Examining the Built Pedagogies of Classrooms

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Built Pedagogies | Classroom Design | Sociomateriality

This research explores the built pedagogies of College of Education classrooms at a large U.S. university. More specifically, this research investigates and categorizes the design of classroom spaces using photographic images and publicly available data. Leveraging the data, we theorize how the default designs of the classrooms impact teaching and learning practices, especially as they relate to teacher movement and interactions with students. In our analysis, we find the majority of classrooms available to education faculty and students can be categorized as "traditional" spaces and lack designs which immediately enable learner-centered experiences (e.g., collaborative activities, small group discussions, etc.). Even more, we discuss how visual methods, such as interaction geography (Shapiro et al., 2024) are providing opportunities to better visualize and understand how classroom design impacts pedagogy.

Introduction

The design of technology-rich learning spaces has long been of interest to both educators and educational researchers (Papaioannou et al., 2023). Generally, this vein of scholarship recognizes space design shapes teaching and learning practices (Baeplar et al., 2016; Painter et al., 2013). For instance, traditional classroom spaces are frequently designed in ways that reinforce "factory-style" learning (Penrod, 2021) and power hierarchies (Orr, 1993). Orr's (1993) work, in particular, attends to how spaces assert power and draws attention to how design reinforces specific forms of human relationships. Indeed, Cleveland (2009) calls into question the rigid design of classroom space, as these spaces stand in stark contrast to visions of learning, and more generally, lifelong learning, which requires agility and adaptability. On the other hand, spaces designed to be flexible and technology-rich lead to more collaborative and student-centered learning experiences (Eyal & Gil, 2020). As such, harnessing classroom space, including how it is designed and constructed, is viewed as critical for improving learning experiences (Cleveland, 2009).

Given the enthusiasm for designing more student-centered learning environments, recent research has sought to identify how flexibly designed spaces impact the learning experience. Donkin and Kynn (2021), for instance, found that learning outcomes can be improved as a result of investing in technology-enhanced spaces. More specifically, their work identifies how the combination of active learning strategies, flexible spaces, and technology-enabled student workstations promotes students' engagement, reflection, and co-construction of knowledge. Brooks' (2011) quasi-experimental study found students in active learning classrooms outperformed their peers in the same courses which were held in more traditional spaces. Similarly, several studies have investigated student and teacher perceptions of active versus traditional classroom spaces (Hernshaw et al., 2011; Jin & Peng, 2022; Park & Choi, 2014; Peng et al., 2022). For example, Papaioannou et al.'s, (2023) systematic review of the literature identifies (1) contemporary classroom spaces elevate quality; (2) minor classroom design features, including wall color, temperature, lighting, and acoustics have a major impact on student motivation (see also, Hershaw et al., 2011); and, (3) contemporary and flexible space encourages interactive learning arrangements. Further, Painter et al., (2013) found flexibly-designed spaces tend to have higher satisfaction rates, and Park and Choi (2014) identified that students view more traditional classrooms as less collaborative. Given the profound impact space design has on the learning experience, researchers have begun to advocate for the need for designers, well-versed in learning theory and pedagogy, to be included as members of design teams responsible for creating such spaces (Rook et al., 2015).

In the following, we leverage sociomateriality and situated perspective of learning to guide our interpretation of classroom spaces and their impact on teaching and learning. Even more, we leverage the concept of built pedagogy (Monahan, 2002) to guide our evaluation of classroom space and theorize the impact the design will have on teaching and learning practices.

Theoretical Perspective

Our understanding of classroom space is framed by situated and socio-material perspectives. First, we recognize teaching as a culturally situated and spatial act which develops in responsive ways to learners (Lave & Wenger, 1991). Second, sociomateriality recognizes that materials shape human activity and perception, and human activity shapes materials. For example, Rook and colleagues (2020) describe how the affective atmosphere of a learning space (i.e., color, sound, light) plays a significant role in learners' feelings and connections with space.

Even more, concepts such as built pedagogy (Monahan, 2002) and equitable pedagogical spaces (Cleveland, 2009) have shaped our vision of classroom design and layout and its impact on pedagogical practices. Built pedagogy refers to the "architectural embodiments of educational philosophies" (Monahan, 2002, n.p.). For instance, rows of desks embody pedagogies of discipline and conformity, while more flexible and collaborative spaces personify pedagogies of freedom, self-discovery, and equity. Further, Monahan (2002) describes how built pedagogies function along a continuum anchored by discipline and autonomy at opposing ends. Classroom spaces aligning with discipline are restrictive in the movement of both

people and materials. For example, in these spaces, seating arrangements are often hard to move or even secured to the floor. At the autonomy end of the continuum, classroom spaces are open and require both teachers and learners to appropriate the space for their needs. In this way, teaching also develops in relationship to the built space of the classroom (Shapiro et al., 2024). Using Monahan's (2002) scale, we analyze where our classrooms fall on the continuum to better understand how they enable or prevent student-centered and equitable practices.

Methods

This exploratory pilot case study (Yin, 2014) investigates the physical layout and design of classroom spaces in the College of Education at a large southeastern U.S. university and is part of a larger study seeking to better understand how higher education faculty navigate classroom spaces. Our research asks: What philosophies of teaching and learning do the College of Education classrooms embody? Our data collection included publicly available data (i.e., pictures and descriptions of the classrooms posted on the university's website) and photographs of twenty-one College of Education classrooms. Additionally, our research team kept observational fieldnotes of classrooms in a Google Document which enabled collaborative and iterative review of the data to identify design themes among the spaces. For our analysis, we adapted Monahan's (2002) characteristics of flexible space to determine where the design of each classroom fell on the discipline-autonomy continuum. In addition to these descriptions, we included interpretive notes which often described the technology available in the room, the materials that could support learning (e.g., whiteboards hung on walls, student workstations), a description of the furniture, and observations of how the default classroom setup and materials could impact the teaching and learning practices, in addition to our own lived-experiences and histories in the rooms.

Findings

While analysis is ongoing and this research is part of a much larger study, our initial data identifies minimal variability in classroom designs across the twenty-one classrooms. In general, the default design of the classroom spaces fell into three categories: auditorium-style (n=3), desk/lecture-based (n=14), and group-oriented spaces (n=4; Figure 1). For the auditorium-style classrooms, these were tiered-seating large-capacity rooms with immovable seating arrangements. In lecture-style classrooms, the default design included rows of desks with an attached chair, often heavy or difficult to move, all oriented in the same direction toward a teacher workstation. The third default design included arrangements of tables that two or more students could sit at. These tables and chairs occasionally included wheels and moveable seating making the room more modifiable compared to the auditorium-style and desk-based rooms. However, even with wheels, the tables were difficult to move. Indeed, the majority of the classrooms tended to include inflexible seating and room arrangements. Additionally, in the more modifiable rooms, technology access, such as access to presentation capabilities was only available at the teacher station, indicating that even though students had more flexible working arrangements, their access and use of technology was individualistic.

Figure 1.

Types of classroom spaces in the College of Education

Discussion, Implications, and Next Steps

Primarily, the design of the classrooms in our research sustains instructor-centric pedagogical philosophies, and while these designs remain visible, their implications for teaching and learning often go unnoticed without critical inspection. Moreover, our initial analysis has us questioning whether or not educators in these spaces can overcome the pedagogical challenges that are posed, and we hope to unearth this in our future work. For example, how do educators create active learning environments in rigidly designed classrooms? What is the impact of such space rigidity on teacher-student movement, interaction, and pedagogy?

Leveraging this preliminary data, our ongoing research investigates and maps teaching practices across classroom spaces. More specifically, we are using methods of interaction geography (Shapiro et al., 2022) to map teachers' movement across time and classroom space. Analytically, these maps provide insight into how classroom space impacts movement (Figure 2) while allowing us to theorize how different classroom designs can support teacher-student and student-student interactions and pedagogy. With this data, we hope to engage faculty in conversation about their teaching practices across different classrooms to better understand basic yet meaningful pedagogical encounters, such as teacher proximity to students, group dynamics, and the design of participatory activities. Furthermore, interaction geography provides opportunities to visualize the affordances and limitations of space in new ways, particularly as it relates to movement and interaction, and can also be used to train pre-service educators to see classroom space in new ways.

Figure 2.

Example of teacher maps generated with interaction geography.

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