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"Space and Consequences": The Influence of the Roundtable Classroom Design on Student Dialogue

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This study sought to explore how the design of both physical and virtual learning spaces influence student dialogue in a modern university. Qualitative analysis of the learning spaces in an undergraduate liberal arts program was conducted. Interview and focus group data from students and faculty, in addition to classroom observations, resulted in the finding that the program's learning spaces empowered students to engage in dialogue, so much so that they occasionally wished to disengage. While this study found support for the idea that both physical and virtual learning spaces can positively influence student dialogue, findings also suggest that the role and purpose of virtual learning spaces (e.g., use of educational technologies) needs to be more intentionally designed and communicated to students. Recommendations and suggestions for future research are provided.

Introduction

> We spend a lot of time trying to change people. The thing to do is to change the environment and people will change themselves. (Watson, 2006, p. 24)

Brooks' (2012) coining of the phrase "Space and Consequences" aptly captured the idea that learning spaces send messages to users, who in turn interpret the meaning of those messages. Temple (2014) contended that campus designs give out signals about what a university deems as important and Chapman (2006) claimed that an institutional story is told through the campus. Clearly, learning spaces have the capability to teach, to tell a story, and to communicate.

During a time when teaching, learning, technology, and classroom design is changing rapidly, researchers and practitioners are addressing the need for learning spaces that intentionally promote student development. Learning spaces are geographical locations designed to support, facilitate, stimulate, or enhance learning and teaching (*Journal of Learning Spaces*, 2011). They can be found in classrooms, lecture halls, or common areas and are regularly blended with virtual learning spaces.

Fisher and Newton (2014) have called for more research on how physical and virtual learning spaces improve students' experiences. Oblinger (2006) called for a reconceptualization of learning spaces that center more around student needs. Up to this point research on learning spaces and student development has been remarkably limited and thus further scholarly attention is warranted.

This study investigated the influence of learning spaces on student development, specifically on students' ability to engage in dialogue in the classroom and its surrounding learning spaces. Social construction scholar Kenneth Gergen (2009) described dialogue as a conversation between two or more persons that leads to authentic interpersonal communication, a sense of community, and a co-creation of reality. This shared reality, wherein a group of strangers perceives that they are surrounded by a supportive community atmosphere, can result in high levels of academic performance (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007) and student persistence (Tinto, 1988, 1997, 1999). Because dialogue is essential to student development, the conditions conducive to dialogue need to be explored.

In order to investigate how best learning spaces can promote dialogue on modern university campuses today, this article will describe: 1) relevant literature about learning spaces and dialogue, 2) the methodology used in this study, 3) results, and 4) discussion.

Learning Space Design and Dialogue

Recent experimental classroom designs attempt to answer the call for classroom environments that are conducive to student dialogue. Active classroom designs have been successful in improving student learning outcomes by intentionally facilitating interaction between faculty and students (Cox, 2011; Douglas & Gifford, 2001; Sommer & Olsen, 1980). Classroom designs that feature innovative use of furniture, such as tablet desks on gliders (Henshaw & Reubens, 2014) and swivel seat desks (Henshaw, Edwards, & Bagley, 2011) have shown to increase classroom

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participation and discussion by allowing students to form small group discussion circles.

Iterations of Beichner's (2008) Student-Centered Active Learning Environment for Undergraduate Programs (SCALE-UP) classroom design, featuring multiple round tables, laptop connections at every seat, no teaching podium or "front" of the classroom, and projection screens at multiple points in the room have been successful in facilitating consistent faculty and student interaction that leads to improved student outcomes (Beichner, 2014; Van Horne, Murniati, & Saichaie, 2012; Brooks, 2012; Pellathy & Leibovich, 2008; Beichner, Saul, Abbot, Morse, Deardorff, Allain, Bonham, & Risley, 2007; Benson, Biggers, Moss, Ohland, Orr, & Schiff, 2008). Research on SCALE-UP classrooms shows the usefulness of the circular seating design, as well as the intentional use of technology.

The growth of an increasingly technology-socialized generation of students prompts a reexamination of technology-enriched learning spaces on campus. Jamieson and Fisher (2000) posited that the development of online and virtual teaching and learning on college campuses challenges planners and designers to reconsider learning spaces from both an on-campus and digital-campus perspective. Because the College of 2020 (Chronicle Research Services, 2010) will bring with it many part-time students who experience a campus through its virtual technologies just as much as through face-to-face interactions, colleges and universities should examine the built pedagogy of the digital presence as well as the on-campus presence. Fisher, Gilding, Jamieson, Taylor, and Trevitt (2000) further posit that universities must balance the development of the growing online teaching presence and the redesign of existing built environments by strategically managing, planning, and allocating educational resources.

Research and testing of active classroom designs informs higher education institutions on how to remain viable in a competitive educational market, to which Harvey and Kenyon (2013) argued learning space planning is central. More learning space research and testing may support the idea that traditional classrooms, when properly adapted, perform just as well as, if not better, than some of these experimental active learning classrooms.

Methodology

This article will now turn to methodology and tools for analysis of an undergraduate liberal arts community. This section will include a description of: 1) research questions, 2) the site and participants, 3) data collection and artifacts, and 4) analysis and coding.

In light of the extant literature and current gaps in understanding about the influence of learning spaces on student development, this study posed the following research questions:

RQ1: In what ways do physical, built learning spaces influence student dialogue?

RQ2: In what ways do virtual learning spaces influence student dialogue?

The Site

This site for this study is an undergraduate liberal arts learning initiative designed to promote innovation and creativity at a large, public, flagship, southeastern university. As part of the program, students complete two 100-level seminar foundation courses, then take 300-level thematic seminars, and complete their experience in the program with a 400-level capstone course. The capstone course integrates prior coursework into each student's development of an individual worldview. Most students in the program live in the residence hall operated by the program, at least during their freshman year, and earn a minor in liberal arts after completing the program.

At the time of the study, about 250 students were enrolled in the program. Fourteen instructors, called senior fellows, were teaching in the program. Teaching assistants, called junior fellows, who are typically graduates of the program, assisted in teaching and facilitating the classes. According to its promotional materials, the program provides the unique nature of a small liberal arts college within a major university. Learning outcomes of the program include: 1) developing intellectual breadth in the liberal arts, 2) critical reading and writing skills, 3) problem solving skills, and the ability to analyze and do research using data across the disciplines of the Arts and Sciences, 4) effective debate and discussion skills, and 5) a sense of community among freshmen who live together.

The Academic Buildings. The program offers exclusive use of two academic buildings, both of which are located at the central quadrangle of campus. Students may access these buildings at any time during the day or night. Both buildings house classrooms for upper level seminars, common study spaces, a computer and printing lab, and office space for program faculty and administrators. The residence hall is mostly utilized by first year students, while both freshman and upperclassmen students in the program often spend time in the academic buildings.

The Classrooms. The classrooms utilized for this study were roundtable classrooms, emphasizing face-to-face communication in small groups. The freshmen seminar class took place in a large seminar room that consisted of multiple, semi-round tables connected into a full circle in the middle of the room, surrounded by 15 to 20 standard chairs and large windows on one side of the room. The freshmen participants in this study, ten of them, met in the program's

living-learning hall classroom (see Figure 1) on Tuesdays and Thursdays from 9:30 to 10:45 a.m.

Upper level classes took place in one of the program's academic houses, Oliver-Barnard Hall. The senior capstone class utilized in this study took place in a small seminar room (see Figure 2) on Tuesdays from 2:00 to 4:30 p.m. and was composed of eight students. The seminar room consisted of a large conference table in the middle of the room, surrounded by 10 to 15 standard chairs, with a projector on the ceiling, and large windows around the perimeter of the room.

Figure 1. Classroom in the residence hall (site of study)

Figure 2. Classroom in one of the academic buildings (site of study)

Participants

Freshmen and seniors enrolled in the liberal arts undergraduate initiative were the focus of this study. The 18 students interviewed for this study ranged in age from 18 to 22 years of age. Each student was currently enrolled as an undergraduate student in either the freshmen seminar class or in the senior capstone seminar. Overall, 11 of the 18 students interviewed in this study were female (61%), and seven students were male (39%).

The students in this study came from a variety of backgrounds, though most grew up in southeastern states and described their socioeconomic backgrounds as middle class. Many of the students also reported growing up in Protestant Christian families and communities. Almost all of the participants were Caucasian; one student was African American. The student participants represented a diverse mix of majors. Three of them had a double major; one of them included a major in two different colleges on the university campus. Among the 18 participants in the study, 21 majors were represented.

The primary instructor who was interviewed and observed during this study has an academic home in the History department and also serves as a senior teaching fellow in the program. The assisting instructor who was also observed during this study completed the program while he was an undergraduate student at the university and has been an assistant instructor in the program since he enrolled in a graduate program. A third instructor in the program was asked for an interview by the researcher. Although his classroom proceedings were not observed, he taught the same freshmen and senior seminar classes as did the primary instructor who was observed in this study and has taught in the program for over a decade.

All participants were provided with a description of the nature of the study and received a copy of an Institutional Research Board (IRB) information sheet, which they were asked to sign. They were informed that their identities would be protected and that all data would be used only for purposes of this project and that all records would be carefully stored during use and destroyed after use.

Data Collection and Artifacts

Data was collected in the proposed site from both a freshmen seminar course and a senior capstone course. Artifacts included reflection journals, interviews, focus groups, and audio-recorded classroom observations. Before the first classroom observation, photographs, sketches, and notes on the unoccupied physical space were also collected.

Interviews. Interviews with both faculty and students were based on participants' experience of the learning spaces, especially the instances of dialogue and discussion that they observed and/or experienced there. Interviews included such questions as: How has the layout of this classroom (e.g., the desks, chairs, board, projector, lab computers, spatial orientation) influenced you/your

students' ability to engage in dialogue? How would you compare the use of technology (or lack thereof) in this program to other experiences you have had on campus? To gather information about how the classroom compared to other classrooms, they were asked what aspects of the classroom made it more enjoyable or less enjoyable than other classrooms they had experienced.

Classroom Observations. The first classroom observation took place during the fourth or fifth week of the semester and continued until near the end of the semester. Audio-recorded footage was collected and later transcribed and analyzed. The audio recorder was positioned as unobtrusively as possible and students were reminded to be as comfortable and natural as possible, even though they were being recorded.

Focus Groups. Students were invited to participate in a focus group that met in the classroom space. They met in groups of five to eight students at a time. During the focus group, students were asked about how the layout of the classroom influenced their ability to engage in dialogue. To guide them through the discussion, students were asked follow-up questions to clarify comments made during class, in interviews, and/or during the focus group discussion. Any necessary follow-up to these focus group discussions and/or member checking took place during the last two weeks of the semester.

Journals. During this study, students and instructors were asked to keep reflection journals, in which they described their experiences and reactions to learning spaces.

Analysis and Coding

Using Glaser and Strauss' (1967) grounded theory approach, this analysis coded for categories that emerged as relevant themes in reference to the research questions. Grounded theory refers to an inductive process of uncovering theories and central concepts that are grounded in the information provided by participants (Strauss & Corbin, 1998). As key concepts emerged from the data collected and analyzed during the study (Kvale & Brinkmann, 2009; Stake, 1995), participant perceptions of the learning spaces were assessed inductively. Following this grounded theoretical approach, and the methodological strategies of Charmaz (2006), initial coding strategies included word-by-word and line-by-line coding of each incident as it happened.

The use of this coding method sought patterns and themes that emerged from the journals, interviews, focus groups, classroom observations, fieldnotes about the space itself, and recordings of classroom proceedings collected during the study. Analysis of these initial codes led to a systematic coding structure. Clustering is a method of coding in which the researcher groups the emergent themes into meaningful categories and systems (Marshall & Rossman, 2011). Following Emerson, Fretz, and Shaw's (2011) instructions for writing ethnographic fieldnotes, the researcher in this study developed jottings into detailed notes of analysis, which were then open-coded, clustered, and thematized.

Results

The purpose of this study was to investigate the influence of learning spaces on student dialogue and communication. This section presents the themes and findings from all relevant artifacts collected in the study.

Theme 1: Students perceive that built learning spaces influence dialogue.

In this study, students described how the roundtable classroom provided them with more opportunity to engage in dialogue and discussion than many of the traditional classrooms in which they have attended class. While they reported that some traditional classrooms were adaptable and did not impede students from dialogue, most students described at least one traditional classroom in which they felt that their opportunity to voice their opinions or ideas was hindered by the arrangement of the space.

Students reported that being seated in a circle created a system of accountability, particularly with regard to remaining alert and accountable to the rest of the group. When asked how the roundtable classroom format compares to other classrooms, students reported that it, "[helps you to stay] awake, because when you fall asleep, it's really embarrassing." One freshman stated, "you can't fade in the background here…if you're not engaged, everyone else is looking at you like you're not engaged." Another freshman stated, "you can't hide behind someone…you have to talk."

Being able to see everyone in the classroom helped students to spark and engage in discussion. One freshman stated that the roundtable design is ideal for discussion of controversial topics, "because if you're going to debate, you want to be able to look at who's debating you." Other students echoed this sentiment and described how difficult it was to debate with someone who was sitting behind you where you could not see them without turning around.

Some students reported that what they enjoyed most about the discussions was not that they were able to express their own opinions, but that they were able to listen to the perspectives and viewpoints of their classmates. One senior described how many students in the program are "convicted [sic]" in their opinions and they also appreciate listening to others' points of view. She stated that, "I may not believe in that, but I want to hear why you believe in that" and "I think I need to listen more." Several students described how the roundtable learning space allowed them to listen to others

and to understand their points of view. Students' descriptions of the comparisons between a traditional classroom (e.g., desks in rows) and a more interactive classroom (e.g., roundtable or other design) are depicted in Table 1.

While several students reported that they enjoyed lively and sometime "intense" discussions, others sometimes wanted to stay in the background, or "fade away" as some put it. One freshman stated that, "it's kind of hard to get used to having all eyes on you. You have to develop a poker face." A senior described how "sometimes it is just nice to go and sit in lecture halls and just melt away and not have to worry about anything…just let the professor do their thing." Classroom observations revealed that students who apparently wished to disengage did not reach for a mobile device or laptop; however, they typically doodled, drew, or sketched in their notepads. Otherwise, students rarely looked away from each other at all during class.

Almost unanimously, students reported that both the seminar classrooms and academic buildings provided a sense of home or community. A senior described the program's classrooms and academic buildings as his home. He stated, "It's really great to have three different locations that we can go to that are specifically designed for [the program]." Classrooms in the residence hall, in particular, provided a gathering place to socialize or to continue discussions that began in the classroom. Students attributed much of the dialogue and ability to express and listen to opinions so openly to the sense of community that emerged in the ample, available, and inviting learning spaces.

Theme 2: Instructors perceive that built learning spaces influence dialogue.

The teaching assistant for the freshmen seminar described how the roundtable classroom provides an opportunity for instructors to challenge students to engage in thoughtful dialogue, rather than simply to answer a list of discussion questions and attempt to give a "correct" answer. He described how "something important comes out of each [classroom discussion]" and that "everything that we talk about…extends outside of the classroom," citing that students regularly stay after class to "just sit and talk" about the recent topic of classroom discussion. Instructors' descriptive comparisons between teaching in a traditional classroom (e.g., desks in rows) and a more interactive classroom (e.g., roundtable or other design) are depicted in Table 1.

Instructors stated that they regularly observe students talking in small groups after class in the residence hall lobbies and in the common area of the academic buildings. They described how the informal learning spaces were helpful in facilitating dialogue outside of the classroom.

In this study, both instructors and students reported that

	Traditional Classroom (Desks in Rows)	**Active Learning Classroom** (Roundtable or Other Non-Traditional)
Students	Instructor-centered Boring Isolating Oppressive Restrictive Intimidating	Student-centered Interactive Engaging Comfortable Open Relaxing
Faculty	Instructor-centered Can be efficient, if arranged properly "Tombstones in a Row"	Student-centered Interactive Egalitarian Socratic Conducive to learning Useful for small group discussion

Table 1. Student and faculty comparisons of traditional and active learning classrooms

the roundtable classroom provided students with the opportunity to speak openly, to develop their own voices, and to engage in debate and dialogue about the readings or current events. All participants agreed that students engage in debate and dialogue in a meaningful way in the roundtable classroom and in its surrounding spaces.

Theme 3: Students perceive that virtual learning spaces influence dialogue.

Students described how virtual learning spaces have a mostly positive influence on their ability to engage in dialogue. To describe their experiences with technology in the classroom (e.g., media platforms, course management systems, in-class projection of PowerPoint slides, showing websites or film clips, online virtual environments), they described classroom experiences outside of the program because technology use is atypical in the classes that the program offers.

Each student in the study had taken classes in both a *technology light* classroom that employed minimal to no use of media platforms and in a *technology rich* classroom that employed the use of one or more media platforms and applications such as Blackboard, PowerPoint, or Skype. As a whole, students described how technology rich classrooms could be effective for larger class lectures and useful for group viewing of film clips. They described how the smaller, technology light classrooms were more effective for small group discussion (see Table 1) and that they had rarely had any difficulty engaging in dialogue in a smaller, technology light classroom. They described no instances of dialogue in large, traditional lecture halls.

Students described how using technology has occasionally deterred dialogue in some of their other classroom experiences. For instance, they reported that they have observed the misuse of technology in the classroom and the distractions that it can cause. In contrast to the liberal arts program, a freshman stated, "Here, if you check your phone, everyone's like [lengthy sigh]" and that it is important that "your mind is here." Seniors in the program emphasized "we use our minds more than technology," "there's no reason for technology," and "sometimes I think [mobile devices] hinder the discussion." Because they agreed that eye contact is so essential to engaging in dialogue, students did not report any instance where technology would be necessary to engage in dialogue. Students described, in particular, how more instruction and guidance on the use of technology in their classes might help students to understand its role and purpose in classes where it is used for instructional purposes.

The 24-hour access to the computer lab in one of the academic halls essentially converts it into a fluid, accessible, information technology laboratory facility, in which students could write and work together. For example, one senior described an experience during her freshman year, in which she spent a whole night in the building: "I did not go to sleep. My friend and I were both here, and we stayed up all night writing a paper." As an academic extension of the seminar classroom, the academic buildings serve many student needs for dialogue and interaction, particularly ones that require the use of technology.

Students' reflections on classroom experiences and the observed classroom behaviors testify to the dialogue that clearly occurs in a learning space that employs minimal technology. Students' descriptions of the distracting nature of technology supports the idea that students do not necessarily believe that technology is required in order for them to engage in dialogue.

Theme 4: Instructors perceive that virtual learning spaces influence dialogue.

Like the students, each instructor interviewed for this study had taught classes in both a technology light classroom and in a technology rich classroom. Although they described how technology rich classrooms could be effective for larger class lectures and useful for showing films, instructors described how the smaller, technology light classrooms in the program were more effective for small group discussion and dialogue. Rather than adding to classroom dialogue, virtual technology was described by both faculty and students as a distraction to classroom dialogue. The following table (see Table 2) displays student and faculty comparisons of technology light classrooms and technology rich classrooms in this study.

Neither faculty nor students reported being averse to technology and they agreed that, if used effectively, technology does not necessarily deter dialogue. However, they agreed that using technology changes the level of dialogue in the learning space. This suggestion was corroborated during classroom observations. For example, when a student instigated the viewing of a short media clip on a laptop, students subsequently engaged in dialogue. However, when the instructor instigated the viewing of a long video on the projection screen, students subsequently disengaged in dialogue. These observations support student reports that technology influences dialogue in both positive and negative ways.

In this study, students and faculty reported that the roundtable classroom provided them with more opportunity to engage in learning than some of the traditional classrooms in which they have taught or attended class. Transcripts of classroom proceedings corroborated much of what students and faculty shared in their journals and interviews. While they reported that many traditional classrooms were adaptable and did not impede their

	Technology Light Classrooms (minimal use of media platforms)	**Technology Rich Classrooms** (use of media platforms inside and/or outside of the classroom)
Students	• Effective for small group discussion. • Fewer distractions. • Whiteboards occasionally useful.	• Effective for larger class lectures. • PowerPoint useful for technical info. • Blackboard useful for accessing grades. • Blackboard useful for sharing files. • Mobile device use is distracting. • Laptop use can be either useful or distracting.
Faculty	• Effective for small group discussion. • Fewer distractions. • Whiteboards occasionally useful.	• Effective for larger class lectures. • Useful for showing films. • PowerPoint is often misused. • Mobile device use is distracting. • Laptop use can cause disengagement.

Table 2. Student and faculty comparisons of technology light and technology rich classrooms

learning, most participants in the study described at least one traditional classroom in which they felt that dialogue and small group discussion was hindered. They also described at least one technology rich classroom in which dialogue was hindered.

Discussion and Conclusions

This article will now turn to a discussion of the findings about learning spaces in this undergraduate liberal arts community. This discussion section includes: 1) a discussion of findings, 2) recommendations for policy and practice, and 3) limitations and suggestions for future research.

Research Question One: Influence of Physical Learning Spaces on Dialogue

RQ1 asked in what ways physical, built learning spaces influence dialogue. Designed to support, facilitate, stimulate, or enhance learning and teaching, physical learning spaces can be formal (e.g., classrooms, offices) or informal (e.g., hallways, common areas) (*Journal of Learning Spaces*, 2011). Through dialogue in these learning spaces, students achieve what Gergen (2009) described as a co-creation of social meaning.

The primary finding in this study is that the physical, built learning spaces had a positive influence on dialogue, as described by both students and instructors. Participants reported that the classrooms and the informal gathering areas worked well for small group discussions, debate, and dialogue. Because participants had observed the misuse of technology in the classroom, they described how it was refreshing to have a reprieve from the use of technology in the roundtable classroom. One instructor described how the key to the program's learning space design is that it promotes a Socratic, egalitarian classroom, in which no one sits at the head of the table. Future research should investigate traditional and nontraditional learning spaces located in other majors and disciplines in order to confirm or disconfirm the influence of physical learning spaces on dialogue.

A surprising finding in this study was that students occasionally desired to disengage from the classroom interaction and dialogue that the circular classroom design afforded. While all students reported that they found the roundtable classroom to be comfortable and enjoyable, a few students reported that facing each other every day was difficult. They described a desire to fade away, hide, or otherwise disengage in class. Do and Schallert (2004) found that students disengage in classroom discussion in order to protect themselves from the frustration, anxiety, exhaustion, dread, and embarrassment they sometimes experience while speaking and/or listening to others in the discussion. Carver and Scheier (1999) described how students periodically tune out in order to regain the emotional energy to rejoin the discussion. Future research should explore students' and instructors' perceptions about why students tune out of discussion and whether or not the desire to disengage is unique to the learning spaces in this study.

This study supports past findings that a classroom design that is circular in nature is conducive to dialogue. Iterations of Beichner's (2008) SCALE-UP classroom design, for example, have been successful in generating desired student outcomes (Van Horne, et al., 2012; Brooks, 2012; Pellathy & Leibovich, 2008; Beichner, et al., 2007; Benson, et al., 2008). Henshaw and Reubens (2014) and Henshaw, Edwards, and Bagley (2011) have shown how the rearrangement of furniture into a circle increases classroom participation and small group discussion. Learning spaces that allow small group discussion circles has tremendous potential to promote student development and thus needs more exploration in the future.

Research Question Two: Influence of Virtual Learning Spaces on Dialogue

RQ2 asked in what ways virtual learning spaces influence dialogue. Designed to support, facilitate, stimulate, or enhance learning and teaching**,** virtual learning spaces include all forms of technology (e.g., learning management systems, in-class use of technology, online virtual environments) used in a learning space (*Journal of Learning Spaces*, 2011).

One finding is that virtual learning spaces have a mostly positive influence on dialogue, as was consistently reported by both students and instructors in this study. Because participants found the use of technology (e.g., media platforms, course management systems, in-class projection of PowerPoint slides, websites or film clips) to be an unnecessary component of the liberal arts program, they described classroom experiences outside of the program when describing the mostly positive influence of virtual learning spaces on student development. Because this particular site relied very little on technology, future research should investigate the virtual learning spaces located in other disciplines (e.g., business, science and engineering, pre-law or other pre-professional majors, nursing, social work) in order to confirm or disconfirm the idea that virtual learning spaces influence student development in a positive way or at all.

While this study found support for the idea that both physical and virtual learning spaces positively influence dialogue, findings also suggested that using technology can deter dialogue and therefore its use should be designed, communicated, and implemented more intentionally. Participants reported that they have observed the misuse of technology in some classrooms and the distractions that it can cause.

Students and instructors have reported in past studies that technology limits interaction with others in the classroom (Jamieson, 2003; Kolleny, 2003; Okojie & Olinzock, 2006; Venezky, 2004). Previous research has also shown that the use of mobile devices in the classroom has potentially damaging effects on student achievement (Kraushaar & Novak, 2010; Wei, Wang, & Klausner, 2012; Kuznekoff & Titsworth, 2013). The personal and individualized nature of mobile devices can clearly create an alluring conduit for disengagement from classroom experiences. Thus, future research on students' and instructors' perceptions of the best uses and applications of technology (e.g., PowerPoint, Blackboard, Skype) would help to further understand the best practices for the use of instructional technology in learning spaces.

In contrast to some criticisms of information and community technology (ICT) use in the classroom, iterations of Beichner's (2008) SCALE-UP classroom design have produced some favorable student outcomes (Van Horne, et al., 2012; Brooks, 2012; Pellathy & Leibovich, 2008; Beichner, et al., 2007; Benson, et al., 2008). Thus, future studies should investigate the best practices for promoting dialogue in classrooms that blend physical and virtual learning spaces.

Recommendations for Policy and Practice

Learning spaces should be intentionally designed to promote interactive engagement, creativity, experimentation, and innovation between faculty and students. To make informed decisions, administrators should seek feedback from other administrators, industry professionals, custodial staff, instructors, and students, to generate ideas about the usability of a space (McArthur, 2011). To promote dialogue and community building in the physical, built learning spaces:

- Furniture should be adaptable to rearrangement for individual work or for group work and discussion.
- Materials necessary for dialogue (e.g., whiteboards) should be easy to find and use.
- Formal learning spaces should be close to informal ones (e.g., lobbies, cafes, study rooms.).
- Various disciplines and majors should be assigned to the same physical space.
- User councils should be strategically appointed to assess needs and to implement necessary changes regularly.

To promote dialogue and community building in virtual learning spaces:

- Various disciplines and majors should be assigned to the same virtual space.
- Laptops, screens, and monitors should be adaptable to rearrangement for individual or group work and discussion.
- Digital materials necessary for dialogue (e.g., computer software, wireless access, Blackboard Discussion Board) should be easy to find and use.

- User councils should be strategically appointed to respond to student needs for technology support services on a regular basis.

As indicated by several participants, inexpensive revisions to the traditional classroom (e.g., repairing or replacing older chairs, supporting instructors in their commitment to try new arrangements of furniture, replacing light fixtures, removing clutter) can improve a comfort and enjoyment factor. User councils composed of students, faculty, staff, and other employees who assist in the regular maintenance and gradual upgrade of classrooms could suggest inexpensive adaptations that would improve the quality of the classroom experience each academic year.

Limitations and Suggestions for Future Research

Although the researcher attempted to mitigate their effects, some limitations of generalizability and reliability may have existed in this study. The first limitation of this study was that it focused on one learning community, limiting access to a wider array of undergraduate student participants. Because a convenience sample, rather than a random sample, was selected in this analysis, focus groups with, interviews with, and observations of more respondents would perhaps yield a more generalizable sample of participants. For example, students in this program self-select to participate in it, and its demographic composition may not represent the entire student body, or students in traditional residence halls or other classrooms across campus. Future research could survey and/or interview a larger, more representative sample of students and faculty at a variety of other institutions and/or among a wider variety of living-learning communities, traditional residence halls, and other classrooms.

A second limitation of this study was that data artifacts, though diverse and comprehensive, were collected during only one semester with two sets of students at one particular university. It would also be useful to interview or observe students taking a class in the same classroom space at a different time or institutional location than the primary class being observed. For example, the same study conducted at a different time of year, at a different hour during the same semester, or at different institutions, may reinforce and/or contradict some of the patterns that were identified in this study. Longitudinal analysis of the space may also yield richer data in the future. In particular, ethnographies and discourse analyses that gather in-depth experiences in dialogue and community building would be very useful.

Concluding Remarks

In this study, learning spaces provided a potential site for social change by influencing student dialogue. Visualizing what the active learning classroom looks like in multiple settings will require more extensive research and testing. Experimental testing on various adaptations of the traditional classroom, roundtable style classrooms, technology light classrooms, and technology rich classrooms will help to identify which types of active learning classrooms are most effective for which environments.

When Diane Oblinger called for more active, participatory, and experiential learning spaces, she emphasized that focusing on learning spaces will help us to understand learners and help them to achieve their goals. To echo once again the words of Les Watson, if we reform the environment, we reform students' ability to engage in dialogue and learning in the university setting.

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