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Use of Swivel Desks and Aisle Space to Promote Interaction in Mid-sized College Classrooms

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Traditional designs for most mid-sized college classrooms discourage 1) face-to-face interaction among students, 2) instructor movement in the classroom, and 3) efficient transitions between different kinds of learning activities. An experimental classroom piloted during Spring Semester 2011 at the University of North Carolina at Chapel Hill uses clusters of stationary desks that swivel 360-degrees and aisle space to address these challenges. The findings from a study involving ten courses taught in the room suggest that there is a need for designs that not only promote quality interactions but also facilitate movement between small group work, class discussion, and lecture.

Introduction

Educational research that is now decades old recognizes student interaction during the instructional process as an important factor in how much students learn and how much information they retain (Davis 2009). The importance of interaction in the classroom is also underscored by trends in the knowledge economy, where workers are "expected to master a higher order of learning…one that depends on interaction and collaboration with other workers" (Steelcase, Inc. 2000). Growing awareness of the importance of interaction has shone a spotlight on an over-reliance on traditional pedagogies such as the lecture in which students tend to play more passive roles. As instructors work to make interactive techniques such as collaborative learning and class discussion a greater part of the classroom experience, the limitations of traditional college classrooms designed to support one-to-many instructional paradigms have become more apparent (Long & Holeton 2009). The current study evaluates an experimental classroom designed to address three specific challenges posed by traditional classroom furniture, layout, and orientation.

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Design goal #1: Facilitate face-to-face interaction among students

That nonverbal cues such as eye contact and body language play an important role in effective communication is intuitive to most people. Within learning environments they are essential to promoting productive interpersonal relationships and dialogue (Brookfield & Preskill 1999). Both student/instructor and student/peer relationships are important constructs supporting student participation (Frisby & Martin 2010) and sense of community (McKinney, McKinney, Franiuk & Schweitzer 2006). Student engagement (Kuh 2009) and sense of community (Lichtenstein 2005) have also been linked to improved student learning outcomes. Much of the literature on interaction in the classroom focuses on the student/instructor relationship, especially as it relates to eye contact (Fryemier 1994; Thomas-Maddox 2003). The dearth of studies related to peer interaction may in part reflect the limited role of face-to-face communication among students in typical college classrooms.

Most college classrooms are designed to facilitate the presentation of information from one to many. They are characterized by rows of desks or tables and chairs all facing the instructor at one end of a rectangular room (Figure 1). Scott-Webber describes the reigning designs as "remnants of the Agrarian and Industrial age models" that reflect a hierarchical concentration of knowledge at the top (2004). In this design, students have convenient eye contact with only one person in the room, the instructor. Eye contact with peers requires that students either turn around in their seats or turn to one side. Sustained eye contact can best be realized by moving classroom furniture into

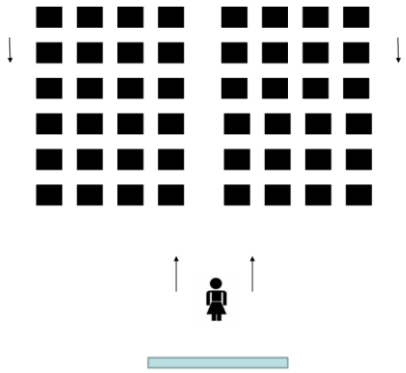


Figure 1. Traditional classroom layout.

configurations where desks or chairs face one another.

Design goal #2: Instructor movement throughout the classroom

Immediacy, or the perception of physical or psychological closeness, is a powerful communications construct that is impacted by physical learning environments (Richmond 2002). It is based on the fact that people are drawn toward people and behaviors they like and avoid those they do not like (Mehrabian 1971). Immediacy in the classroom has been positively related with student learning outcomes (Kelley & Gorham; Gorham 1988), student motivation (Christophel 1990), and student participation (Rocca 2004). Examples of nonverbal behaviors by instructors that can positively impact immediacy are moving around the classroom while teaching and removing real or perceived barriers between self and students (Chesebro & McCroskey 2001). Closer instructor proximity to students is also important to the effectiveness of many interactive teaching techniques. Students engaged in small group activities often benefit from instructor clarification and feedback during small group activities (Barkley, Cross, & Major 2005).

Instructor movement in most classrooms is limited to primary aisle space and in many classrooms there are no primary aisles. For the most part, teaching techniques that emphasize the presentation of information from instructor to students do not require that the instructor leave the "stage" or podium area. Furthermore, instructors often find themselves bound to the podium area in order to remain in close proximity to class materials or technologies associated with classroom projection and display. The primary purpose of aisle space in these classrooms is to provide for orderly student entrance and exit.

Design goal #3: Transition between instructional modes

Flexibility is often cited as a primary goal in classroom design and furniture procurement decisions. Most often flexibility is referred to as the ability to easily reconfigure furniture to accommodate multiple uses (Cornell, 2002; Kennedy, 2010). The benefits of portable furniture, however, must also be weighed against the demands of lesson plans that call for more than one mode of instruction. It is not uncommon for instructors to move back and forth between lecture, class discussion, and small group activities within a single class period. (Dittoe & Porter 2007).

One of the primary issues to consider in larger classrooms is the cost in instructional time associated with rearranging desks and tables to facilitate student collaboration. In the typical college classroom, rearranging furniture is likely to become more time-consuming and disruptive as the number of seats increases. New designs for learning environments must be *flexible* in their ability to support multiple instructional techniques within a single space and without disruptive room reconfigurations (Kirby, 2006).

Classrooms that support multiple modes of instruction are equally important for their ability to complement institutional change management strategies, especially in cultures like higher education where the evolution of teaching strategies is incremental. During the transition toward more learner-centered educational designs, classrooms that promote well-rounded instructional approaches will serve as a bridge for practitioners who are learning to integrate new instructional techniques.

Institutional parameters

The design goals for this experimental classroom were informed by several other parameters of interest to University of North Carolina at Chapel Hill. Chief among them were an emphasis on mid-sized classrooms, designs that can be replicated cost-effectively, and a minimal loss of students seats resulting from the new design. Smaller classrooms (fewer than 24 seats) are often not a high priority for renovation because they inherently support higher levels of interaction (Cuseo 2007). At the same time, while large lecture halls with stadium seating are perhaps the least conducive to collaboration, the costs associated with changing the physical environment in these classrooms is often prohibitive. For these reasons, mid-sized classrooms that seat 25-49 students offer the most potential for integrating interactive features on a cost-effective basis. Impact on student learning will be minimal if emerging designs can only be applied to a handful of

classrooms; the University would like to identify interactive classroom designs that are cost-effective enough to replicate widely. Finally, in order to accommodate future enrollment growth it was also an important consideration that any loss of seats associated with interactive classroom designs be minimized.

Experimental room design

An experimental swivel classroom was chosen to address the pedagogical goals within institutional parameters discussed above. The design used for this study borrows from ideas tested in a large lecture hall at Iowa State University that uses swivel furniture to enable peer discussion and small group activities (Twetten 2006). A comparison study conducted as part of a large calculus-based physics course suggests that the room design has had a positive impact on student performance (Ogilvie 2008). For the current project, swivel tablet desks produced by manufacturer Krueger International (KI) were used for a mid-sized classroom which seats 48. The seats swivel 360 degrees and are fixed to the floor. When unoccupied, each of the seats is set to automatically return to a position facing the center of the classroom.

While fixed seating is often portrayed in the literature as negatively influencing instructor control of the classroom environment (Lei 2008), one of the principles driving this design is that maximum room flexibility actually inhibits instructional innovation for many instructors. Classroom support staff at this university report that at the beginning of a term it is common to see instructors reconfigure the room before class begins. Eventually most of them tire of taking the time to rearrange furniture and accept the prevailing seat arrangement. In fact, all of the instructors in the current study reported at least occasionally moving classroom furniture for learning activities and all also reported that the layout of traditional rooms has discouraged the use of particular teaching techniques.

In order to facilitate instructor movement throughout the room, two three-foot wide aisles crossing in the room's center were included in the room layout. The twelve seats in each of the resulting quadrants are placed to maximize the number of peer groupings possible (Figure 2). Student groups of two, three, four or six are possible, although maximizing groups of four requires that students in four of the twelve groups interact across the aisles. Whiteboards were installed at the two ends of each aisle where there was not already a blackboard.

The classroom was already outfitted with standard media equipment used in general purpose classrooms at the University. It included a LCD projector, a motorized screen, audio speakers, a ceiling mounted document camera over the podium, media playback decks, and an

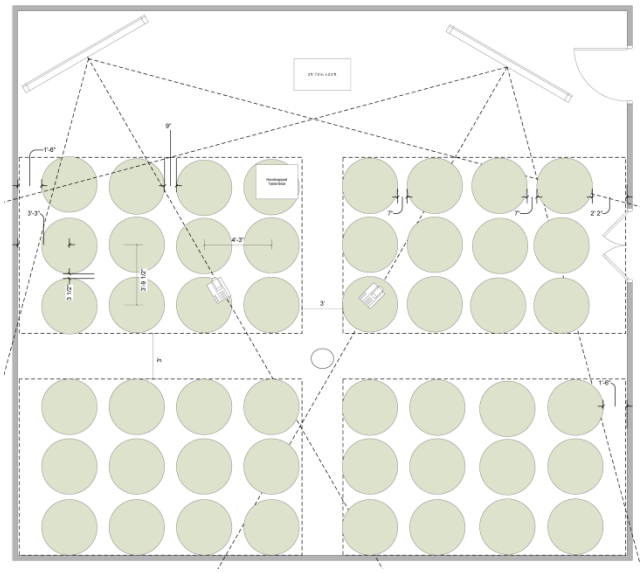


Figure 2. Experimental classroom layout.

AMX-controlled touch panel screen located on the podium. A hand-held remote was available to advance podium-based slides from other locations in the room. For the renovation, a second projector was installed to take advantage of a motorized screen that was not being used. The extra display was intended to help compensate for problematic sight lines exacerbated by the low ceilings in the room (Figure 3). Twelve lap-sized whiteboards purchased for the room were used by some instructors to facilitate small group problem-solving activities. The total cost of the renovation was roughly $27K.

Figure 3. Experimental classroom – Projection and displays.

Methods

Data was collected for the classroom design evaluation over the span of the spring 2011 semester. After responding to an open call distributed via several campus mailing lists, instructors were chosen for the experimental classroom based on course size, scheduling feasibility, and

representation of various content areas. In the end, ten different instructors taught in the experimental swivel classroom. The chosen instructors taught undergraduate courses in the humanities, natural and social sciences. All of the instructors had taught their courses at least two times previously in a traditional classroom. A classroom orientation session that provided an overview of the unique aspects of the experimental room was attended by approximately half of the instructors.

A multi-method approach was used to collect information about (1) the utility of the room, (2) ways in which it was used by the diverse instructors, and (3) perceived advantages and disadvantages from both student and instructor perspectives. Surveys were administered to the instructors at the beginning (Appendix A) and end of the semester (Appendix B). At the beginning of the semester, surveys included questions regarding teaching background, classroom strategies, and previous experiences in traditional classrooms. At the end of the semester, instructors were asked about their use of various elements of the experimental classroom and included open-ended questions regarding perceptions of how the room affected the learning environment and overall satisfaction with the classroom. Similarly, students in eight of the ten courses were administered surveys at the end of the semester (Appendix C) with questions that gauged student satisfaction with the room, perceived level of engagement, sense of classroom community, and the overall advantages and disadvantages of the learning environment. Across the eight classes, 215 students responded to the survey, representing approximately 78% of the 276 students who took classes in the experimental classroom during the semester. Student and instructor surveys included both forced choice and open-ended questions. Open-ended responses were analyzed using a grounded approach in which common themes were identified in the data.

In addition to the student and instructor surveys, a staff member from the Center for Faculty Excellence arranged to capture video recordings of class sessions for five instructors near the end of the semester in order to characterize how instructors were using the available space in the classroom, occurrences of student-student and instructor-student interactions, and the time required to transition between instructional modes. These recordings reflect instructors' teaching approaches across a range disciplines—biology, psychology, information science, political science, and environmental science—as well as class sessions of varying durations. Each class session was led by a single instructor with the exception of Instructor C's class, where a graduate teaching assistant was also active during small group discussions within that session. The video camera was positioned high in a rear corner of the classroom, and overall, the five recordings yielded 266 minutes of usage data within the space.

In order to describe instructor movement throughout the class room, the floor-plan (see Figure 2) was divided into 10 regions: a region at the "front" of the classroom around the instructor's podium and projection screens, a region at the "center" of the classroom where the aisles intersect, regions for each of the 12-seat clusters (4 in total), and regions for each segment of the aisles separating any two of the 12-seat clusters (4 in total). The amount of time that an instructor spent in each region of the classroom was coded using qualitative analysis software HyperResearch, version 3.0.2 (ResearchWare 2011). Additionally, several characteristics associated with small group activities were tabulated: the size and membership of students' small groups (as a proxy for the extent to which student-student interaction occurred) and the number of direct, substantive interactions that the instructor (as well as, in the case of Instructor C's class, the graduate teaching assistant) had with each small group.

In the context of this study, "direct, substantive interaction" refers to instructors' observable behaviors where they engaged with students during small-group activities. Comments or questions posed by the instructor while circulating throughout the classroom as well as cases in which an instructor temporarily joins a small-group discussion in progress would count as instances of substantive interaction; however, cases in which an instructor simply distributes an in-class worksheet to a small group or merely circulates throughout the classroom would not be viewed as substantive interactions.

Given the physical constraints with respect to the position of the camera, the field of view for each recording, and the fidelity of the recorded audio, there are several limitations to the observation data: (1) some areas of the classroom were unable to be fully captured in the video, and these obscured areas are reflected in the visual representations of the classroom which follow; (2) the specific nature of the discussions associated student-student and teacher-student interactions are often unintelligible, making it difficult to code for several potentially relevant characteristics (e.g., the proportion of time students spend discussion class-related topics, the techniques instructors used to stimulate additional discussion within individual groups). Despite these caveats, the recorded class sessions provide yet another lens for examining the ways in which students and instructors were working within the interactive classroom.

Results

The primary evaluation of the experimental classroom was based on the extent to which the three design goals, mentioned in the introduction, were met. The results from all data sources (instructor, student, and observation) are discussed below in regards to the design goals.

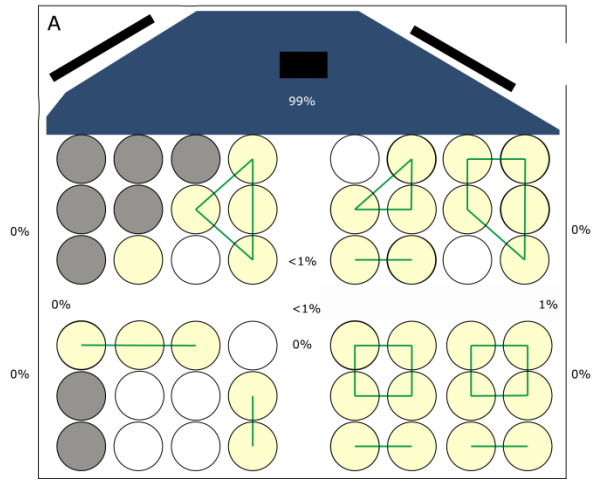
Facilitate face-to-face interaction among students

Overall, instructors reported that the experimental design had positive impacts on student interactions. Instructors were asked, *"how has the classroom design impacted interactions among students in class?"* All but one instructor believed that the room design supported student interactions. Instructors reported that the swivel seats "made the class more intimate" and allowed for instructed and informal student interactions to occur "more seamlessly". One instructor noted that the "ability of students to face toward a student who is speaking makes the class more interactive". However, two of the eight instructors also noted that increased student interactions were not limited to the topic at hand as students "frequently swung around to chatter".

The ability of the room to support student-to-student interactions was echoed in student surveys. Students were asked how the classroom design *contributed to* or *detracted from* their interactions with other students in the course. 94% of the students indicated that the classroom design contributed to the quality of their interactions with other students. In open-ended responses, more than one in four students mentioned eye contact or the ability to look at others as a benefit of the room design. "The design makes it feel more like a roundtable discussion than a classroom setting, which makes participation feel a little more natural", said one student. Another common theme in the student comments was an appreciation for getting to know students sitting close to them. Another student noted that "In most classes I might talk to the person directly to my right or left, but I've talked to many more people in this course".

From the five recorded videos of class sessions, it is clear that instructors have been able to draw upon (and, perhaps in some cases, adjust) their unique teaching and disciplinary styles to sustain student-student interaction in the classroom. Every instructor incorporated some elements of lecture and whole-class discussion in their classes, but the amount of student-student interaction during small-group activities varied.

(Note: in Figures 4 through 8, gray circles represent seats which were not captured in the recorded video, yellow circles represent seats occupied by students, and white circles represent empty seats; green and orange lines connecting students indicate students' membership in distinct groups.)



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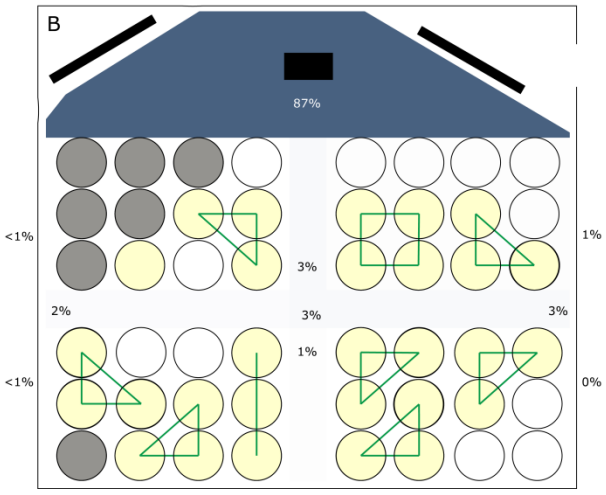

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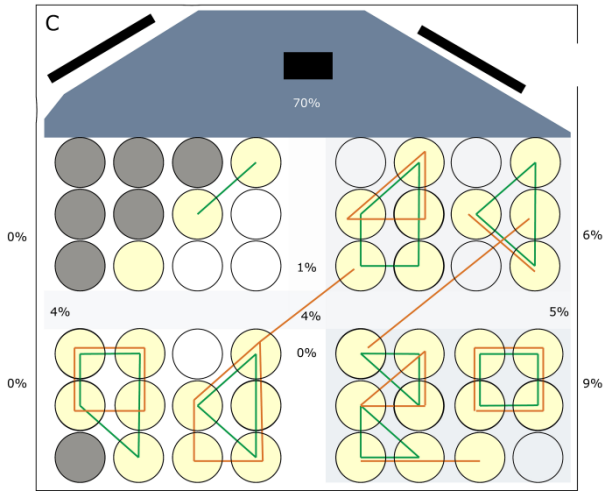

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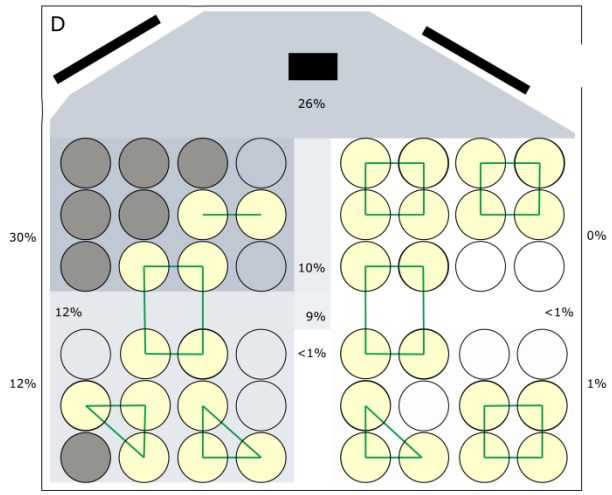

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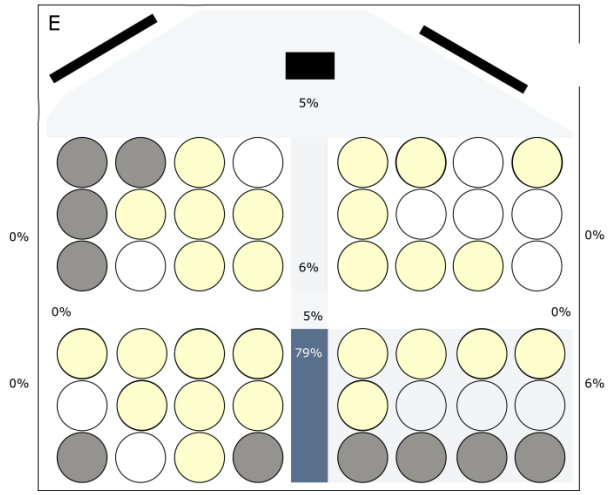

Figure 8.

Instructor A projected four videos during class with each viewing followed by a period of small-group discussion and analysis. Instructor B incorporated two small-group activities as well as a student-led presentation. Instructor C and his graduate teaching assistant incorporated two small-group activities during class with varied group membership across the two activities. Instructor D began the class session with an extended period of small-group discussion, followed by a debriefing session with the entire class. Instructor E, in contrast, incorporated no small-group activities, opting instead to facilitate a whole-class discussion for the entire class period.

Across these cases, each student was often interacting with a small number of students who were in close proximity to each other; group membership was consistent throughout all small-group activities in classes led by Instructors A, B, and D. The recording of the class led by Instructor C reflected one subtle distinction: group formation during a small-group activity focused on that day's topic for discussion was driven by proximity, while an activity focused on a semester-long group project forced two students to join group-mates in another part of the room. Even in the absence of specifically-designed small-group activities, there were several instances of student-student dialogue, unconstrained by proximity, during whole-class discussions; this was observed most consistently in the class led by Instructor E as students swiveled their seats from facing the speaker to facing the respondent.

Instructor movement throughout the classroom

All instructors reported using the aisle space to interact with students or student groups on a regular basis during the semester. Instructors were asked *"how has the classroom design impacted your ability to engage your students during class?"* Despite not directly asking about instructor movement, six of the eight instructors mentioned that the room facilitated movement and thereby improved student engagement. One instructor said the room allows him to "…move about and engage with my students directly".

Consistent with theory, the improved movement of the instructor throughout the classroom was noted to have effects on participation and engagement by students and instructors alike. Instructors noted that their ability to move around the room had an overall effect on the dynamic in the classroom. One said, "[the design] makes the back of the room less different than the front of the room since the instructor can move around". Students in courses taught by instructors who regularly moved around the room noted the absence of a barrier between the instructor and students. Many said that it was easier to pay attention in the room, with a few saying they were "forced" to pay attention. Other students noted that instructor movement and the design of the room meant that there was "nowhere to hide". 77% of the students said that the classroom design contributed to their willingness to ask questions or participate in class discussions.

The recorded video of class sessions also suggests a certain amount of flexibility in instructors' uses of classroom space. In a "traditional" classroom, it is plausible to assume that the majority of an instructor's time would be spent near the "front" of the classroom. In several of the recorded class sessions, this area of the room was still the predominant location for Instructors A, B, and C to conduct the class, spending between 70% to 99% of the session near the podium and projection screens (see Figures 4 through 6). Instructor E reversed that setup by leading a whole-class discussion from the "rear" of the room near a whiteboard for 79% of the class (see Figure 8). Instructor D, to a greater

degree than any of the other instructors, circulated throughout a much wider coverage of the room, spending time interacting with students within several 12-seat clusters, from the aisles, at the center of the room, as well as from the "front" (see Figure 7); in this class, seven of the nine groups of students were able to engage in direct, substantive interactions with Instructor D. In other classes, Instructor A was able to engage in direct, substantive interactions with two groups—for Instructor B, two groups; and for Instructor C and his graduate teaching assistant, three groups—as a product of their movement into regions other than the "front" of the room.

Figure 9. Experimental classroom – Small groups and instructor movement.

Transition between instructional modes

A final goal of the design was to allow for easier, quicker transitions between instructional modes. On the beginning-of-semester survey, all of the instructors reported having taken time to form groups and rearrange furniture in order to accommodate different learning activities when teaching in traditional classrooms. Many instructors in the experimental classroom noted that the swivel chairs allowed for quick movement in and out of small groups. Further, the video capabilities of the room were noted by one instructor to allow her to "quickly go into and out of lecture to discussion and back". In addition, a third of the students mentioned the ease with which they were able to move in and out of small groups. The recorded video from class sessions corroborates these self-reported perceptions; the time to transition from one mode of instruction to another was negligible for students sitting in close proximity to their group-mates.

Other findings related to utility of experimental design

Overall the instructor and student response to the experimental classroom was positive. All nine of the instructors who completed the post-semester survey said they would consider teaching another course this classroom or one with a similar design. Students were asked if they would like to take additional courses in a similarly designed classroom; 80% responded yes and 18% were neutral, only 2% responded no. 62% of the students said the room design contributed to their focus in the class. However, two instructors and 16% of the students surveyed said that the swivel desks had been a distraction at times. They were most likely to mention "moving too much" while in the seats or items falling off the desks.

Students had three primary suggestions for improving the classroom. Nearly a third of the students would prefer that the desks not automatically return to a standard position when unoccupied. Larger tablets on the desks were suggested by 11% of students. Another 8% said the dearth of power outlets in the room was a problem, although access to power is an issue in most classrooms and addressing this issue was beyond the scope of the project. Finally, 80% students felt that the distance between seats was about right; 15% said they were not close enough.

Discussion

The pilot findings suggest that the experimental design used for this study shows promise in meeting its stated goals to 1) promote face-to-face interaction among students, 2) facilitate instructor movement throughout the room, and 3) minimize transition time between instructional modes. The open-ended approach to gathering instructor and student feedback has also yielded several findings that transcend the project's primary goals and raise additional questions for consideration.

For example, instructor and student comments suggest that the design may have increased the overall rate of class participation in some courses. This finding raises questions about students' ability to "hide" in traditional classrooms and the importance of challenging conventional views about the appropriate use of classroom space by instructors. To what degree can providing more open space in classrooms break down perceived barriers between instructors and students? Future research may seek to better understand how physical spaces might support wider student participation in discussion-based courses, wherein it is typical to observe a few students dominating the conversation.

One issue that this study raises is what type of professional development and support is necessary to prepare instructors to be effective in this environment. Given the manner in which instructors were recruited for participation in this study, it is not surprising that all of the instructors who participated in the study reported on the pre-semester survey that they were already using

interactive teaching techniques. That said, it should be noted that even the motivated group of instructors in this study mentioned "not making full use of the room" due to pressures of time and lack of necessary planning. Future research might consider the degree to which the classroom can encourage incremental experimentation with interactive techniques among instructors with very little experience using them. In other words, if provided a learning space that makes interaction easier, will instructors change their teaching strategies?

Determining what types of courses and pedagogies are best suited for new classroom designs will inform decisions about where on campus they should be replicated. For example, the initial faculty call attracted mostly instructors who use discussion-based techniques during class. That may be because this particular design has obvious limitations for instructional techniques that require students to look at the same laptop computer screen or document together. In making their decisions about changes to classroom space, administrators are likely to be considering a variety of design options. This process could be aided by more information about the "fit" of particular designs for certain instructional needs. Research, like this study, commonly compares traditional classrooms to an "experimental" design, but in the future it will be critical to make comparisons of innovative designs to understand the particular advantages and disadvantages across the learning spaces. In the case of this study, it would be particularly interesting to investigate how this design compares with other interactive designs such as the popular studio model (Beichner 2008; Singleton, M. 2011). This kind of information would allow the University to move toward a more varied classroom inventory and scheduling system that does not depend on one-size-fits-all designs to effectively match instructor needs and appropriate learning environments.

At UNC Chapel Hill, there are plans to pilot the swivel design in a 36-seat classroom with quadrants of nine seats each. Modifications likely to be made during the next implementation of the design include 1) larger tablets on desks, 2) no automatic return on the desks, and 3) the use of one video display instead of two. This room will likely be online by the spring 2012 semester. The process of identifying new candidate rooms has raised additional questions about the design. For example, the specific layout used for the classroom design described in this article does not translate as well for rectangular rooms with elongated profiles. Moving forward, another important criterion for interactive designs must be their ability to accommodate the limitations of existing facilities.

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Appendix A – Pre-semester instructor survey

Thank you for participating in the evaluation of the new seating configuration for 311 Peabody. This instructional improvement pilot is a collaboration between the School of Education, the Center for Faculty Excellence, and ITS-Teaching and Learning.

1. Your name:

2. What is the name of the course that you are teaching in 311 Peabody this semester (e.g. HIST 101, Introduction to Western Civilization)?

3. How many students do you expect to be enrolled in the course?

4. Will they be primarily undergraduate or graduate students?

5. How many times have you taught the course previously?

6. Think about the instructional techniques that you generally use during class time for this course. For a typical class session, estimate the percentage of time that you generally devote to each. If you have not taught the course previously, you can base your estimates on your plans for the semester.

Teaching technique	**% of class time**
Lecture/presentation	
Class discussion	
Small group activities	
Student presentations	
Other (please specify)	
Other (please specify)	
Other (please specify)	
	100%

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7. When you have taught this course in the past, can you think of any time when the layout of the room and furniture made it difficult to use (or discouraged you from using) a particular teaching technique? (Circle or highlight one.)

   Yes **No**

8. When you have taught this course in the past, how often did you take class time to move furniture around to accommodate different learning activities? (Circle or highlight one.)

   Never **Occasionally** **Regularly**

9. If you answered *occasionally* or *regularly* for Question #6, please describe the learning activities that required rearrangement of the furniture.

10. When is the last time that you taught in 311 Peabody, if at all?

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Appendix B – Post-semester instructor survey

Thanks again for agreeing to help us evaluate the new seating configuration for 311 Peabody this semester. Your feedback will inform decisions about how to improve design and its use in other classrooms on campus.

1. Your name:

2. Please specify how often you used each of the following in 311 Peabody this semester:

	Every or almost every class session	Occasionally	Rarely	Did not use
Document camera				
Blackboard located at the front of the room				
Lap-sized whiteboards				
Whiteboard located at the back of the room				
Whiteboard located on the right side wall				
Blackboard located on the left side wall				
Remote control for advancing slides				
Both projectors/screens simultaneously				
Aisle space to interact with students/groups				

3. The desks in 311 Peabody are currently configured to swivel back toward the center of the room when they are empty. Which of the following options would you recommend? (Select one)
   - o Desks should continue to swivel toward the center of room when they are empty.
   - o Desks should swivel toward the front of the room when they are empty.
   - o Desks should not swivel at all when they are empty.
   - o No opinion.

4. How has the classroom design for 311 Peabody impacted on your ability to engage your students during class?

5. How has the classroom design for 311 Peabody impacted interactions among students in class?

6. Did the classroom design have any other impact on the way you interact with students, observe students, or your efforts to create a positive learning environment?

7. What changes to 311 Peabody, if any, would you recommend?

8. What preparation, if any, would you recommend to a colleague who was planning to teach in 311 Peabody?

9. Would you consider teaching another course in 311 Peabody or another classroom similar to it?

Yes No

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Appendix C- Post-semester student survey

Thank you for participating in the evaluation of the new seating configuration for 311 Peabody. This instructional improvement project is a collaboration between the School of Education, the Center for Faculty Excellence, and ITS-Teaching and Learning. The results of this survey are completely anonymous, and will have no impact on your grade for this course. We appreciate your candid responses.

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1. How did the classroom design for 311 Peabody ***contribute to or detract from*** your willingness to ask questions in class or participate in class discussions?

2. How did the classroom design for 311 Peabody ***contribute to or detract from*** your ability to stay focused during class?

3. How did the classroom design for 311 Peabody ***contribute to or detract from*** your interactions with other students in this course?

4. Would you like to take additional courses in a classroom designed like 311 Peabody? (Circle one)
Yes No Neutral/Not sure

5. How would you describe the distance between the desks in 311 Peabody? (Circle one)
Too close together About right Not close enough

6. The desks in 311 Peabody are currently configured to swivel back toward the center of the room when they are empty. Which of the following options would you recommend? (Select one)
- ☐ Desks should continue to swivel toward the center of room when they are empty.
- ☐ Desks should swivel toward the front of the room when they are empty.
- ☐ Desks should not swivel at all when they are empty.

7. What *features* of this classroom, if any, made it an effective learning environment for you?

8. What *changes* to this classroom, if any, do you think would make it a more effective learning environment for you?