	1.0
Feeling comfortable to participate *	79%	97%	59%	0.8
Creation of enriching experience *	88%	97%	53%	0.6

<i>Factor</i>	<i>Old Adequate</i>	<i>New Adequate</i>	<i>Rated New Higher</i>	<i>Average Improvement</i>
Collaboration *	68%	100%	88%	1.6
Focus *	79%	97%	65%	0.9
Active involvement *	71%	97%	79%	1.3
Opportunity to engage *	76%	97%	79%	1.3
Repeated exposure to material through multiple means *	74%	97%	79%	1.4
In-class feedback *	76%	100%	62%	1.0
Real-life scenarios	79%	94%	45%	0.6
Ability to engage ways of learning best *	73%	97%	72%	1.1
Physical movement *	70%	97%	82%	1.5
Stimulation *	85%	97%	79%	0.9
Feeling comfortable to participate *	76%	97%	76%	1.2
Creation of enriching experience *	79%	97%	73%	1.1

Average overall engagement scores for old and new classrooms:
Instructors (n=34)



Percent of instructors rating each factor as adequate or better in the “old” and “new” classroom (n=34) .



APPENDIX v

RAW COMMENT DATA FROM STEELCASE SURVEY PROVIDED BY

STUDENT COMMENTS

This is a math class. A lot of the features is not very applicable to this class. The good thing is that the instructor can move around easily during problem solving sessions and students can help each other easily during the problem solving sessions.

The green wall is putrid

Love it so much.

This classroom rocks

I think all classrooms should be designed this way!!
Klemens is awesome !!!!!

I love this classroom!

I like that the room is very open, but with the desks being in groups, there are some people not facing the professor, like me, and I feel I get side-tracked because I am not facing her.

I like the technology offered through the classroom. I think it makes learning more interesting and the chairs, table and lounge is better than traditional desks.

Since the room is very open and the first room in the building, everyone looks at you and makes you feel uncomfortable.

The vibrant colors and windows keep me awake.

None

The new classroom allows me to stay more focused because I am not sitting through a standard lecture

This room needs outlets. There are not outlets at the desks therefore when doing group work or other in class work on a laptop, you must sit against the back wall, and that is not always possible, not to mention it creates a hazard by having a cord stretched across the floor. Also another sink is vital, when washing your hands after a lab or attempting to clean materials, becomes an issue

STUDENT COMMENTS

I genuinely look forward to attending my medicinal plants class. This is my first class of the day on MWF, when I arrive I usually feel tired and in many classes that has always hurt my grades. However, when I walk into H211, there is always something to do to get us up and moving. In addition every project we have done or learned about directly relates to what is going on in the world along with the field I have chosen to study.

I like the moveable chairs and the floor, it adds brightness to the room and doesn't make it feel like I'm in consolatory finement and being lectured

I like being able to spin around in the chair to see the teacher at all times.

The nexus learning room is great because it has chairs that move and can store personal items, there are boards everywhere and individual boards, tables allowing students to work in groups, accessible mobility, and very interactive. These special points about this classroom make it that much better.

Different class atmosphere is great but I have this new room for Medicinal plants in the morning three days a week and psychology in the afternoon two days a week.

Sometimes I find it hard to concentrate in psychology because I sometimes flash back to medicinal plant and what I have to get done and work on.

I believe that it is a good improvement for courses that are more interactive- like medicinal plants- but for a general lecture course I don't believe it makes a major difference.

Pathways are completely pointless, wasting my time even being here. It's hard to focus when you can just talk to your friends and goof around the whole time.

The new rooms provided me with a different and fun view of classroom. It allowed me to feel more comfortable in my learning environment which in effect allowed me to focus and absorb more of the information given to me in class. I love the new classroom!

STUDENT COMMENTS

The room is a very nice atmosphere to learn in, and I feel as though in some cases, it causes me to learn better. However, I believe the learning experience mostly depends on who is teaching the class, and how their teaching style impacts the students.

I love the layout and diversity of this classroom and the way it is set up.

The table arrangement was not always beneficial to everyone in the classroom. There were sightline issues and it seemed more distracting than the typical classroom.

I love the orange room

I really liked the setting of the classroom because you can do so many different things with it, like move around the furniture and interact with classmates a lot easier. The setup makes for very engaging classes, and although Chemistry is the hardest subject for me, it was one of my favorite classes to attend this semester because of the teacher and the learning environment. I hope I get to have more classes in this classroom. It is so bright and keeps you awake and alert, and wanting to be engaged. Also, I rarely participate in class so I was surprised to find myself answering a good number of questions, I think it has something to do with the comfort I feel while being in this learning setting.

This classroom is great. I wish every class was like this one. I am excited to go to class because of it. It doesn't hurt that Dr. Ashley is probably one of the best teachers I have ever had. He knows how to use the room effectively. The white boards are a great touch. They make learning fun. I believe PhilaU should really try to make every room more like this one.

Don't make anymore of these classrooms. Its like any other learning environment.

The set of the classroom is helpful because i can see the board instead of looking at someones head.

The new classrooms, when used properly, have the potential to be helpful to the students enrolled in them. However, there has to be a capable teacher running the class for it to function and the students to learn.

STUDENT COMMENTS

I like the idea of increasing technology in the classroom, but I find myself continually getting distracted by my computer. Instead of focusing on the coursework, I get distracted by what I am able to do on my computer. So, I have not seen a real increase in learning by being in the “new” classroom.

This new setup is definitely a more fun and better learning experience for students who don't like the traditional classroom setup.

A refrigerator would be helpful for storage of organisms.

This room is in dire need of outlets at the work stations. How are you supposed to do laptop work without outlets at the desk. This room also needs another sink because while cleaning materials and washing your hands there is a huge line and it takes up a large amount of time.

All of the new additives included are great! There are more electric outlets, equipment, storage space (under chairs & cabinets), white board, mini white boards, and so much more provide students with more right at finger tips.

Fix wifi issues on campus

This classroom is effective in engagement, especially with the use of the mini white boards, for certain courses like ecology, however it would not be effective for all classes such as a physics class

I love this learning space, but I am better at learning in a typical classroom setting. For me, lecture makes sense but the constant splitting into different groups to answer different questions does not help me learn. Instead, I only learn a fraction of the material.

There should be more relations between the modules and the in class activities. The information should've been explained and talked about in class. I felt like I was just flying through information on my own before class and not really understanding it. Then in class we did Vensim diagrams that didn't really relate to the information we should have learned outside of class through the modules.

STUDENT COMMENTS

I really like this classroom setting. I don't mind lectures at all but you should make all the classrooms like this
The storage under these chairs is awful
the window wall is super distracting for me.

I just really love the "new" classroom. It has bright seats that are inviting and make me happy to be in class. It is also easier to work with others.

both classes are equally as good depending on which class exactly, i prefer having a calculus class in the old classroom than the new one so it depends on the subject and how interactive it is.

We need more of these rooms at Philadelphia University, I am tired of middle school style rooms.

I find this classroom to be helpful because of the numerous ways that I am engaged and because of the atmosphere. The natural light is awakening and Professor Bower is excellent.

I have noticed with the hands on of a nexus classroom, I have had a higher grade than my other classes because I get to not only hear it and write it; but also see it. Nexus really helps and I hope that we can have many more of these types of classrooms.

thought the classroom had a great environment; however the lighting is quite bright and strains my eyes. it easier to engage in activities because the chairs allow one to rotate a face the instructor.

With the "new" classroom layout, I feel more comfortable and relaxed. It feels that if I am in an environment where I actually want to attend. I love the idea of the new classroom layout!!

There is not a big difference from traditional classrooms to the Nexus class rooms. Only major difference is the rolling chairs, however, we barely use them because we don't really do group projects, we still listen to lecture. I love the different colors, but it can feel a little uncomfortable with people looking at you from the outside while in class. I see the major differences, but we barely use them because class is still taught the same as in a traditional class. I actually think I get less attention from professors in the nexus class than I do in traditional classes.

STUDENT COMMENTS

I honestly do not feel the class rooms are all that important to the educational experience. Don't get me wrong, they are cool and the rolling chairs do help mobility; they are better classrooms than standard ones. With that being said, however, I don't feel that they "enhance" the educational experience. I believe that the educational experience is mainly affected by the quality of professor and inherent level of interest in the class. I've had truly engaging and exciting classes in standard classrooms as well

MORE CLASS ROOMS LIKE THIS!!!

I believe that these classrooms have helped to motivate me to participate, focus, and attend class more. I am way more involved than I have ever been and seen an improvement in my grades. I believe there should be more of these classrooms.

I love the new classrooms! The bright colors help me to stay awake and focused in class. You're never in the back of the classroom and your teacher is always walking around because they have more space to. Build more of these!!!

I love this classroom environment. Not only because the rolling chairs are more comfortable and a good time, but it's easier to focus being able to see the board from every angle. I also feel more awake and focused when I'm sitting closer to my peers at a table rather than by myself at a desk.

make more of these classrooms

I like the idea of these classrooms because it provides a comfortable learning experience.

I absolutely love the layout of this classroom. I feel much more comfortable here than I do in standard classrooms. The bright layout also helps me stay focused. I love these new classrooms. I would love to see more of them at this University. My ability to pay attention is significantly better, and it provides a less stressful, and more engaging class period.

I love these classrooms, I think they are visually stimulating, and the colors and brightness of the rooms keep me focused and upbeat. The chairs are comfy enough that I'm not fidgeting every couple of minutes. The mini blackboards are helpful in solving problems with the class. I would highly suggest making more classrooms like this.

STUDENT COMMENTS

I want more of these classrooms I feel I can concentrate better.

This new class is awesome. Probably needs a trash can though.

We need 2-4 trashcans, please.

Add more outlets.

Light switches auto shut off during class. Glass wall is distracting.

Hate that we got kicked out of the room we paid for, for a PhilaU function

For a junior seminar course this new classroom setup is very effective

The open windows distracts me because I continually watch the people walking outside.

The lights randomly turn off at [around] 6:30 pm.

Classroom is nice except that the lights will shut off automatically at the same time during class at 6:30. Its distracting.

Room is very welcoming and makes me happier and want to come to class

Nexus Learning!

Is there a way to frost the glass up to eye level? It can get really distracting looking out the windows while the professor is teaching. Or when people are always looking in at you like your in a giant fish bowl. The giant glass walls are not necessary. If the room had the same interior design with normal walls I feel like it would still accomplish the same learning environment you are aiming to achieve.

She is a very bad teacher but a nice person so I feel bad for saying that but she doesn't help me learn what so ever.

It is harder to pay attention to the teacher that is teaching upfront when the table you are sitting at is facing away from them.

Great classroom. Teacher is not the best at delivering the material but it is obvious that she wants us to learn with her trying different teaching style. The room really helps.

STUDENT COMMENTS

It is good idea in retrospect however lecture based classes this classroom is not affective at all.

I would like it if we got the chance to use the white boards more, I feel more group activities would be great in order to learn and using the white boards would be a great tool for understanding. There is a lot of technical difficulties in this classroom sometimes but overall its nice.

I really enjoyed learning in this new room, but my teacher had no idea how to use it so it felt like a traditional classroom.

I like the layout, style, and concept of the classroom but it does need some improvement. For example, curtains to block outside commotion would be beneficial as well as a monitor for every table station.

the classroom is nice, but instead of adding a lot of new TVS and other things, i'd like my money for tuition to go elsewhere

I think this classroom is distracting with the huge window looking out into the Hayward lobby. On top of that, I didn't really like my professors teaching style as it felt like he was trying to base it more on the collaborative idea of the classroom rather than how we actually learn.

I like the comfortableness of the classroom

I think the success of this class is due to Ryan Long's ability to teach effectively, not the room we use. maybe campus money should be spent on professors of his caliber, rather than updating 2 rooms
The room is very distrsacting

Sitting in a classroom that faces a entire wall of glass see through windows is super distracting. There are constantly people walking by and looking into the classroom and it makes you feel like you are in a fishbowl.

I love the chairs and the storage underneath them. I also really appreciate how easily moved everything is, it makes it all much more dynamic. I also enjoy the whiteboards on the sides of each table.

STUDENT COMMENTS

I hate going to classes with the “traditional” classroom layout. I am much more inclined to go to class in the new layout because it is stimulating and engaging and provides a social learning atmosphere.

I think other types of classes benefit more from this classroom than ours. Not to say I enjoy having class in here, but we do not use all of the available functions.

I think we need a new pen for the smart board...
The chairs are fun

Not really a fan of the color selection. No doubt they were probably carefully selected but they are not very appealing to me personally.

This is a neat classroom and set up, but there are a lot of unnecessary amenities included that are very seldom used. There is only need for two screens maximum in class, not four, and the lounge-like set up is not used unless there is a special event going on and even then it didn't seem very popular. I believe a classroom should be a classroom focused towards the professor and students, not a lounge/event space that is focused on unused technology that is inappropriate to the classes being taught. This is a specialized space that should be used for specific purposes and classes, not for common classes that only need one white board. Not to mention that the giant glass windows that turn this room into a fishbowl make it difficult to focus on class when people are walking back and forth outside looking in.

I believe the new classrooms create a better learning environment and help motivate me to work because of various learning techniques and opportunities. It helps me to learn the subject from different angle, creating a better understanding of that subject.

During the course of this class, the only issue I had was visibility due to a beam in the view of the professor of the front of the class, at times it was not always an issue I think the room is a great addition to the school.

As long as the professor creates lessons to use the spaces and technology in the class, the room is very effecting in having a great learning experience. Very nice equipment, the professor wasn't afraid to use it and knew how to which was nice.

STUDENT COMMENTS

The layout is great as it's rather open and modern feel that seem to increase our motivation to speak in the class. That being said, there are components such as the topic being taught and the professor teaching that would factor the students motivation. The vibrant colors does keep us active and still focus unlike a white room with dark blue mats that seems to give off a less of a motivation and dulls the experience.

The new layout, furniture, and color choices allow me to be more engaged with the materials I am learning. Plugs and screens located at each cluster of desks insures that everyone in the class has an opportunity to see and engage in the actives on the screen. White boards and markers constantly available gives my classmates and I opportunities to participate more in the class activities. Overall, this classroom keeps me more awake and focussed, as opposed to the drudgery associated with traditional classrooms.

I really enjoy the layout design of the classroom because it makes discussion and class involvement more available during class time. I have been able to get more feedback and hear more thoughts through this way of learning rather than a row by row layout designed to focus on the professor. This way makes it better to interact and get more perspective on a topic while also keeping me more intrigued. I believe my professor did an outstanding job at utilizing this classroom and all its capabilities, I can't tell whether I had a great experience because of the classroom or my professor, my guess is that it's both. But I just fear that there will be professors that don't take advantage of all of the new classrooms' positives. If professors are able to engage us in the same way that my professor was able to do for us then this type of classroom is so awesome and so comfortable, and not boring traditional lecture experience. It is more hands on, and learning through the students rather than just the professor.

I enjoy the traditional lecture scenario, and learn well that way. I think the new style is valid, but I think I will always defend the old way.

Love these classrooms! they are the best and i find them so much fun I actually like coming to class.

Love this room!!!!

STUDENT COMMENTS

It smells with the bio stuff and there are flies all over.

Wonderful setup, do not like the smells from other classes though, especially with allergies. Other than that lovely setup

The acoustics was pretty bad so sometimes hearing what a classmate at the other end of the room was difficult.

N/A

The class seemed to lack a general purpose, regardless of which room it was in / /

no comment

I think that this layout is more likely to stimulate students because it is more modern and up to date, but the way that I learn has more to do with the professor than what room I am learning in.

The pole and windows suck

The room is stupid. The lights turn off when we don't move. We could not watch our movie which we wasted a class trying to figure out. I don't like how the tables move around each time I come into the classroom. I like to come in and sit in the same place. Also non of the chairs are really facing the instructor.

The layout of a room, really does not influence my ability to become engaged, or perform well in a class. Its about the course, course work, and the instructor.

The classroom is like a fishbowl, its distracting when people you know walk by and try to get your attention.

I think that the technology may be a little too advanced in this room. For instance, we were trying to play a DVD and weren't able to do so becuase no one could figure out how to play the disk. Also, I sit behind the poll and I have to physically move every day in order to see the teacher. That has been a big problem.

STUDENT COMMENTS

Room is distracting because of all glass wall. Every time someone walks by they stop and stare in so everyone looks back at them. Also there is a lot going on in the room color wise, so focusing can be a little tricky.

The columns that support the ceiling is in the way. It is annoying because you cannot see the professor. The Technology never work properly. The wall Windows are very distracting.

The layout of some of the tables is somewhat difficult because of the pillar in the classroom. Maybe work a different layout where that will not be an issue and the professor is able to interact with every person in the room. I also feel that students use the pillar to hide from the professor too which then becomes difficult for the professor as well.

Although the classroom is cool looking it doesn't feel like it adds anything to my personal learning environment. The lights go off from time to time from a sensor and when we tried to watch a movie, it was extremely complex and ate up class time. I also am not a big fan of the huge glass window. It is easy to get distracted with people constantly walking by or looking in.

Overall the classroom layout is nice, however it is a bit distracting with everyone walking by. It might be helpful to have curtains or blinds to give the option of closing off the room in certain situations (similar to the rooms in the downstairs dec).

It is a nice classroom overall, but it holds many distractions - the windows, the multiple displays, etc. The tables could be placed in a more cohesive setting where a quarter of the students are not being blocked by the pillar. If there is a "new" classroom, there should be an update in the computer systems being used in the classroom as well rather than having to contact IT for help constantly because no one knows how to work anything.

get blinds like they have in dec so that we can close them when the hallways get crowded so people dont look in or out

INSTRUCTOR COMMENTS

There is too much 'stuff' and color in the classroom that it psychologically distracts the students. This 'indoor distraction' is in addition to the 'outdoor distraction' that occurs due to the glass wall. Classrooms need to be plain so that students do not get distracted by the stuff inside the classroom. This is supported by research in psychology that has found a connection between ADD and all the stuff that babies are exposed to in their crib. Students lose focus and attention in the class material when there are too many things in the classroom to distract them. Another issue was the X shape of the furniture. I know I can re-shape it but the few times I tried to change it from the X shape to the row shape that I needed for certain days, the students kind of objected (they probably saw me as the 'villain' who was depriving them of their unfocused leisure time). The room was also very big and with the X shape, I lost attention of the class as the students spent more time looking at each other than at what I was doing on the whiteboards. And many times the technology did not work for me. Overall, I was disappointed with this classroom. It might work for other classes but not for the courses I teach or for my style of teaching. And no, I do not wish to adjust my largely successful teaching style to suit technology or new furniture shapes -- it should be the other way around where technology and furniture adjust to a professor's teaching style.

Some factors made identifying a vector sum for these questions difficult: time of my class is 8:00 AM. many students still sleepy and they offered that to me informally as a reason for lack of participation. class period is 75 minutes - probably too long for attention spans even with opportunities to engage something new. teaching a first semester first year course for the first time. I do not have experience in the standard model for this population of students to reflect upon for comparison. students are at different levels and, as is common, they quickly sort themselves into those who participate and those who do not. with trying to manage 28 students, I would often be pulled in the direction of those participating. some who remained quiet were allowed to remain so due to limitations with faculty/student ratio. its hard to differentiate my management effects from those of the space itself.

INSTRUCTOR COMMENTS

Class is primarily lecture based so I haven't had as much opportunity to use the collaborative aspects as I would like.

The furniture supports a more interactive teaching style. But the instructor and the course material must inspire the students to retain the information- not the furniture. The survey puts way too much emphasis on the furniture. It is more convenient to teach a class where Ebola Nurse to Officials: Don't Violate 'My Civil Rights' / Oct 29, 2014, 8:00 PM / by we look at materials and hand them around. If the materials and information are presented well the furniture assisted only in that it suited the method of sharing.

Students have complained that over a 2.5 - 3 hour class the white walls, whiteboards, desk tops tend to run together. They've also complained that the seats become less comfortable as the class goes on. The console holding the computer is a bit clunky and hard to move. Overall, I like the new 211, though. I'm concerned that there is too much glass on 111 - too exposed - maybe apply a frit to the lower 3'?

The flexibility of the classroom arrangements and the individual student centered dry erase boards are key features we use regularly. The Eno board is too small the share scientific data---needs to be much wider. Dry erase boards on all classroom walls are excellent and used constantly. The chairs with wheels (and storage--thank you) facilitate movement.

For hands-on laboratory collaboration, the configuration as well as the additional storage space and sink make a huge difference. I have two freshman BIOL 103 sections. The classes are full and all seats taken so the space is very tight and even with the new arrangement moving the furniture is problematic given the short time, dense technical material to be covered and number of people. I have students sort themselves into work independently versus small group versus lecture to accommodate the wide disparity in background knowledge.

I feel this classroom is best for a class like IDP but not for math, I sit right in front of the white board in a seat that faces the window so I have to turn my seat around and use my lap to write in my notebook during a lecture. I feel the standard classroom is best for a lecture class like math while the professor is using a smart board or an elmo projector.

