

## Control Panels, Numerous Screens, and Wheeled Chairs: An Examination of the TEAL Classrooms in the University of Kentucky’s Jacobs Science Building

Kathryn McClain, University of Kentucky

As discussed in James P. Purdy and Dànielle Nicole DeVoss’ (2016) anthology *Making Space: Writing Instruction, Infrastructure, and Multiliteracies*, the exploration regarding how physical spaces inform composition education has expanded over the past decade or so, especially concerning the contributing technology found within the spaces; such research has more specifically considered just how “new and existing spaces are renovated and/or designed to make best use of digital tools and physical spaces for multimodal, digitally mediated instruction and research-related work” (para. 10). However, in the search for these innovative tools and environments, the balance between the provided technology and the physical learning environment can ultimately be lost. In search of such needed balance, this analysis will explore the boundaries between a positively technology-rich learning environment and an excessively-equipped physical space, using the University of Kentucky’s newly unveiled Jacobs Science Building as a model. Specifically, the technology and materials included in the space and the placement of the instructor within the classroom setting will be considered from the viewpoint of a rhetoric and composition instructor.



Figure 1: The initial view of an active learning classroom in UK’s new Jacobs Science Building as a person enters the room (McClain, 2016c).

Technology cannot become everything within a classroom, yet the advances possible with technologically-advanced spaces undeniably allow for more interactive assignments and group work, especially in classrooms designed for student collaboration. Considering the impact of physical space within the composition classroom, James P. Purdy and Dànielle Nicole DeVoss’ (2016) anthology *Making Space: Writing Instruction, Infrastructure, and Multiliteracies* explored how physical space informs composition education, as well as how such examinations have especially expanded over the past decade or so concerning the contributing technology found within these spaces. Such research has more specifically considered just how “new and existing spaces are renovated and/or designed to make best use of digital tools and physical spaces for multimodal, digitally mediated instruction and research-related work” (para. 10). Yet, the inclusion of such digital technologies does not account for all the needs in a composition learning space. Pushing farther into how changeable these aspects may be

depending on the specific classroom situation, DeVoss (2005) wrote with Ellen Cushman and Jeffrey T.

Grabill concerning infrastructure’s impact on writing instruction, with infrastructure including the use of the room, the support for the work in the room, and the funding for the materials in the room (p. 20). In their article “Infrastructure and Composing: The When of New-Media Writing,” they detailed how infrastructure becomes “more than material, is never static, and is always emerging” (p. 22), connecting to a possibly deeper concern that needs to be addressed (p. 17).

Keeping in mind both the movement toward renovated/designed spaces for digital instruction and the deeper concern with infrastructure overall, this analysis will examine the University of Kentucky’s recently completed Jacobs Science Building, which includes classroom spaces designed for student group work and multimodal instruction. More explicitly, two aspects of the technology enabled active learning (TEAL) classrooms as used for composition and rhetoric courses will be considered: the technology and materials included in the space and the placement of the instructor within the classroom setting.

## **Overview of the Jacobs Science Building**

Built to become the cornerstone of UK’s chemistry and biology programs, the \$112 million-dollar Jacobs Science Building includes technology-enhanced classrooms that are structured with a focus on student group work and various digital pedagogies (Blackford, 2016). The building includes 12 TEAL classrooms, as well as teaching labs, student learning centers, ecological teaching spaces, and interior green space, found in areas such as the bases of the staircases (Czar, 2016). The Jacobs Science Building is estimated to serve 6,000 students a day (Blackford, 2016). It is also important to note that the building is not only used for science-based courses, as biology chairman Vincent Cassone stated: “[This day is] one of the most exciting days that we’ve had at the University of Kentucky in which there’s an investment in arts and sciences that goes beyond what we could imagine” (Blackford, 2016).

This report will specifically focus on the TEAL classrooms in the Jacobs Science Building, such as the room shown in figure 1. These classrooms include elements such as the following: a desktop computer for the instructor, which connects to an iPad that activates other digital aspects of the classroom; a camera, large screen display, and control panel at each of the student tables, including the ability for students to connect their laptops in order to show content on the linked screens (see fig. 2); recording capabilities; a projector with an electronically-controlled projection screen; white boards; wheeled chairs, which have either storage capacity or adjustable height



Figure 2: The control panel at each student table includes two outlets, six cable cords to connect laptops, volume control, and the ability to select from the following screens: connected laptops 1-6, the instructor’s desktop computer, and the camera mounted at each table (McClain, 2016b).

capabilities; student tables, seating five to six individuals each, including the previously mentioned control panels as well as adjustable height; and a center podium for the instructor. Throughout the course of this discussion, the focus will be on the use of the Jacobs Science Building for a composition classroom, following Cassone's statement that aspects of the building can function for the arts and UK's decision to place some rhetoric and composition courses (including the introductory courses WRD 110 and WRD 111) in the new TEAL classrooms. However, the findings that are related to the organization of the room and the utilization of the technology are not necessarily limited to this specified discipline.

## **Technology and the TEAL Classroom Setting in the Jacobs Science Building**

High-Tech Active Learning classrooms, such as those classrooms located in the Jacobs Science Building, are designed to create student interaction via collaborative learning, including features like round tables, moving chairs, laptop connections, and student-accessible whiteboards (Cotner, Loper, Walker, & Brooks, 2013, p. 82). Faculty are able to function as facilitators who spend less time behind the podium (p. 85–86), and students appreciate the variety of learning styles possible within such a classroom environment (p. 83). Unlike traditional classrooms that stick students in stationary rows and emphasize the teacher over the student via placement within the room, TEAL classrooms have round tables that encourage natural group interactions and deemphasize the instructor's role (p. 86).

In an examination of the University of Minnesota's Active Learning Classrooms (ALC) compared to the more traditional classrooms for biology classes, D. Christopher Brooks (2011) found that the physical environment that students learn in has a "significant impact on measurable student learning outcomes" (p. 719). The ALCs included large tables for up to nine students, technology to project laptop content to large display panels, marker-boards around the perimeter of the room, and an instructor station connected to projector screens and student display screens (p. 721). When comparing students in the ALC environments to students taking the exact same course in a traditional classroom, Brooks (2011) found that students in the ALC outperformed expected grades, using composite ACT scores to predict freshman students' grades (p. 723). When Brooks continued this study with Sehoya Cotner, Jessica Loper, and J. D. Walker (2013), they had similar results: students reported a higher level of engagement than their peers in a traditional classroom, a higher level of flexibility concerning various in-class assignments, and a better correlation between the use of the physical room and the coursework (p. 86).

Many of the elements found in the ALCs are also present in the Jacobs Science Building's TEAL classrooms, with slight differences including the tables only seating up to six students at a time and chair designs varying (height changes and wheels on certain provided chairs instead of only wheels). When comparing my past experiences in traditional classrooms with the TEAL classrooms, I believe that student interaction with group work succeeds more often at the circular tables; additionally, the students appreciate the ability to view content, including their own work via the laptop connections and cameras, with the available technology. The supplied technology readily grants students the ability "to become publishers and distributors of their writing" (Hart-Davidson, Cushman, Grabill, DeVoss, & Porter, n.d.) within the space of the course in a more interactive manner than previously available in the traditional setting. This element is highlighted in the University of Kentucky's introductory composition and rhetoric courses, as the WRD assignments include requirements such as digital writing — including podcasts, PSAs, websites, and documentary assignments — and group work. With those points acknowledged, however, the so-called decentralization of the instructor, or the literal centralization of instructor's podium in the TEAL classrooms at UK, does not necessarily succeed in the same manner as the other physical aspects of the space, including the tables and the technology.

## **Teacher Decentralization and the TEAL Classroom Setting in the Jacobs Science Building**

Often emphasized in the TEAL classroom is the relationship between the students and the instructor: more specifically, how that relationship shifts from an audience full of students all facing the instructor

positioned at the front of the room to a collection of students interacting with each other while the instructor mediates the activities. This second organization exists in the Jacobs Science Building's TEAL classrooms, as displayed in Figure 3. The workstation, defined by EdTech Planning Group's founder Michael David Leiboff (2010) as the place an instructor periodically returns to during activities, is here placed at the center. As the wiring for the desktop computer and additional electronics goes through the classroom's floor, the workstation cannot be relocated. Therefore, the instructor often moves between the podium, the open space at the front of the room near the projector screen, and the four student tables during class periods.

The altered arrangement currently found in many TEAL classrooms can be an adjustment for many instructors unfamiliar with students focusing on each other instead of the instructor during discussion, as well as students consistently facing alternate directions during class periods. In the article "It's Not You, It's the Room' – Are the High-Tech, Active Learning Classrooms Worth It?" investigating TEAL classrooms, the initial adjustment to such decentralization for instructors was explored:

Half of the students in the class may be facing away from the instructor at any given time. Teachers who view silence as engagement will need to adjust their perceptions, as one goal of decentralized classrooms is increased small-group interaction and this activity can be noisy and difficult to monitor...Namely, any efforts to decentralize the room, with an overt focus on group dialogue, are likely to increase the individual student's sense of accountability and lead to the learning gains that result from peer interaction. (Cotner, Loper, Walker, & Brooks, 2013, p. 87)



Figure 3: The instructor's podium, which includes the desktop computer, the station for the iPad as the room's controller, and the adjustable seat for the instructor, is situated in the middle of the four student tables within the classroom space (McClain, 2016a).

Cotner, Loper, Walker, & Brooks (2013) claimed that the decentralization of the classroom, including the grouping of students and the placement of instructor, help to increase student accountability. However, I believe that a separation should be recognized between the grouping of students within a space and the supposed decentralization of the instructor in that same classroom, which awkwardly and incidentally places the instructor at the center of the room.

As valuable as the student tables are for both encouraging group work and utilizing technology, the placement of the instructor's console remains unfortunate. The inability to see all of the students at once (see fig. 4) is not the detriment here, though the view is quite limited when a professor is presenting an activity, conducting a lecture, or coordinating larger discussion. Often during such large group interactions, I will need to pace the room, stand in front of the podium (blocking students in certain areas

of the room from view), or, less often, request that students wheel their chairs in order to create a misshapen circle for the formation of that needed community. Worse placements for the instructor's workstation than the center of the room include the very front of the room, which can convey an authoritarian feeling to students, or the complete absence of an instructor desk at all within the classroom (see Krych's (2015) "Placement of the Teacher's Desk" for further critical discussion on these two stances). Instead, the arrangement of the TEAL classrooms in the Jacobs Science Building would be most improved by shifting the instructor's workspace from the center of the room to the back, allowing the students to remain grouped at the rounded tables with access to all of the same technology.

Placing the instructor's workspace at the back of the room maintains the TEAL classroom's goal of decentralization—as Matthew Krych (2015) asserted, the students still walk in to see that their desks are prominent and that "the teacher has centered the environment on students" (p. 4). With this arrangement, the podium and desktop will no longer be blocking the students' view of additional screens during class presentations, such as when specific tables want to share their group work with the entire class (Leiboff, 2010). Most importantly, students become more comfortable with approaching an instructor with individual concerns, as the back of the room is simultaneously less congested and more accessible (Krych, 2015, p. 4). Moving the instructor's desk into this optimal position, like Krych argued, "can go a long way in determining student and teacher success" (p. 4), and the same commentary follows for the TEAL classrooms at UK's Jacobs Science Building.



Figure 4: The immediate view for instructors in the TEAL classroom is comprised of the desktop screen, the projector screen, and very few of the students (McClain, 2016d).

## **Concluding Thoughts**

As they consider the overall value of teaching digital writing, Bill Hart-Davidson, Ellen Cushman, Jeffrey Grabill, Dànienne Nicole DeVoss, and Jim Porter (n.d.) considered space particularly, claiming that traditional classroom spaces across different institutions “constrain our work in intellectual and in physical ways.” In fact, they continue to value a space’s influence concerning student to teacher interactions, student to student interactions, and usable tools to eventual products: “Essentially, space shapes the work we do and the ways in which we interact with one another.” Carrying that sentiment forward to the classrooms discussed here, the Jacobs Science Building as a learning environment contributes many advantageous tools that allow students to create and share interesting products (such as documentary assignments on the large screen displays) as well as advance their educations via group work (the six-person tables with moveable chairs). Both the projects that students create and the interactions that students exchange as groups are shaped by the class’s actual space; yet, their communication with the instructor must remain relevant as well.

While critical research has considered student engagement with classrooms designed for group work and multimodal instruction, far less research examines the balance between instructor pedagogy and student learning goals in TEAL classrooms. Additionally, even studies that do consider that balance do not yet know the influence of physical space on effective teaching methods in a rhetoric or writing course. Summer Smith Taylor (2009) conducted faculty interviews and student surveys at Clemson University (p. 220) concerning technology-rich studio classroom spaces. Results indicate that the classrooms encourage an “egalitarian approach” during student-teacher interactions (p. 222) and potentially an “active learning pedagogy” (p. 226). However, the study expressly excludes courses taught by English faculty because Taylor claimed “they do not represent typical users of the space” (p. 219). Engida Gebre, Alenoush Saroyan, and Robert Bracewell (2014) did specifically consider the relationship between student engagement and teaching methods (p. 84), and their study at McGill University included philosophy, physics, law, English as second language, geography, continuing education and electrical and computer learning courses conducted in active learning classrooms (p. 89). Yet, the influence of technology on teaching remains unclear (p. 93–94), and instructor placement is not explored alongside student seating. Also, first-year composition courses remain excluded from the study. As this paper’s focus is on both instructor placement in relation to student-instructor interactions as well as technology use in first-year rhetoric courses, further research is needed to understand the balance between instructor pedagogy and student learning goals.

During the 2016 Fall semester, the inaugural semester for the Jacobs Science Building at the University of Kentucky, my rhetoric and composition students were able to better distribute image-based blog posts, lead discussions on sections of readings, record soundscapes, find and listen to podcasts and videos, and teach one another how to edit their digital assignments. These positives were possible because of the technology supplied and the group tables used. Yet, the teacher’s role as mediator does not work in all teaching situations, particularly in an introductory rhetoric and composition classroom. In the search for a balance between the room and the different types of necessary instruction, any transition back to larger discussion is made difficult by the instructor’s workstation in the center of these TEAL classrooms. Brooks’ (2011) study displayed that “space, and space alone, affects student learning” (p. 724). Should that statement hold true, the positive aspects of the TEAL classrooms in UK’s new Jacobs Science Building do need to be given praise.

However, improvements should also be taken into consideration so that students learn in the best possible space that the university can provide. As the 2012 C&W Conference Town Hall “The Design of Learning Spaces: Perspectives from Across Fields and Disciplines” (Smith, 2012) collectively illustrated, working within innovative spaces requires a reconsideration of modes of learning and pedagogical goals. Based on the findings in this paper, a reconsideration may also be needed for integrated technology and room configurations along the same vein.

## References

- Blackford, Linda. (2016). UK's new \$112 million science building opens Wednesday. *Lexington Herald Leader*. Retrieved November 28, 2016, from <http://kentucky.com/news/local/education/article97383777>
- Brooks, D. Christopher. (2011). Space matters: The impact of formal learning environments on student learning. *British Journal of Educational Technology*, 42(5), 719–726. Retrieved November 16, 2016, from doi:10.1111/j.1467-8535.2010.01098.x
- Cotner, Sehoya, Loper, Jessica, Walker, J. D., & Brooks, D. Christopher. (2013). 'It's not you, it's the room:' Are the high-tech, active learning classrooms worth it? *Journal of College Science Teaching*, 42(6), 82–88. Retrieved November 16, 2016, from <http://www.jstor.org/stable/43632160>
- Czar, Karyn. (2016). UK's multi-million-dollar science building ready for first day of classes. *WUKY*. Retrieved November 28, 2016, from <http://wuky.org/post/uks-multi-million-dollar-science-building-ready-first-day-classes#stream/0>
- DeVoss, Dànielle Nicole, Cushman, Ellen, & Grabill, Jeffrey. (2005). Infrastructure and composing: the when of new-media writing. *College Composition and Communication*, 57(1), 14–44. Retrieved October 11, 2016, from <http://www.jstor.org/stable.30037897>
- Gebre, Engida, Saroyan, Alenoush, & Bracewell, Robert. (2014). Students' engagement in technology rich classrooms and its relationship to professors' conceptions of effective teaching. *British Journal of Educational Technology*, 45(1), 83–96. Retrieved July 14, 2017, from doi: 10.1111/bjet.12001
- Hart-Davidson, Bill, Cushman, Ellen, Grabill, Jeff, DeVoss, Dànielle Nicole, & Porter, Jim. (n.d.). Changed context for writing. *Why Teach Digital Writing*. Retrieved October 11, 2016, from <http://english.ttu.edu/kairos/10.1/coverweb/wide/kairos3.html>
- Krych, Matthew P. (2015). Placement of the teacher's desk. *Journal of Best Teaching Practices*, 2(1), 3–4. Retrieved December 3, 2016, from <https://teachingonpurpose.org/wp-content/uploads/2015/03/Kyrch-M.-2015.-Placement-of-the-teachers-desk.pdf>
- Leiboff, Michael David. (2010). New classrooms: solving the front of the room problem. *Campus technology*. Retrieved December 3, 2016, from <https://campustechnology.com/articles/2010/05/12/new-classrooms-solving-the-front-of-the-room-problem.aspx>
- McClain, Kathryn. (Photographer). (2016a, November 16). *Back of classroom view* [Photograph]. Lexington, KY.
- McClain, Kathryn. (Photographer). (2016b, November 16). *Center panel of student table* [Photograph]. Lexington, KY.
- McClain, Kathryn. (Photographer). (2016c, November 16). *Front of classroom view* [Photograph]. Lexington, KY.
- McClain, Kathryn. (Photographer). (2016d, November 16). *Podium view of classroom* [Photograph]. Lexington, KY.
- Purdy, James P., & DeVoss, Dànielle Nicole. (2016). Making space to theorize and situate space making: An introduction. In James P. Purdy & Dànielle Nicole DeVoss (Eds.), *Making space: writing instruction, infrastructure, and multiliteracies*. Ann Arbor, MI: University of Michigan Press. Retrieved September 18, 2016, from <http://dx.doi.org/10.3998/mpub.7820727>
- Smith, Christian. (2012). Town hall I—the design of learning spaces: perspectives from across fields and disciplines. In 2012 C&W Conference Proceedings. *Digital Rhetoric Collaborative*. Retrieved July 14, 2017, from <http://www.digitalrhetoriccollaborative.org/2012/06/11/town-hall-i-the-design-of-learning-spaces-perspectives-from-across-fields-and-disciplines/>

Smith Taylor, Summer. (2009). Effects of studio space on teaching and learning: preliminary findings from two case studies. *Innovative Higher Education*, 33(4), 217–288. Retrieved July 14, 2017, from doi:10.1007/s10755-008-9079-7