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Classroom Interaction Redefined: Multidisciplinary Perspectives on Moving Beyond Traditional Classroom Spaces to Promote Student Engagement

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Student learning and engagement are paramount for educational institutions. This paper examines the impact of an interactive learning space on teaching and learning for both faculty and students. Specifically, four faculty from disparate disciplines examine the impacts on teaching and learning of an active learning space designed for student engagement compared to traditional classrooms. Statistically significant results favor learning experiences in an interactive classroom due to ease of movement in the space as well as increased collaboration and active engagement. This work provides evidence that classroom design affects student learning.

What does it take to teach, or educate, college students in today's world? While standard lecture and note-taking traditionally were hallmarks of a college education, engaging today's students in their education and, by extension, fostering their lives has been a focus of student learning research. This research continues to generate interest from scholars and educators who seek ways to incorporate student-centered methodologies into college classrooms (see, for example, the National Survey of Student Engagement (NSSE), an annual survey conducted at institutions of higher education, 2014; Arum & Roksa, 2011; Kuh, 2001 etc.).

Literature Review

With recent media attention and political awareness being paid to how little (allegedly) students learn, the concept of student engagement, the extent to which learners enter into or *engage* in their education, has long been elusive, but is now commanding more notice. The benefits of student engagement are no doubt myriad. Grissom et al. (2003), for example, found that learning increases as the amount of student engagement increases. Similarly, Carini, Kuh, and Klein (2006) demonstrated that student engagement can be enhanced by various strategies and have a positive impact on academic learning and critical thinking. Furthermore, Tinto (2000) linked student engagement with their institutions to tenacity and perseverance and noted its critical role in keeping students from terminating their educations before degree completion, (see also Flynn, 2014; Jackling & Natoli 2011). Engagement, then, positively impacts learner persistence, which, in turn, leads to learners being more likely to finish a degree, an achievement only 58% of all undergraduates reach within six years at public institutions (National Center for Education Statistics, 2016). Citing a 2002 NSSE report indicating only twelve percent of freshmen at four-year residential colleges reported spending as much time studying outside of class as professors felt they should, Young (2002), not surprisingly, stresses that "colleges should try to engage students and persuade them to study in earnest." Recent findings in the 2014 NSSE are also noteworthy as they remind institutions that student success is not the sole province of students themselves. Rather, the institution, and its faculty, must provide an environment for student success, and always strive to increase student engagement. Undoubtedly, student engagement is dynamic and changes over time (Coates, 2007).

If an educated and skilled populace is critical to a well-functioning society, then understanding how to strengthen student engagement is vital. Active learning has been shown to be effective in a variety of courses and domains (Gatch, 2010; McConnell, 1996), including several student-engaging pedagogical models that make students more responsible for their learning. Bonwell and Eison (1991) claim that learners must read, write, discuss, or be engaged in problem solving

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– not simply listen – in order to learn. In such cases, the professor is able to spend significantly more time with the students who are engaged in active learning (Gannod, Burge, & Helmick, 2008) as it deviates from the student-as-passive vessel context (e.g., Felder & Brent, 2009; Collins & O'Brien, 2003).

In addition, immediacy behaviors, both verbal (e.g., calling a student by name, using humor, or soliciting student commentary) and nonverbal (e.g., smiling at an addressee, relaxing one's body posture, or spatial proximity), can enhance communication between people and increase student engagement, as positive behaviors tend to draw people closer than negative ones that distance people (Mehrabian, 1971; Mehrabian, 1969). Not surprisingly, nonverbal (Rocca, 2009) and verbal (Roberts & Friedman, 2013) immediacy behaviors have been positively correlated with greater student participation. Furthermore, besides being positively linked to student learning and motivation (e.g., Christophel, 1990; Frymier & Houser, 1999; Allen, Witt, & Wheeless, 2006; Velez & Cano, 2008; Rocca, 2009), and students' beliefs in their abilities to succeed (Velez & Cano, 2012), immediacy behaviors, importantly, have also been linked to breaking down students' resistance to classroom engagement (Seidel & Tanner, 2013).

Classroom Spaces

If we consider the positive effects of student-centered pedagogies such as active learning and immediacy on student engagement, we must also consider the extent to which physical classroom spaces support such endeavors. Despite faculty efforts to embrace student-centered pedagogies, face-to-face classes meeting in traditional, linearly oriented spaces (which comprise the bulk of classrooms) can present particular challenges. These traditional spaces are not naturally configured to engender discussions, student group work, other forms of collaborative learning, or even instructor mobility that encourage student engagement and immediacy. Not surprisingly, there have been questions about the effectiveness of traditional classroom spaces (e.g., Scott-Webber, Marini, & Abraham, 2000). There have also been calls for both physical changes to traditional learning spaces (e.g., Harris, 2010; Kuuskorpi & Cabellos González, 2011; Harvey & Kenyon, 2013) and studies examining both specific design features of the physical learning environment (such as movable furniture and display spaces such as whiteboards) that support collaborative, project-based learning (Wolff, 2003) and "teacher and student practices in different spaces" (Blackmore, Bateman, Loughlin, O'Mara, & Aranda, 2010, p. 25).

If student engagement is the goal, then spaces where students are simply passive vessels receiving knowledge from a lecturing sage at the front of the room must be transformed to encourage student participation. Although the research is relatively new, the results comparing traditional learning spaces and active learning, or experimental, classrooms are encouraging. Students in active learning classrooms exceeded their expectations compared to students in traditional classrooms (Whiteside, Brooks, & Walker, 2010). Similarly, a comparison of traditional and experimental classrooms by Henshaw, Edwards, and Bagley (2011) resulted in a call for designs that promote quality interactions and facilitate movement between small group work, class discussion, and lecture. In addition, a comparison of a traditional classroom space and a technologically enhanced active learning classroom showed a causal link between classroom type and observed student and instructor behaviors (Brooks, 2012). While Rasmussen, Dawes, Hargreaves, and James (2012) found that a switch from a tiered, theatre-type lecture space to an interactive room outfitted with round tables increased student satisfaction, Scott-Webber, Strickland, and Kapitula (2013) reported statistically significant positive relationships between newly designed interactive spaces and student engagement. It is clear then active learning classrooms foster more relaxed, interactive environments and appear to engender an intimacy between students, as well as between students and instructors (Baepler & Walker, 2014).

Purpose

While the research comparing traditional and innovative spaces is encouraging, there is still more to understand about the impact on students and faculty when transitioning from traditional to interactive classroom spaces. As a result, the purpose of this study is to examine the transition from traditional to interactive learning spaces for faculty members in four distinct courses: Computer Science: Computers and Society; Mathematics: Mathematics and Its Applications; English: TESOL Practicum; and Geography: Climate Change and Modification (For course descriptions, see Appendix A). First, we compare teaching in traditional and interactive classroom spaces at our university. Then, we explore both faculty and students' reactions to and perceptions of their transition to an Interactive Learning Space (ILS).

Methods and Data

To evaluate the impact of an ILS, we qualitatively examine teaching across different classroom spaces, and then analyze survey data from students participating in an ILS initiative.

Description of and Reactions to Traditional Classroom Spaces

Although we think of today's classrooms as having evolved considerably from the old "benches and slates" models to projection systems and internet access, one vestige of the past has remained surprisingly constant: rows. Traditional classrooms are typically comprised of linear environments (see Figures 1 and 2), which can be found in general purpose classrooms as well as large lecture halls (with a dominant tiered theatre-style model) and even many computer labs.

Figure 1. *Traditional Classroom with Tablet Arm Chairs*

Figure 2. *Traditional Classroom Teacher Station*

Naturally, such learning environments may inhibit collaboration and immediacy behaviors, and reduce overall student engagement. In the case of large tables (Figure 3), the difficulties are magnified. In order for students to work in small groups, they have to move chairs in a way that allows them to face each other directly; no circular formations are possible. While having students seated at tables facing the front may work for a standard lecture class, this situation falls short when an instructor switches to a different mode of content delivery inviting students to interact with one another and engage in the content. Moreover, from an instructor's point of view, physical movement is largely restricted to the perimeter of the classroom in these traditional classroom spaces, making interaction between teachers and students a challenge as well.

Figure 3. *Traditional Classroom with Tables*

Faculty members teaching in an ILS for the first time participated in a faculty learning community. During discussions, the impact of the interactive space across disciplines became increasingly clear. As we participated in our faculty learning communities, we realized our traditional classroom spaces had many shared attributes. We taught in traditional classrooms with students (facing in the same direction) seated in either linear rows of individual tablet armchairs or long, fixed tables (sometimes with an aisle down the middle of the classroom), or in the case of a large lecture class, stadium style seating. In each case, students faced a chalkboard, whiteboard, and/or a projection screen in the front of the room where the room's teaching station (computer hook-up, document camera, etc.) is located (to one side of the room).

Both full class and small group discussions presented some challenges in this configuration. Although chairs could be moved (with the exception of the lecture hall rooms), the process was noisy and curtailed the instructor's ability to adequately cover material or conduct learner-centered activities. Instructor-led student discussions involved the full class, but students usually faced the front of the room, and seldom turned to look at the person speaking. Similarly, smaller group discussions required students to either turn their desks or turn sideways in their chairs to fully participate.

Not surprisingly, instructor mobility was also limited. During group discussions/class, the instructor was limited to wandering back and forth in the front of the room, or, at times, along the perimeter of the room, primarily because

narrow aisles did not provide enough space to move comfortably among the student chairs or tables. This meant that the instructor's ability to listen to student discussions was limited to students sitting in the front of the room or along the perimeter of the room. Typically, students in the front and along the sides of the room engaged most with the instructors, while students sitting in the middle or back of the room were least likely to engage with the instructor during discussions, generating clear obstacles to collaborative learning for both the instructors and students.

Description of and Reactions to Interactive Learning Space

Interactive classrooms, on the other hand, are nonlinear by design; additionally, they typically feature technology that can contribute to or enhance teaching. As such, they are amenable to a variety of teaching styles and techniques designed to encourage student engagement. One particular interactive classroom, the Node™ room, is a product of a Steelcase collaboration with a comprehensive university in the mid-west. This classroom is outfitted with 24 Node™ chairs (Figure 4), mobile desks specifically designed for educational purposes. These desks (on casters) feature ergonomic seats that swivel and adjustable work surfaces, as well as a place for books and backpacks. A moveable instructor station holds a laptop. The room is enhanced with three interactive whiteboards (eno™ boards) which can be used with both digital ink and dry erase markers. The eno™ boards can also be used as a projection surface, and can show the same display or different ones. The moveable desks mean students may be facing any one of three eno™ boards, eradicating a customary "front of the room".

Figure 4. *Interactive Learning Space Node Room*

One of the greatest advantages of the Node™ room is the ability to quickly and quietly reconfigure the mobile desks, enabling a teacher to move from one layout (e.g. large circle) to another (e.g. pairs) in less time and with less noise than in a traditional environment. This permits multiple learning activities to take place in a single class period without the transitions from one layout to another consuming much time. Thus, an instructor can rapidly shift from one mode (such as traditional lecture delivery) to another (such as small discussion groups) to facilitate active learning. Similarly, the ability to have students gathered in a large circle with the instructor moving around within the circle as they discuss content increases the potential for greater immediacy.

As we transitioned to teaching in an ILS, we noticed differences in our courses. In each of the four courses, teaching in the Node™ room brought very little, if any, change to the content of the courses. Nonetheless, the use of the physical space and the "feel" of the course were significantly different in the ILS. Instead of maintaining a configuration of rowed seating, students generally found the chairs arranged in a large circle around the perimeter of the room, and if chairs were not part of the large circle, students naturally tended to move them into "place" at the beginning of class. In some cases, the instructor started the class with a slide depicting the day's desk configuration – pairs, triads, quads, etc. Not surprisingly, moving from the large circle into small groups without the encumbrance of fixed tables or less mobile desks became much easier for students to form groups. Groups of three to five students, for example, tended to roll the "end" chairs inward to form small circles around the room's perimeter. At the end of small-group discussions, most students rolled their chairs back to re-form the larger circle, while a few stayed in their small circles. As such, most of the students would be able to look at the person speaking without significantly moving their chairs. Interestingly, the instructor never gave any direction to the students about how or when to arrange the chairs; movement seemed to occur naturally and coincided with the assigned activity.

One striking difference following the "seated circle" arrangement was the elimination of the unengaged back row, where the least engaged students sat in traditional spaces; there was simply no place for students to "hide." In one of the classes, two students were overheard complaining about the Node™ Room shortly after the start of the semester because they "have to pay attention."

The faculty member's computer, positioned on a semi-mobile stand on one side of the room, became a part of the large circle. During full-class discussions, the faculty members were able to lead from the computer stand or while moving around inside of the circle. During small-group discussions, faculty-student immediacy was more prevalent compared to the traditional classroom space as the faculty member was able to easily move among the groups, ask

questions, make eye contact with students, address students personally (and in their proximity), and get a sense of how engaged the students were in the discussion. The increased interaction seemed to provide a much more intimate feel to the classes. The faculty members also observed interesting (and positive) changes in several students who tended to remain quiet during discussions in other courses. In the interactive space, they became much more vocal, speaking out and contributing greatly to class discussions.

The Node™ room's technology was also utilized throughout the course. Due to the ease of connecting to power, students were encouraged to bring laptops. Small working groups were able to make use of the multiple eno™ boards (i.e., computer stations) or portable dry erase boards. As a result, while the courses continued to consist of short lectures, group work, and presentations, activities used to address course content such as collaborative exercises, jigsaw activities, and informal presentations, worked naturally in this new space.

Clearly, although some student engagement activities were taking place in the traditional classrooms, the traditional spaces restricted mobility. With the transition to an ILS, the faculty all noticed more interaction, collaboration, and a general willingness to engage in the classroom.

Student Survey Data

To consider student perceptions of the "new" classroom space, we invited students to complete a survey. Participation in completing the survey was voluntary. Thirty-seven of 92 students across all four classes completed a Steelcase-designed online student survey (see Appendix B). The survey was intended to assess the impact of classroom space, classroom furnishings, and furniture layout on the students' perceptions of their learning experiences (Steelcase Survey, p. 1). For two sets of twelve questions, students responded to the survey questions using a Likert scale of zero to four, where zero indicated not adequate, one indicated not really adequate, but almost OK, two indicated adequate, but just barely, three indicated somewhere between 2 and 4, and four indicated exceptional. (See Appendix B for exact wording.)

The first set of questions asked students to compare classroom activities such as collaborative work, ability to stay focused, and opportunity to engage in different activities in the "Standard/OLD" space versus the "Current/NEW" space. The specific instructions were:

> These questions below are about your activities in the classroom: Knowing what you know now about using the Standard/OLD versus Current/New classrooms, rate yourself now regarding the following characteristics. (Steelcase Survey, p. 4)

The second set of questions addressed the same set of classroom activities (e.g., collaborative work, ability to stay focused, opportunity to engage in different activities), but focused more specifically on the impact the "classrooms' furniture layout" had on the activities. The specific instructions were:

> The previous questions were about the classroom activities, in this section we are asking about how the classrooms' furniture layout affected these classroom activities. Knowing what you know now about using the Standard/OLD versus Current/New classrooms, rate the following characteristics. (Steelcase Survey, p. 5)

Two sample t-tests were used to determine statistical differences between mean responses for each set of twelve questions on the survey. Table 1 displays the findings of the first set of questions comparing classroom activities in "new" vs. "old" classrooms. Statistically significant differences in mean responses at the 5% or below level were found on six of the twelve items: classroom activities in the "new" space emphasized collaborative work (question 1), active involvement (question 3), engagement in different learning activities (question 4), and "real-life" scenarios (question 7). In addition, the degree of physical movement allowed in the classroom space (question 9) and the degree to which students were stimulated by the classroom environment (question 10) were significant.

Table 2 displays the findings for the second set of questions that asked students to assess the impact of the furniture layout on classroom activities. Statistically significant differences at the 5% or below level were found on seven of the twelve questions. Compared to the traditional classroom, the furnishings/layout had a significant impact on collaborative work (question 1), active involvement in class activities (question 3), engagement in different learning experiences (question 4), the ability to repeatedly engage with course materials (question 5), the opportunity for 'real-life' scenarios (question 7), the opportunity to move around while learning (question 9), and the contribution to an enriching educational experience (question 12).

Discussion

There is no doubt the interactive space promoted a more collaborative and engaging environment than the traditional classroom spaces. Compared to previous years, instructors observed less attention being paid to diversions, and more attention to following the instructor's movement, with more discussion. The interactive space allowed more mobility, generating greater immediacy and engagement in the

classroom. During large-circle discussions, students tended to sit in proximity to small group members, making reconfiguration (circle to small group) more efficient than in the traditional classroom. Perhaps most importantly, movement in this space seemed to naturally occur with students gravitating towards others when provided with a group task; no direction from the faculty was needed.

The statistical results from Tables 1 and 2 supported faculty observations. Indeed, student survey results for both sets of questions yielded significant results ($p \leq 0.05$) for several topics (six for activities, seven for furnishings). The results for **Question 1** (with respect to both activities and classroom furnishings) are not surprising. Given the novelty of the Node Room, with its movable desks, instructors developed and/or emphasized activities that would take advantage of said desks and deliberately designed activities that would bring students together in pairs or groups. Not surprisingly, the Node Room not only outperformed the traditional classroom with respect to collaboration, but students also recognized the influence of the furniture layout on collaborative work. **Questions 3 and 4**, also significant for both factors, showed anticipated results. Instructors encouraged involvement and varied activities by designing endeavors that were purposely active in the Node Room; this may have been more difficult in traditional classrooms, to the extent that instructors felt constrained by the spaces and made less of an effort to build such activities into the course (it would take too much time). The ease of movement with the desks may have driven the development of "active" engagement activities; it is not surprising that both activities and furniture were perceived to contribute to more active work in the Node Room. It takes little time to move from lecture to group discussion. Interestingly, this likely also points to immediacy behaviors on the parts of the instructors, who demonstrate, among other behaviors, making more eye contact and referring to students by name more often than in the traditional spaces. **Question 7**, statistically significant for both sets of queries, may indicate that the naturalness of physical movement, prevalent outside a classroom milieu, is more attainable in a Node Room than a traditional classroom. Physical movement was the focus of **Question 9**, which yielded expected results. Students experienced how easily the desks moved, permitting greater rearrangement of desk configuration in the class and instructors enhanced student experiences by deliberately designing activities to take advantage of the mobility of the furniture. The results from these specific survey questions sported the greatest mean differences and were highly significant suggesting that furniture may be a driver of teaching style and activities.

More curious were the results for **Questions 2** (focus) and **10** (classroom stimulation). With Question 2, the Node Room was preferred, but not significantly so. The novelty of this new environment may be a source of distraction for some students. This points to the need for further research into such an active environment; perhaps focus will be less of an issue as active and technologically enhanced classrooms become more common. Results for **Question 10** are significant for activities, but insignificant (barely) for the furnishings themselves. This could partially (or completely) explain the lack of focus noted in **Question 2**. The room could potentially invite so much stimulation as to interfere with student concentration.

Not all results were significant, but even those results help elucidate student perceptions of an active learning space. **Question 11**, addressing students' feelings of comfort, seemed initially puzzling. However, the lack of a back row in which to hide could influence levels of discomfort. The mixed results for **Question 12** about enriching experiences suggest that while the students like the desks, they are less enamored of the activities. However, further research on these (and other learning space-focused topics) is warranted.

Summary and Conclusions

Classroom design and layout—both traditional and contemporary—affect both faculty members and student learners. However, the extent to which such effects take place remains under-researched. This work examines the impact one such space, a modern, technologically enhanced classroom, had on both instructors and students in four courses from various disciplines.

Instructors qualitatively assessed differences in teaching between the old and the new spaces, noting positive adjustments to classroom delivery and activities that allowed for more opportunities for small group discussions and paired activities, and ultimately resulted in a learning environment for students to engage naturally in collaborative learning activities. If anything, the fact that instructors perceive the ability to move more freely within the classroom space could impact classroom learning, as they are more likely to plan activities that promote student engagement. Similarly, student surveys (see Appendix B) about their beliefs and perceptions of the new Node Room compared to their old classrooms confirmed that learning activities in the new spaces were promoting a greater level of engagement in the course for students.

This study is not without its limitations. The class sizes were relatively small due to the size of the space and there were no true control groups. Additionally, the novelty of the new room may diminish with time, so a study over time may yield additional insights this research cannot address. However, even with its unavoidable shortcomings, this work yields an understanding of the crucial role classroom design may have on student learning and instructional

delivery. This study certainly advances academic knowledge about classroom impacts on student engagement. As institutions endeavor to provide students with enriching academic environments, they will do well to strongly consider the impact teaching space, format, and design has on learning.

Table 1: First set of 12 questions referenced activities

Topic	Mean Difference (new - old)	Std Error Mean	t-statistic	Degrees of Freedom	p-value
1. Of emphasis on collaborative work during class time.	0.618	0.207	2.985	33	0.005
2. To which you were/are able to stay focused during class time.	0.324	0.289	1.121	33	0.270
3. Of your active involvement in classroom activities.	0.647	0.223	2.902	33	0.007
4. Of opportunity you have to engage in different learning activities.	0.588	0.243	2.421	33	0.021
5. Of repeated exposure to same course material through multiple means.	0.353	0.267	1.324	33	0.195
6. To which you were/are able to get in-class feedback from your teacher on your work.	0.294	0.288	1.021	33	0.315
7. To which your coursework includes "real-life" scenarios.	0.676	0.167	4.041	33	0.000
8. To which you were/are able to engage in the ways that you learn best [i.e., seeing, hearing, doing].	0.441	0.299	1.475	33	0.150
9. Of physical movement you engaged/engage in within the classroom.	0.941	0.267	3.527	33	0.001
10. To which you were/are stimulated by your classroom environment.	0.676	0.273	2.481	33	0.018
11. To which you felt/feel comfortable participating during class.	0.265	0.271	0.975	33	0.336
12. To which you found this class to be an enriching educational experience.	0.118	0.286	0.412	33	0.683

Table 2: Second set of 12 questions referenced the classroom furnishings

Topic	Mean Difference (new - old)	Std Error Mean	t-statistic	Degrees of Freedom	p-value
1. Supported/supports collaborative work during class.	1.182	0.259	4.561	32	0.000
2. Helped/helps you stay oriented and focused during class.	0.485	0.323	1.501	32	0.143
3. Allowed/allows you to be actively involved in class activities.	1.000	0.246	4.066	31	0.000
4. Allowed/allows you the opportunity to engage in different learning experiences.	0.606	0.226	2.683	32	0.011
5. Supported/supports your ability to repeatedly engage with course material in multiple ways [e.g., individual study, group work, presentations, etc.].	0.727	0.205	3.541	32	0.001
6. Allowed/allows you to receive in-class feedback from your teacher on your work.	0.061	0.242	0.250	32	0.804
7. Allowed/allows you and your classmates to model 'real-world' scenarios.	0.667	0.172	3.870	32	0.001
8. Supported/supports the ways you learn best.	0.303	0.290	1.044	32	0.304
9. Allowed/allows you to move around while learning or participating in learning activities.	1.364	0.264	5.164	32	0.000
10. Contributed/contributes to your interest and stimulation in class.	0.515	0.269	1.917	32	0.064
11. Contributed/contributes to your ability to feel comfortable participating in class.	0.333	0.249	1.340	32	0.190
12. Contributed/contributes to enriching educational experience.	0.531	0.258	2.060	31	0.048

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Appendix A

Course Descriptions

Computers and Society explores the impact of computers on us as individuals and on our society. Many of the topics in the course revolve around laws regarding privacy, freedom of speech, search and seizure, and intellectual property. The students come from many different majors. The course is not required of any particular major, but does satisfy a core curriculum requirement.

Climate Change and Modification, required for junior and senior meteorology/climatology students, focuses on climate variability and contemporary issues such as global warming. No math beyond college algebra is necessary. Lecture and discussion form the major teaching component, with small group discussion and group projects secondary. The instructor previously taught most of these students in other classes.

Mathematics and Its Applications is a liberal arts mathematics course intended to satisfy a university core curriculum requirement. A majority of students are not majoring in a STEM field. The course covers statistics and a variety of applied topics, including mathematical modeling, finance, geometrical concepts, and physical and social sciences applications.

TESOL Practicum is a required course for education majors wanting to earn a license to teach English Language Learners in K-12 schools. As a teacher preparation course, students consider best practices for teaching and are expected to engage in active learning tasks throughout the course.

Appendix B: Steelcase Survey

STUDENT SURVEY INFORMATION AND CONSENT

Steelcase Education Solutions

ABOUT THE SURVEY

Researchers from Steelcase Education Solutions wish to conduct a study concerning the impacts of classroom furnishings and furniture layout on students' perspectives of their learning experiences. The Middle and Secondary Level Education POE Classroom Study is funded by Steelcase Education Solutions. This survey will take approximately 10-15 minutes to complete. The purpose of this letter is to inform you about the study and to request your permission for inclusion in this survey.

As part of the use of non-standard furniture in this classroom, researchers will gather data that can be used to validate the effectiveness of the furnishings and the furniture layout as well as to guide further refinement of them. All surveys will be recorded and transcribed for further analysis. Recording and reporting of gathered data will assign randomly selected numbers to each participant. No identifying information will be gathered. All data gathered for this study will remain stored for a minimum of 3 years securely on a password-protect, company server located at Steelcase University, 901 44th St SE Grand Rapids, MI 49503. There are no anticipated risks to participants in this study.

Data will be reported to a variety of company and university stakeholders through research journal articles, white papers posted online and information posted on the company's website. No real participant names will be used when reporting these data.

Your participation in this survey is not required for successful completion of this course. Neither will any part of your course grade be based on participating or not participating in this study. At any time during the survey, you may withdraw from the study without penalty to your course grade. Even though you give permission to participate now, you may decide at any later point to withdraw your permission. In that case, any data gathered from you will be discarded and not analyzed or reported.

PLEASE GIVE YOUR CONSENT TO PARTICIPATION BELOW.

This project has been reviewed and approved by Heartland Institutional Review Board.
Questions concerning your rights as a participant in this research may be addressed to:
Heartland Institutional Review Board – Ph: 866.618.HIRB – director@heartlandirb.org

Researchers from Steelcase Education Solutions wish to conduct a study concerning the impacts of classroom furnishings and furniture layout on students' perspectives of their learning experiences. The Middle and Secondary Level Education POE Classroom Study is funded by Steelcase Education Solutions. This survey will take approximately 10-15 minutes to complete. The purpose of this section is to inform you about the study and to request your permission for your participation in this survey.

First, indicate your age:

- ○ I am under 18 years of age
- ○ I am 18 years of age or older

Please indicate if your parent/guardian has given consent for you to participate by signing the study consent form:

- ○ Yes, my parent/guardian have given permission for me to participate

○ No, my parent/guardian have not given permission for me to participate

Please give voluntary consent:

○ Yes, I wish to participate in this study. I understand I may withdraw my permission for participation in this study at any time without penalty.

○ No, I do not agree to participate

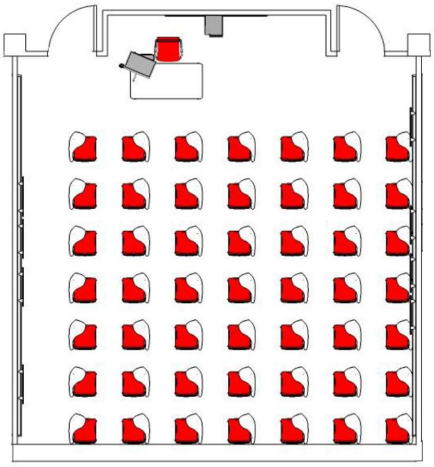
Question Block

Please indicate the level of the course:

Please indicate the course (name & number) you are in now.

Please Indicate the name of the primary instructor in this course you are in now:

Our research indicates that a majority of standard/traditional general education classrooms are in a row-by-column seating arrangement with the educator at the front in lecture mode. Please think of this situation when we refer to 'standard' classroom in the following survey. Example below.



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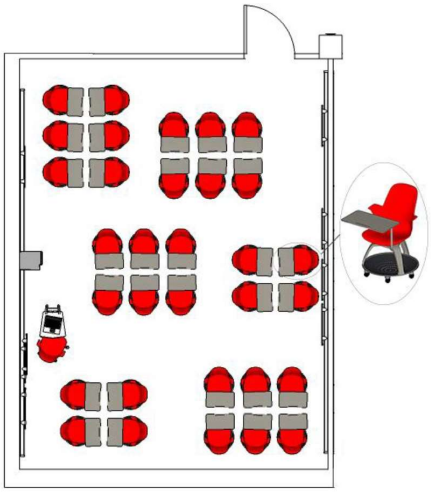
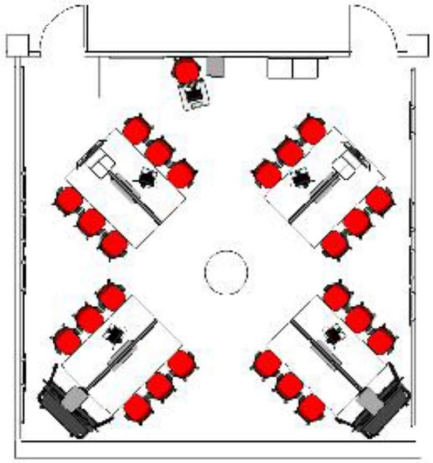
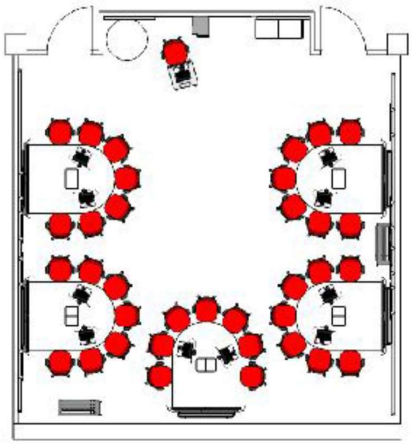
Please select the type of "New" classroom furniture layout you are in now:



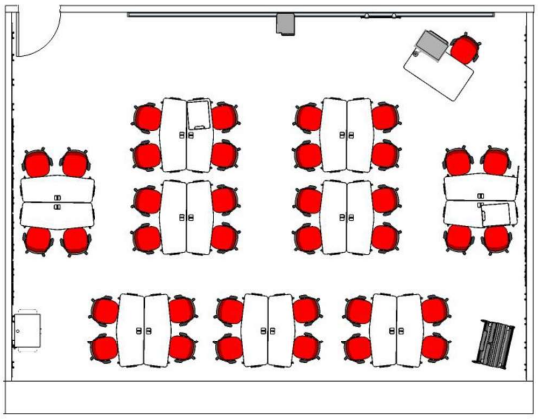
node classroom



LearnLab (or media:scape LearnLab)



Media:scape



Verb Classroom

Provide an overall view of the type of instruction you experience in this current class during the course's term:

	Only lecture	--	Even mix of lecture and student-to-student work	--	only student-to-student work
In this class, I experience:	○	○	○	○	○

Provide an overall view on your level of engagement in this current course:

	Not at all	Slightly	Moderately	Very engaged	Extremely
My overall level of engagement is:	○	○	○	○	○

To help you provide a more accurate answer, please use the two-step decision-making process described below when responding:

(A) decide on whether the statement was/is not adequate (Not OK) or adequate (OK), then

(B) assign the appropriate rating:
(0) not adequate;
(1) not really adequate, but almost OK;
(2) adequate, but just barely (still OK otherwise it would be 0 or 1);
(4) exceptional; or
(3) somewhere between 2 (minimally OK) and 4 (exceptional). [Yes, 3 is intentionally after 4.]

Graphically, the scale looks like this:

These questions below are about your activities in the classroom: Knowing what you know now about using the Standard/OLD versus Current/NEW classrooms, rate yourself now regarding the following characteristics:

THE DEGREE:

	Standard (OLD)					Current (NEW)				
	Not OK 0	Not OK 1	OK 2	OK 3	OK 4	Not OK 0	Not OK 1	OK 2	OK 3	OK 4
of emphasis on collaborative work during class time.	○	○	○	○	○	○	○	○	○	○
to which you were/are able to stay focused during class time.	○	○	○	○	○	○	○	○	○	○
of your active involvement in classroom activities.	○	○	○	○	○	○	○	○	○	○
of opportunity you have to engage in different learning activities.	○	○	○	○	○	○	○	○	○	○
of repeated exposure to same course material through multiple means.	○	○	○	○	○	○	○	○	○	○
to which you were/are able to get in-class feedback from your teacher on your work.	○	○	○	○	○	○	○	○	○	○
to which your coursework includes "real-life" scenarios.	○	○	○	○	○	○	○	○	○	○

to which you were/are able to engage in the ways that you learn best [i.e.,seeing, hearing, doing].	○ ○ ○ ○ ○	○ ○ ○ ○ ○
of physical movement you engaged/engage in within the classroom.	○ ○ ○ ○ ○	○ ○ ○ ○ ○
to which you were/are stimulated by your classroom environment.	○ ○ ○ ○ ○	○ ○ ○ ○ ○
to which you felt/feel comfortable participating during class.	○ ○ ○ ○ ○	○ ○ ○ ○ ○
to which you found this class to be an enriching educational experience.	○ ○ ○ ○ ○	○ ○ ○ ○ ○

The previous questions were about the classroom activities, in this section we are asking about how the classrooms' furniture layout affected these classroom activities. Knowing what you know now about using the Standard/OLD versus Current/NEW classrooms, rate the following characteristics:

THE LEVEL TO WHICH THE CLASSROOM FURNISHINGS:

	Standard (OLD)					Current (NEW)				
	Not OK 0	Not OK 1	OK 2	OK 3	OK 4	Not OK 0	Not OK 1	OK 2	OK 3	OK 4
supported/supports collaborative work during class.	○	○	○	○	○	○	○	○	○	○
helped/helps you stay oriented and focused during class.	○	○	○	○	○	○	○	○	○	○
allowed/allows you to be actively involved in class activities.	○	○	○	○	○	○	○	○	○	○
allowed/allows you the opportunity to engage in different learning experiences.	○	○	○	○	○	○	○	○	○	○
supported/supports your ability to repeatedly engage with course material in multiple ways [e.g., individual study, group work, presentations, etc.].	○	○	○	○	○	○	○	○	○	○
allowed/allows you to receive in-class feedback from the teacher on your work.	○	○	○	○	○	○	○	○	○	○
allowed/allows you and your classmates to model 'real-world' scenarios.	○	○	○	○	○	○	○	○	○	○
supported/supports the way that you learn best.	○	○	○	○	○	○	○	○	○	○
allowed/allows you to move around while learning or participating in learning activities	○	○	○	○	○	○	○	○	○	○
contributed/contributes to your interest and stimulation in class.	○	○	○	○	○	○	○	○	○	○
contributed/contributes to your ability to feel comfortable to participate in class.	○	○	○	○	○	○	○	○	○	○

contributed/contributes to enriching your educational experience.	○	○	○	○	○	○	○	○	○	○

Due to your experience in this "new" classroom layout, please indicate how the you believe the "new" classroom layout contributed to an increase in:

	not at all	low	moderate	high	exceptional
your engagement in this class	○	○	○	○	○
your ability to achieve a higher grade	○	○	○	○	○
your motivation to attend class	○	○	○	○	○
your ability to be creative	○	○	○	○	○

Please provide us with any other comments and feedback you wish to share.

Thank you for participating in this evaluation project.