JoTLT
Journal of Teaching and Learning with Technology
Volume 8, Special Issue, August 2019
jotlt.indiana.edu

Special Issue:
Physical Learning Spaces

JoTLT
JOURNAL OF TEACHING AND LEARNING WITH TECHNOLOGY

Volume 8	Special Issue	2019
Anastasia S. Morrone	Introduction Special Issue on Physical Spaces	1
J.D. Walker	Foreword	3
Abimbola O. Asojo, Yuliya Kartoshkina, Dolapo Amole, and Babatunde Jaiyeoba	Multicultural Learning and Experiences in Design Through the Collaborative Online International Learning (COIL) Framework	5
Gina Sanchez Gibau, Francia Kissel, and Modupe Labode	Starting With the Space: Integrating Learning Spaces and Technologies	17
Judith A. Giering and Hope Fitzgerald	The Language Commons: An Innovative Space Supporting Second Language Acquisition	33
Elisabeth Counselman-Carpenter and Alex Redcay	Understanding the Role of the Brick-and-Mortar Classroom in Course Design and Implementation of the "Flipped" Classroom: An Exploratory Case Study	42
Crystal M Ramsay, Jenay Robert, and Jennifer Sparrow	Promoting Pedagogical Agility in Learning Spaces: Toward a Comprehensive Framework of Faculty Support and Innovation	60
Teggin Summers and Maggie Beers	Ready for Equity? A Cross-Cultural Organizational Framework to Scale Access to Learning-Ready Classrooms That Support Student Success	76
André C. Buchenot and Tiffany A. Roman	Reframing Writing Instruction in Physical Learning Environments: Making Connections Between Digital and Nondigital Technologies	87
Tanya Perkins	Strange(r) Places: Collaborative Creativity in Real and Virtual Spaces	99
	Reviewers	111

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 1-2. doi: 10.14434/jotlt.v8i1.2761

Foreword

J.D. Walker
University of Minnesota
jdwalker@umn.edu

Over the past few decades, researchers have produced a body of literature that examines the educational importance of space, finding that how learning spaces are designed and equipped makes a difference to the teaching and learning process. Put another way, the formal learning spaces in which much teaching takes place, such as classrooms and laboratories, are not neutral. Different types of classrooms can facilitate, or retard, the implementation of different teaching techniques, and we have only begun to study the ways in which innovative learning environments may enhance equity in the education of our increasingly diverse student body.

Technology is an especially important factor in shaping space. Digital technologies, in particular, can enhance formal learning spaces and extend their capabilities – or they can be expensive distractions. Moreover, research dating back to the early days of the internet has consistently shown that virtual spaces matter. Even if MOOCs are unlikely to replace face-to-face classes completely, the online environments that they exemplify, and in which students interact and collaborate, have distinctive properties that give them enormous educational potential but also create pitfalls for the inexperienced or unwary.

We also know that learning is not confined to the classroom. For post-secondary students, a great deal of learning takes place in the informal spaces that are everywhere on our campuses -- some created with much intention and forethought, and some simply as a byproduct of other construction. Informal spaces are under-studied, but what evidence we have indicates that, like formal instructional spaces, how they are configured (and where they are located) matters greatly to whether they are used by students at all. If they are used, the design and location affects how often they are used, for what types of activities, how connected to formal classes, and so forth.

The complex relationship between space and digital technology is only one of many forces that have combined to shape higher education in recent years. Another is diversity. American colleges and universities serve a larger proportion of the population than ever, as enrollments have surged over the last few decades. This new student population is not only larger but more diverse in many ways – for example, in terms of ethnicity, religion, native language, economic status, gender, and first-generation status. When the post-secondary student population was more homogeneous, it was possible to believe that all students learned in much the same way. The increasing diversity of our student body highlights the fact that different students may have different needs, and their success may be promoted by different learning environments and pedagogical approaches. These teaching and learning environments also provide rich opportunities to help prepare students to be global citizens.

How best to configure the environments in which faculty teach and a diverse group of students learn is a central challenge facing colleges and universities as they consider revising aging campus classrooms or constructing new buildings. Happily, two further changes in the landscape of higher education will help faculty, researchers, and administrators meet this challenge.

The first is a renewed focus within colleges and universities on the teaching mission, a change that has perhaps been easiest to see at large research-focused institutions but is evident

across the landscape of higher education. Graduate students in a wide variety of fields now receive pedagogical training along with their disciplinary education, a combination that was practically unheard of twenty years ago. A growing number of departments and programs have created teaching-focused faculty positions that encourage faculty not only to teach well but also to systematically study their own teaching and work to improve it. And this focus on teaching can be seen in a shift toward the view that the responsibility for student learning is shared between faculty and students.

The second is an increasing recognition across higher education of how much is known about teaching and learning. The science of learning has advanced tremendously in recent decades, giving rise to an impressive body of knowledge about the types of practices and environments that facilitate learning, including the emerging consensus around the importance of active or student-centered learning.

The studies in this special issue represent the right kind of response to the need to construct and configure learning spaces that facilitate the learning of a diverse student body. They both apply and contribute to the science of learning by investigating different ways of integrating technology and space, and by doing so in authentic instructional environments. As important as laboratory research has been in developing knowledge of the processes that underlie learning, educational research conducted by teachers in live educational environments is also needed, because such studies have strong external validity and are credible for instructors who are considering similar innovations in their own classes. For educators who wish to be inspired and informed with respect to space and technology, the case studies in this volume are an excellent place to start.

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 3-4. doi: 10.14434/jotlt.v8i1.27617

Introduction
Special Issue on Physical Spaces

Anastasia S. Morrone
Indiana University
amorrone@iu.edu

JD Walker's foreword to this special issue sets the context for the need for studies like those in this volume that explore innovative ways to integrate technology in physical learning spaces. We issued the call for abstracts for this special issue in September 2018 and expected a variety of different article types including empirical research, case studies, reflective essays, and critiques. We received 36 abstracts and it was interesting to me that the overwhelming majority were case studies. I didn't know why. After all, much has now been written about the importance of active learning and the classrooms and informal learning spaces that support active learning. But as we began the review process, the reason became clear. The research on the use of technology in physical classrooms is still relatively new and we appear to be in a time of active exploration of creative and collaborative use of technologies in physical learning spaces.

The eight case studies that make up this special issue contribute in a meaningful way to our conversation about how technology plays a key role in the experiences of students and faculty in a physical classroom. All of the case studies emphasize the importance of collaborative learning and student engagement first with technology playing a supporting, but key role.

I was also struck by how many of the studies focus on creating environments that promote diversity and inclusion. For example, Asojo, Kartoshkina, Amole, and Jaiyeoba used web conferencing technologies to connect students at the Obafemi Awolowo University in Nigeria with students at the University of Minnesota who were enrolled in a lighting design course. Gibau, Kissel, and Labode examined the experience of incoming IUPUI freshman in a learning community organized around the theme of "The Human Story." And to help promote the University of Virginia's College of Arts & Science's goal to "prepare undergraduate students to be global citizens and participate in a connected, globalizing society," Giering and Fitzgerald describe the creation of a new Language Commons that replaced an aging, traditional language lab.

The importance of the physical learning environment was explored in several studies. Counselman-Carpenter and Redcay examined the impact of a flipped classroom design on Columbia University social work students' development of advanced clinical skills. What makes this study different from many flipped classroom studies is that it not only discusses the pedagogical benefits of a flipped classroom approach, but also the importance of the physical space. Ramsay, Robert, and Sparrow describe the Penn State University Blue Box learning space and the framework for supporting pedagogical agility. The authors make a compelling case for the importance of a cyclical process of research, instructional technologies, instructional design, and faculty development. Summers and Beers from San Francisco State University address equitable access to "learning-ready classrooms" designed using universal design principles to create classrooms that support diversity and inclusion--at scale.

Two studies that consider writing instruction connect the use of digital technologies with the physical environment. Buchenot and Roman describe an approach to teaching writing at IUPUI in a way that intentionally connects paper-based student writing activities with a range of digital technologies available in an active learning classroom. And Perkins examines how students in an advanced fiction writing course at Indiana University East moved story, character, and setting between physical spaces and virtual worlds to support collaboration and creativity.

The case studies in this issue explore new horizons in our understanding of creative and collaborative uses of technologies in physical learning spaces. The authors share with us a variety of important considerations around design of learning spaces. They not only exemplify innovative pedagogical approaches, but also the commitment to study these approaches. And through their efforts to capitalize on and explore the potential of bringing together technology and learning spaces, they demonstrate new ways for higher education to take on timely issues confronting universities such as promoting diversity and inclusion, deeper learning, and student engagement.

I appreciated the invitation by the journal's editorial team to serve as guest editor of this special issue. I am grateful to all of the authors in this special issue for their excellent contributions—it was an honor to work with all of them. I also owe deep thanks to the reviewers who provided substantive comments on earlier drafts that contributed to the quality of the papers in the issue. Finally, I thank Karissa Rector in the FACET office and copy editor, Anita Todd, for their assistance as we prepared the issue for publication.

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 5-16.
doi:10.14434/jotlt.v8i1.26748

Multicultural Learning and Experiences in Design Through the Collaborative Online International Learning (COIL) Framework

Abimbola O. Asojo
University of Minnesota
aasojo@umn.edu

Yuliya Kartoshkina
University of Minnesota
ykartosh@umn.edu

Dolapo Amole
Obafemi Awolowo University
dolapoamole@gmail.com

Babatunde Jaiyeoba
Obafemi Awolowo University
ebjaiye@oauife.edu.ng

Abstract: One of the requirements for interior design students by the Council for Interior Design Accreditation is to be "prepared to work in a variety of contexts as well as across geographic, political, social, environmental, cultural, and economic conditions." To help with this preparation, faculty partners from two institutions—the University of Minnesota Interior Design program and the Obafemi Awolowo University Architecture program in Nigeria—created unique learning experiences for their students using the collaborative online international learning (COIL) framework. The main goal of this teaching methodology is to develop students' cross-cultural competence by linking university classes in different countries. Two COIL projects were chosen to help students practice solving design problems while responding to specific sociocultural contexts. Students from both countries benefited from this learning experience. Findings from students' reflections after the experiences indicated deeper intercultural sensitivity in their design solutions and appreciation of technology and collaborative learning. Overall the COIL framework strengthened the integration of multicultural learning experiences in both settings.

Keywords: collaborative online international learning (COIL), interior design, intercultural pedagogy, intercultural learning, culture, diversity

Introduction

Students in all disciplines need to be prepared to work and live with people from diverse cultural backgrounds, as the world is becoming more interconnected. This trend toward interconnectedness puts the responsibility on universities to help students develop the intercultural skills needed to be successful in a global economy and attain jobs after graduation. One such foundational skill is the development of intercultural sensitivity. According to Bennett (1993), who developed the developmental model of intercultural sensitivity, there are several stages to expanding one's sensitivity to other cultures. Bennett emphasized that this journey is developmental and with experience, awareness, and practice, a person can move from cultural ethnocentrism, seeing one's culture as "central to reality," to cultural ethnorelativism, where culture is seen as "relative to context." Overall,

intercultural sensitivity involves becoming conscious of differences among cultures and being able to respect and accept those differences (Chen & Starosta, 2000).

In the United States, study abroad experience has been historically the most common way universities and colleges help students develop intercultural sensitivity. However, not all students can afford such an experience or are able to include it their course of study. According to the most recent Institute of International Education (2017) Open Doors report, only 16% of U.S. students seeking a bachelor's degree were able to study abroad during the 2016–2017 academic year. Therefore, local classrooms where the majority of students receive their education becomes an environment where intercultural skills need to be fostered.

In design curricula, the pedagogical strategy of teaching students about different cultures has been accomplished predominantly through history courses where students are exposed to different historical styles around the world. The problem is that within the context of a history course, students do not have the opportunity to practice solving design problems in a cross-cultural context. At the same time, the population of the United States is becoming more diverse and multicultural, with a recent U.S. census report indicating that 39.3% of the U.S. population is non-White (United States Census Bureau, 2019). It is thus crucial for future designers to be aware of different cultural contexts. They will need to be able to conduct culturally sensitive research and engage in projects that take into consideration cultural nuances. The accreditation board for interior design education in the United States recognizes the importance of integrating cultural diversity and global issues in design education. The Council for Interior Design Accreditation (2018) dedicates one of its 16 standards (Standard 4) to global context: It requires that interior design graduates be "prepared to work in a variety of contexts as well as across geographic, political, social, environmental, cultural, and economic conditions." (p. 16). Thus, design faculty need to find ways to include elements of intercultural and global learning in their courses and especially to develop the foundational skills of intercultural sensitivity.

One pedagogical strategy for approaching this methodological gap is to create international partnerships with universities abroad and to help students collaborate with their peers abroad virtually. This approach is also known as collaborative online international learning (COIL). According to the State University of New York (SUNY) Center for Collaborative Online International Learning, one of the leading international organizations focused on the emerging field of globally networked learning, COIL is designed to cultivate "cross-cultural student competence through development of multicultural learning environments that link university or college classes in different countries." (The SUNY Center for Collaborative Online International Learning, 2017). In the COIL framework, experiential cross-cultural student learning is fostered in co-created online environments that link college classes in different countries using the three main components that are necessary for an effective COIL experience: pedagogy, technology, and cross-cultural learning (The SUNY Center for Collaborative Online International Learning, 2017).

"COILing" a course is an opportunity to grow for both students and instructors that can enhance the course content and provide experiences similar to study abroad in fostering intercultural learning (The SUNY Center for Collaborative Online International Learning, 2017). Lo, Johnson, and Tenorio (2011), in their study about student learning in an online environment, showed that "having students participate in online assignments can promote student satisfaction and foster critical thinking and deep learning" (p. 1). Similarly, Bai, Larimer, and Riner (2016) highlighted bringing faculty from international settings, integration with the host university, and student reflection as important aspects of strong cross-cultural pedagogy. Both studies reinforce the importance of the three main COIL components, pedagogy, technology, and cross-cultural learning.

In the current paper we describe how a design faculty at the University of Minnesota developed several COIL projects for students (Figure 1). We present an overview of the partnership

with Nigerian colleagues at Obafemi Awolowo University, the COIL assignments, and findings about student learning based on their feedback and reflections. Future recommendations and adaptations for other courses and disciplines are also discussed.

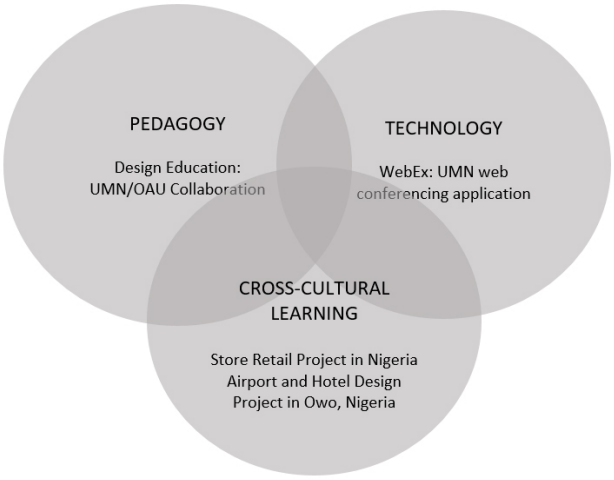

Figure 1. The three main components of collaborative online international learning—pedagogy, technology, and cross-cultural learning—and their interdependence. The University of Minnesota (UMN) and Obafemi Awolowo University (OAU) in Nigeria collaborated on two projects using the UMN Web conferencing application WebEx.

COILing a Design Course

The College of Design at the University of Minnesota consists of three academic units, (1) the School of Architecture, (2) the Department of Design, Housing, and Apparel, and (3) the Department of Landscape Architecture, with about 1,600 students. The Interior Design undergraduate program in the Department of Design, Housing, and Apparel has about 140 students. The vision of the Interior Design program at the University of Minnesota is to:

> Develop globally competent interior design practitioners and scholars who excel in identifying and solving interior environment problems from an evidence-based, human-centered approach by applying knowledge, infusing creativity, and valuing the person and the environment through an interdisciplinary design process.... Undergraduate students learn how to be professional interior designers who design in ways that protect people's health and safety and improve human well-being. (University of Minnesota Interior Design Program, 2019)

To help students at the University of Minnesota develop global competence and provide them with real-life opportunities to practice solving design problems in cross-cultural environments, Asojo created COIL projects in a lighting design course. Thus, Asojo initiated the collaboration.

To COIL a course, faculty members need to think about many factors involved in setting up such a collaboration. According to the SUNY Center for Collaborative Online International Learning (2019), some of these important factors are (1) determining content and institutional resources, (2) finding a partner, and (3) agreeing on pedagogical components and logistics of teaching a course together.

Determining Content and Institutional Resources

To go through this stage, Asojo (University of Minnesota faculty member) had to answer three questions about (1) the qualities that make a course a good candidate for COIL, (2) readiness to teach in a technologically enhanced way, and (3) availability of institutional support (The SUNY Center for Collaborative Online International Learning, 2017). Two design projects, "The Store Retail Project in Nigeria" and "The Hotel Design Project in Owo, Nigeria," in Asojo's lighting design course were good candidates for COIL because the content and student learning could be enhanced by collaborating with peers in the geographical locations of the design projects. Both projects offered the opportunity to provide students cross-cultural experiences. In terms of technology, Asojo was very comfortable with Web conferencing applications, and the student drawings in the course involved digital representation with computer software applications. Institutional support was available through the University of Minnesota's Global Programs and Strategy Alliance Internationalizing the Curriculum and Campus initiative. Asojo received funding prior to the COIL experience to travel and visit the Nigerian faculty in summer 2016 at Obafemi Awolowo University and funding to bring the Nigerian faculty (Dolapo Amole and Babatunde Jaiyeoba) to visit Minnesota in fall 2016.

Establishing the Partnership

Establishing the partnership is another critical factor in creating an effective COIL project, as "having the right partner can literally make or break your COIL enhanced course" (The SUNY Center for Collaborative Online International Learning, 2019, p. 8). One way to establish partnerships is to look into already existing professional relationships with faculty abroad. In the present example, University of Minnesota faculty (Asojo) had research collaborations with Nigerian faculty from the Obafemi Awolowo University Architecture Department (Amole and Jaiyeoba). This existing relationship offered a great opportunity to capitalize on this partnership for the lighting design course. During their fall 2016 visit to the University of Minnesota, the Nigerian faculty were able to attend a course that was intended for COILing, to co-lecture on Nigerian culture for this course, and to provide U.S. students with feedback on their design projects in class. This experience was very beneficial in the follow-up discussions about organizing pedagogical and logistical aspects of the collaboration.

In-person discussions between faculty from Minnesota and Nigeria were very valuable in deciding on the details of how the partnership would continue virtually, what projects would work best, and what platform to use for online communication. For example, the partners agreed that Nigerian architecture students would provide feedback to the U.S. students twice during the project. Also, besides discussing the pedagogical aspects of the course, the partners needed to take into account the 6-h time difference between the United States and Nigeria, the cost of Internet access in Nigeria, and the platform for their synchronous meetings. WebEx, a University of Minnesota platform, was chosen because it offered the opportunity to Web conference, share screens for visual presentation, and record presentations. Thus, the existing research partnership, Nigerian faculty visiting the Minnesota campus to experience the course and having in-person conversations about the details of collaboration, and follow-up discussions online and by phone all contributed to establishing an effective partnership.

Developing Design Projects

To provide students with an opportunity to practice solving design problems in cross-cultural environments, University of Minnesota faculty chose the lighting design course that is usually offered

to third-year design students. An average of 30 students from interior design, architecture, and other college majors enroll in this course every fall semester. The main goal of the course is to introduce lighting as a dynamic design element impacting interior space. Assignments and design projects emphasize the integration of lighting with interior and architectural elements. Nigerian faculty selected several graduate architecture students in their program who had taken an interior design elective.

Two design projects, "The Store Retail Project in Nigeria" and "The Hotel Design Project in Nigeria," were created for the lighting design course. Both projects lasted no longer than 6 weeks, with the class meeting twice a week. This gave faculty enough time to help students develop the foundational knowledge about Nigerian culture and architecture, and the students enough time to conduct their own research related to their project, to receive feedback from Nigerian students and faculty, and to refine their work according to the feedback.

The first project, "The Store Retail Project in Nigeria," was assigned to students in fall 2016 and 2017. The goal for students was to design the lighting and display space for a contemporary brand-name store in an international airport in Lagos City, Abuja Federal Capital Territory, or Port Harcourt City in Nigeria. Students were allowed to choose their brand and location from a predetermined list. Students were required to reflect Nigerian culture in their design proposals in addition to emphasizing different layers of lighting in the space. The second project, "The Hotel Design Project in Nigeria," was assigned in fall 2018. The goal for student teams was to design the lighting and interiors for a hotel in Owo, Ondo State in Nigeria, for a client who was a retired elderly female college professor. Students were required to reflect Nigerian culture and Western influences in their design proposals in addition to emphasizing different layers of lighting in the space.

The first 2 weeks of each project were dedicated to developing students' knowledge of the culture and architecture of Nigeria. For example, on the first day the students were introduced to the project requirements, given a lecture on Nigerian architecture, and introduced to Asojo's (2013) cultural framework for design problem solving focused on the following five themes: juxtaposition of traditional and contemporary culture; social dynamics; elements and principles of design; visual and performance arts; and sustainability (Figure 2). The lecture on Nigerian architecture was jointly presented by University of Minnesota faculty and faculty from Obafemi Awolowo University. It focused on introducing students to Nigerian people, history, culture, geography, art and aesthetics, and traditional and contemporary architecture. For the next two classes, students were asked to read three articles on Nigerian architecture and work on their research, design concept, conceptual sketches, and lighting design ideas. The next two classes were dedicated to students developing their concept and schematic design and presenting them for feedback: face-to-face to visiting Nigerian faculty in 2016 and via Web conferencing to Nigerian faculty and students in 2016, 2017 and 2018. Students had about 2 weeks to refine their work based on feedback and additional desk critiques. During the last week of the class students made their final presentation via Web conferencing to Nigerian faculty and students (Figures 3, 4, and 5). At the end of the experience students from both Minnesota and Nigeria filled out a questionnaire about their experience.

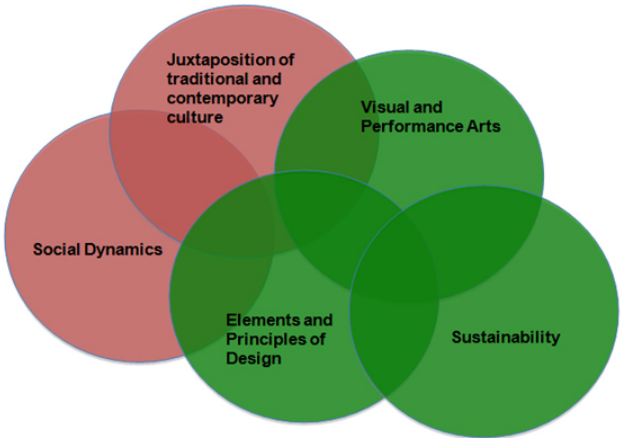

Figure 2. Five themes of Asojo's (2013) cultural framework for design problem solving. The juxtaposition of traditional and contemporary culture is an abstract theme, dealing with indigenous influences and the importance of interpreting them in design solutions in non-literal and non-stereotypical ways. Social dynamics, the second abstract theme focuses on ethnicity, cultural diversity, philosophy, religion, government and iconic figures in the cultures, community, social interaction and family. The visual and performing arts, a concrete theme includes artifacts, the arts and crafts. The elements and principles of design, a second concrete theme, characterizes the seven elements of design (point, line, form, shape, space, texture and color) and seven principles of design (balance—symmetrical or non-symmetrical—rhythm, emphasis, proportion, scale, unity/harmony, and movement). Sustainability, a third concrete theme, characterizes the importance of nature, the use of local materials, and climatic considerations.

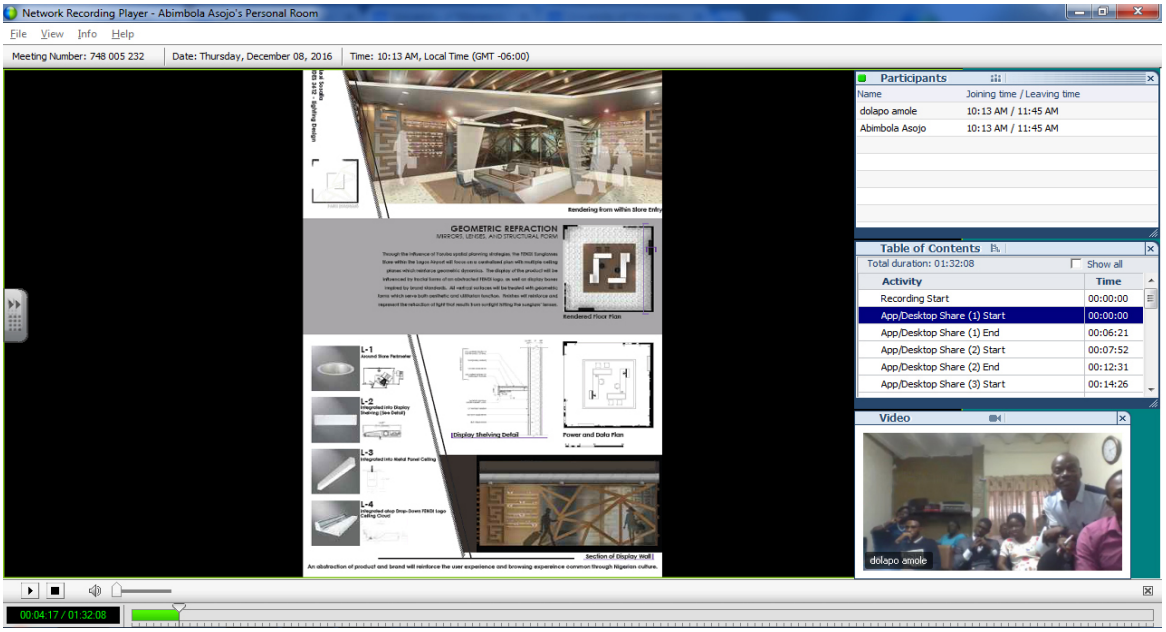

Figure 3. The "Store Retail Project in Nigeria" Web conferencing presentation, fall 2016.

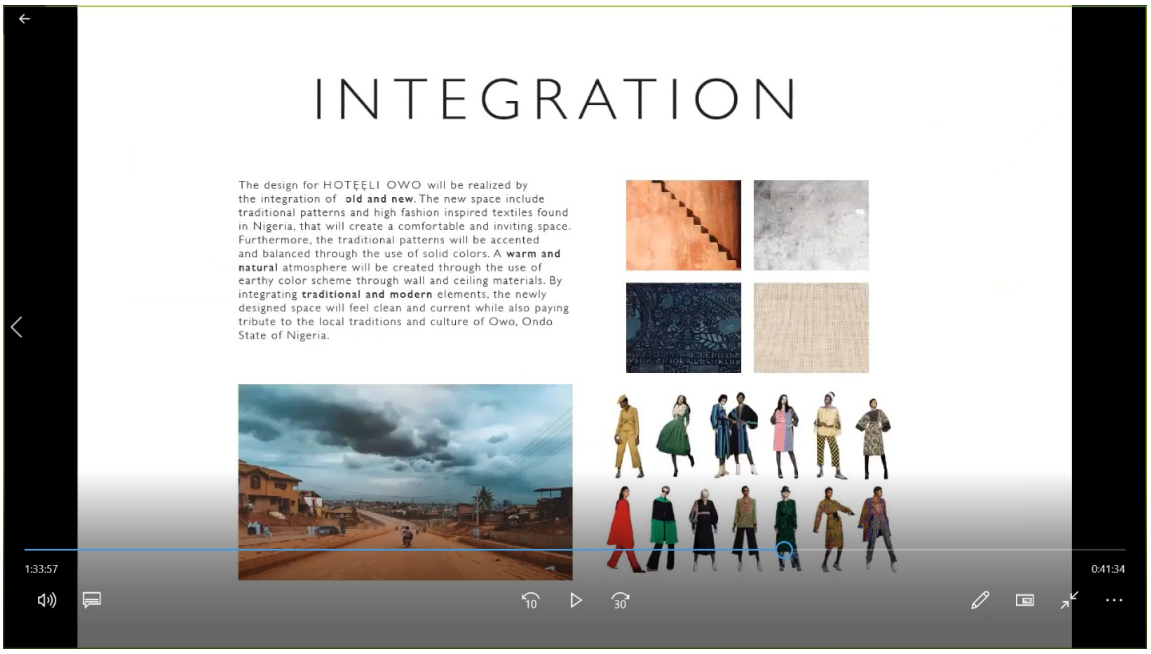

Figure 4. The "Hotel Design Project in Owo, Nigeria" Web conferencing presentation, fall 2018.

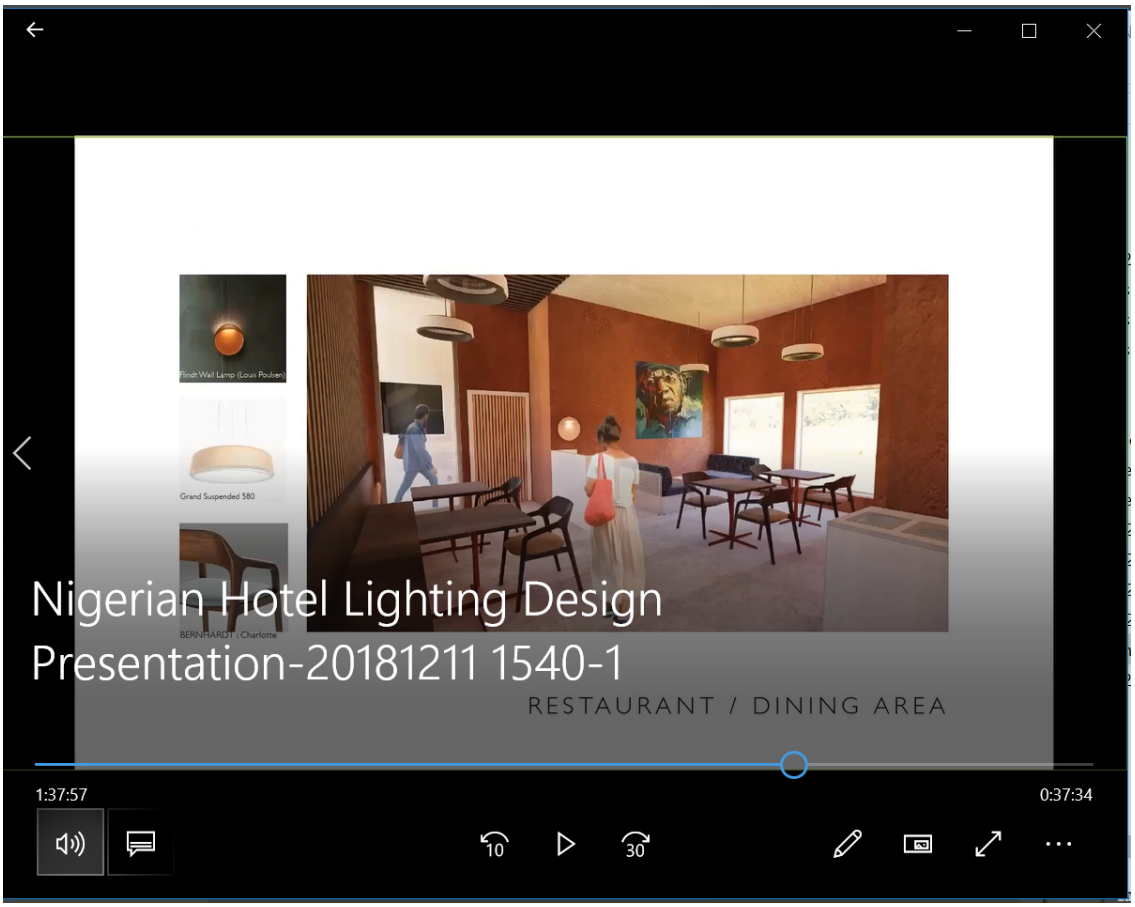

Figure 5. The "Hotel Design Project in Owo, Nigeria" Web conferencing presentation, fall 2018.

Student Learning

Faculty at both universities were interested in what students were learning through this COILed project, in both Minnesota and Nigeria. Thus, at the end of each semester, all students were given a short online survey to reflect on their learning. The questions were the following:

(i) How did the Juxtaposition of Traditional and Contemporary Culture theme impact your design?
(ii) How did the Social Dynamics theme impact your design solution?
(iii) How did the Visual and Performance Arts theme impact your design solution?
(iv) How did the Elements and Principles of Design impact your design solution?
(v) How did Sustainability impact your design solution?
(vi) What was/were the most important thing(s) you learned in this course in relation to global/international/intercultural issues?
(vii) What in this course most helped you learn about global/international/intercultural issues?

A thematic analysis was conducted on the qualitative data collected from the open-ended questions by the authors. Through a process of continual comparison, grouping, and categorizing of the data (Miles & Huberman, 1994; Stake, 2006; Strauss & Corbin, 1998), the following two themes emerged: *cultural sensitivity in design* and *importance of collaboration and technology*.

Cultural Sensitivity in Design

Responses from both U.S. and Nigerian students indicated that they became much more aware and sensitive when designing projects for potential clients and providing feedback on each other's work. U.S. students seemed to have many realizations regarding why and how to be more culturally sensitive. As for why, they realized that it is very important to conduct research about a culture you are designing for, to avoid assuming what is needed and stereotyping people. One student reflected:

> I had to do a lot of research on finding out the traditions and culture of a specific country. I did this so that my design would not offend that group of people and also to avoid stereotypes.

Another student realized that to be a good designer, it is important to conduct culturally sensitive research:

> I learned that research is crucial, we have no choice as designers but to accept that there are many cultures we know little or nothing about, but also that we must educate ourselves in order to do design effectively in those places.

As for how, U.S. students in this class learned to incorporate different elements of Nigerian culture into their designs. For example, one student commented: "I used Nigerian contemporary art as my inspiration, so it informed my design through color and curving lines." Another student shared: "I was highly inspired by traditional Nigerian art and textiles. This translated into my design." Some students commented on how they paid close attention to the environment and integrated natural light in their project. One student shared:

> Local wood and stone tile would be used, and there is an abundance of natural light so general ambient lighting could be kept at a minimum during the day. I used harder materials to keep them from rotting in [the] often humid climate, and to prevent replacements from being needed frequently.

For the Nigerian students, the COIL collaboration allowed them to practice providing feedback (known as "crits" in design) in a different cultural context. This was an instructive learning method for them. They learned from the designs of the Minnesota students (who were students like themselves) what the most important issues were in the process of design and especially in the translation of design ideas to physical form. It appeared that providing a crit was an easier way to learn because they could see and appreciate some of the problems they also could have had in the design process. Nigerian students also learned to be culturally sensitive in their role as crit providers. Before the interactive online sessions with the Minnesota students, they were briefed on the cultural differences in critiquing and communication with other cultures. This was apparent in the way they critiqued the projects. The students learned to identify the positive issues in the projects first before identifying aspects that could be improved upon. In this way they learned to be culturally sensitive in their communication. One of the students at the end remarked that "I think I like this way of critiquing... and I had to be careful not to critique like my tutors did..."

The Nigerian faculty observed that the Nigerian students benefited from the University of Minnesota students' reinterpretation of cultural elements that are part of their everyday lives but sometimes unappreciated in their design solutions. These same unappreciated elements yielded design concepts for the University of Minnesota students' design projects. For students at both University of Minnesota and Obafemi Awolowo University, their design concept vocabularies were enriched through the process of deriving ideas from Nigerian culture. The cultural ideas that emanated from the diverse ethnic groups in the different regions of Nigeria in which the projects are located enhanced all students' learning experiences. For example, the Yorubas of Western Nigeria and the Binis of the Midwestern region provided conceptual ideas for the student designs located in Lagos and Owo. The way of life of the Gwaris, who are the original inhabitants of Abuja, the Hausa/Fulani, and the Tiv, Nupe, and other ethnic groups in the middle belt of Nigeria were displayed in the students' designs located in Abuja. The Port Harcourt location brought to the forefront the culture of the Ijaw, Ikwere, Ogoni, and other diverse cultures of the Niger Delta region of Nigeria and the dominance of oil as the mainstay of Nigeria's economy. These explorations and interpretations reinforced the impact of the social dynamics theme from the cultural framework for design problem solving (Asojo, 2013) on students' design solutions. Furthermore, the design concepts developed from the different cultures of the Nigerian people allowed students from both universities to deconstruct elements and principles of design through a culturally sensitive inclusive lens. Cultural concepts that emanated from art, sculpture, textile design, dance, hairstyles, and language reinforced the importance of the visual and performance arts theme in the students' design solutions.

Overall, students in the United States and Nigeria indicated development of cultural sensitivity. They showed personal growth in respect and recognition that cultural differences exist, as well as an ability to adapt their designs to Nigerian values. According to Bennett's (1993) model of intercultural sensitivity, students started to reveal ethnorelativist features, such as acceptance and adaptation of cultural differences. Ethnorelativism involves viewing difference not as a threat but as a challenge as well as a desire to develop new categories for understanding rather than depending on the old ones (Bennett, 1993). The COILing experience led students who took this course and learned about Nigerian culture to develop both an awareness of different cultural practices and the ability to incorporate their new knowledge into their design projects. COIL is therefore an important way to prepare future interior designers who will have clients from diverse cultural backgrounds. As Nelson

and Stolterman (2003) emphasized, good designers need to be able to find "the most appropriate response to the unique requirements of the design situation" (p. 137). And one of these unique requirements will be the need to be culturally sensitive.

Importance of Collaboration and Technology

Many U.S. students, especially during the first lighting project when Nigerian faculty visited their class, responded very favorably to having international visitors in their classroom. One student reflected:

> [I enjoyed] having people come and talk to us who are from another country (even though this may not be attainable for all projects) [and hearing] them talk from their point of view and what they would like to see us accomplish.

Students also enjoyed having feedback from their Nigerian visitors. One student shared that "having them see our final projects was fun and their feedback helped a lot!"

Both U.S. and Nigerian students said how much they valued the technology that allowed for this intercultural learning to happen. For example, one student commented "that it's possible with technology to do research and execute projects in parts of the world without having to be physically present."

Students also really enjoyed their interactions with each other. One student commented: "The opportunity to interact with and learn from students of similar professional background on an international level is quite amazing."

Both collaboration and technology are important parts in establishing successful COIL projects. Collaboration provides the opportunity to bring in multiple perspectives and partners who understand the culture to enrich the design problem-solving experiences. This theme coincides with students' reflections from other COILed courses mentioned in the SUNY 2013 report on COIL Institute case studies (SUNY COIL Center, 2013). In this report, positive comments were usually about students' appreciation for having had access to different points of view; they also indicated a high level of awareness of "self" and "other." This report also mentioned students' enthusiasm as one of the positive highlights of the experience. Students' reflections on the lighting design course universally expressed an abundance of enthusiasm from being taught by both U.S. and Nigerian faculty as well as receiving feedback from their international peers. In addition, having students learn from Nigerian faculty and students about the culture and architecture in Nigeria and receive feedback about their proposals provides the kind of collaborative relationship design students need to develop in real-life design problem solving.

As for technology, it was instrumental in achieving this COIL experience. It provided an opportunity to bring a Nigerian experience into the design studio virtually. It was very surprising to see that students really appreciated the technology, as usually in COIL courses technology is reported as one of the points of frustration (The SUNY Center for Collaborative Online International Learning, 2017). In the SUNY 2013 report (SUNY COIL Center, 2013), many instructors and students in COIL courses commented on several challenging aspects of technology—agreeing on the technology to use, learning how to use the technology, and overcoming frustration when the technology did not work. At the same time, some students in that report mentioned that even though they "hated" technology, they were grateful that it allowed them to learn from people in another country. Students in the lighting design course wrote only about positive aspects of the technology. This does not mean that there were no challenges at all, but if technology works and all the aspects of organization have been taken care of, it becomes a very positive experience for students in both countries.

Conclusion

The COIL experience embedded in the lighting design course provides several insights for design educators. This experience gave students the opportunity to start developing cross-cultural sensitivity, appreciation for technology, and collaborative international learning and teaching. The U.S. and Nigerian students became more conscious of cultural perspectives when thinking about design projects either as designers or when providing crits. The three main components of COIL—pedagogy, technology, and cross-cultural learning—strengthened the integration of multicultural perspectives in this course.

The COIL experience also contributed to strengthening of the partnership between two universities and among professors. This has been a unique learning experience not only for students but also for the faculty. The Nigerian faculty observed that their students who were part of the crit process improved in knowledge about culturally sensitive design. Many cultural aspects that the students took for granted were explored by the University of Minnesota interior design students. Therefore, the Nigerian faculty decided to enhance the predesign briefing process of design studio projects in their architecture department with more cultural issues. This became a subject of discussion in subsequent departmental studio project proposal review sessions. Furthermore, the Nigerian faculty now appreciates the need for international learning and teaching exposure through continuing this COIL experience, and for international student and staff exchange. COIL is seen as a viable means of international exchange of learning and knowledge generation while other modalities for international exchanges are being worked on.

This collaboration demonstrated that it is possible to teach students about other cultures without physically taking them abroad. By taking time to discuss the details of the collaborative assignments and carefully planning the structure of the interactions, faculty partners from the United States and Nigeria were able to create an enriching teaching environment where students learned to practice culturally sensitive interior design. Having had such a fruitful partnership, the authors would like to encourage other faculty in all disciplines to consider developing unique partnerships with different universities abroad and developing assignments that can be COILed. There is no one recipe to make such a course successful in enhancing students' intercultural learning—it all depends on what partners in different universities are willing to try. The authors would like to emphasize that the COIL teaching experience is definitely worth embedding in any course but it requires careful and thoughtful planning from both partners. Overall, COIL can be one of the best tools for bridging the gaps between different parts of the world and improving understanding of cultural differences, developing cultural sensitivity, and ensuring cultural transmission and exchange.

References

Asojo, A. O. (2013). Instructional strategies for teaching cross-cultural design: A pedagogical example using Nigerian and South African spatial forms. *International Journal of Architectural Research*, *7*, 76-91.

Bai, J., Larimer, S., & Riner, M. (2016). Cross-cultural pedagogy: Practical strategies for a successful interprofessional study abroad course. *Journal of the Scholarship of Teaching and Learning, 16*, 72-81.

Bennett, M. J. (1993). Towards ethnorelativism: A developmental model of intercultural sensitivity. In R. M. Paige (Ed.), Education for the intercultural experience (pp. 21–71). Yarmouth, ME: Intercultural Press.

Chen, G. M., & Starosta, W. J. (2000). The development and validation of the intercultural sensitivity scale. *Human Communication*, *3*, 1-15.

Council for Interior Design Accreditation. (2018). *Council for Interior Design Accreditation: Professional standards*. Grand Rapids, MI: Author. Retrieved from https://accredit-id.org/wp-content/uploads/2019/02/Professional-Standards-2018.pdf

Institute of International Education. (2017). *2018 fast facts: Open doors report on U.S. students studying abroad* [Fact sheet]. Retrieved from https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts

Lo, C., Johnson, E., & Tenorio, K. (2011). Promoting student learning by having college students participate in an online environment. *Journal of the Scholarship of Teaching and Learning*, *11*(2), 1-15.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Newbury Park, CA: Sage Publications.

Nelson, H. G., & Stolterman, E. (2003). *The design way: Intentional change in an unpredictable world.* Englewood Cliffs, NJ: Educational Technology Publications.

Stake, R. E. (2006). *Multiple case study analysis*. New York, NY: Guilford.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage.

The SUNY Center for Collaborative Online International Learning. (2017). *About COIL*. Retrieved January 21, 2019, from http://coil.suny.edu/page/about-coil-0

The SUNY Center for Collaborative Online International Learning. (2019). *Guide for collaborative online international learning course development.* Retrieved from http://coil.suny.edu

The SUNY Center for Collaborative Online International Learning. (2013). *The COIL Institute for Globally Networked Learning in the Humanities final report.* Retrieved from http://coil.suny.edu/sites/default/files/case_study_report.pdf

United States Census Bureau. (2019). United States Census Bureau State & County Quick Facts. Retrieved from https://www.census.gov/quickfacts/fact/table/US/PST045217

University of Minnesota Interior Design Program. (2019). *Interior design strategic plan.* Retrieved from https://interior.design.umn.edu/about/strategic.html

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 17-32.
doi:10.14434/jotlt.v8i1.26743

Starting With the Space: Integrating Learning Spaces and Technologies

Gina Sanchez Gibau
IUPUI
gsanchez@iupui.edu

Francia Kissel
IUPUI
fkissel@iupui.edu

Modupe Labode
National Museum of American History
modupe.labode@gmail.com

Abstract: Teaching introductory courses to college freshmen requires innovative pedagogies, which are often powered by new advanced technologies that potentially increase student engagement. In addition, instructors may also plan and deploy active-learning strategies that first consider the physical spaces in which learning will take place. Effective pedagogies acknowledge both the impact that space has on student learning and the ability of both "low" and "high" technologies to facilitate such learning, merging the inherent power of each. The following case study provides an example of a themed learning community as a vehicle through which instructors may maximize technologies and spaces to enhance the teaching and learning process. The case study highlights the use of both physical learning spaces (e.g., cutting-edge active-learning classrooms; traditional classrooms; the off-campus settings of museums) and learning technologies (e.g., high-technology tools such as image-sharing software vs. low-technology white boards and paper-based pop-up museum exhibits) to illustrate the ways in which instructional teams collaborate to intentionally design meaningful learning experiences for their students.
Keywords: active-learning classroom, high-impact practices, pedagogy, synthesis, reflection, instructional strategies, transparent assignments, collaborative learning

Instructors who are attentive to the current realities of 21st-century higher education recognize that learning occurs both within and outside the classroom, in spaces where technologies may range from cutting edge to seemingly absent. Therefore, effective pedagogies acknowledge both the impact that space has on student learning and the utility of both "low" and "high" technologies to facilitate such learning, merging the inherent power of each. Starting with the space is key to the design of learning experiences for undergraduate students. What features of each learning space can be utilized to fulfill the specific learning objectives? What technologies can be harnessed to engage students, focus their attention, and help them achieve the learning objectives? This case study serves as an example of an integrative, student-centered instructional strategy designed to facilitate the first-year student learning experience while challenging the conventional notions of space, technology, and pedagogy and the uses of each.

Literature Review

Learning Communities

A majority of U.S. tertiary institutions pay special attention to beginning students through first-year programs, most commonly through offering first-year seminars or learning communities (Field, 2018; Zhao & Kuh, 2004). Learning communities are two or more linked courses that focus on a common theme or topic. Considered a high-impact practice in themselves, learning communities often incorporate other high-impact interventions, including service learning, common intellectual experiences (such as a common reader), community engagement, and other practices (Stebleton, Jensen, & Peter, 2010). The members of the community include the cohort of students who enroll concurrently in the courses, the professors who teach the linked courses, and often, librarians or student affairs personnel.

The rationale for offering these curricular links is that they support first-year students, facilitating gains in retention as students become engaged in their learning and thus committed to the college experience (Lardner & Malnarich, 2008; Zepke, 2013). In addition to the retention gains desired by institutions, other aims target student learning outcomes, as Kuh (2008) explained: "The key goals for learning communities are to encourage integration of learning across courses and to involve students with 'big questions' that matter beyond the classroom" (p. 10). However, not all learning communities fulfill such aspirational goals; often, they "can be a set of disconnected experiences, described in an arcane and unfamiliar language, which appear to have no relevance to [students'] lives" (Mills & Mehaffy, 2016, p. 58).

Active Learning Strategies and Integrated Learning

The best-planned learning communities select strategies that correlate with success but also provide a framework for integrative learning. The 2007 summary report to the National Postsecondary Education Cooperative's initiative on student success listed a set of strategies positively correlated in the literature with student success:

> high expectations that students will succeed, curricular and behavioral integration, pedagogies involving active learning and collaboration, frequent feedback, time on task, respect and engagement with diversity, frequent contact with faculty, connections between academic and non-academic experiences, and an emphasis on the first year of study. (Ewell & Wellman, 2007, p. 5)

Furthermore, using multiple high-impact practices has been shown to have "cumulative, additive effects" (Kuh, 2016).

Particularly prevalent in learning communities is the use of active and collaborative learning activities and often, learning outside the classroom, according to the National Survey of Student Engagement (Zhao & Kuh, 2004). Active learning has been defined as "anything course-related that all students in a class session are called upon to do other than simply watching a lecture and taking notes" (Felder & Brent, 2009, p. 2). Faculty may find it challenging to incorporate active-learning strategies in their own classrooms (Stebleton et al., 2010), but more challenging is the task of incorporating outcomes that complement the curricula offered by the individual instructors in a cohesive way. An even greater level of difficulty arises when the instructional team plans a singular, integrative assignment, which is assigned in each of the courses and evaluated by each instructor in the learning community. Yet, such assignments can give a focus to the entire enterprise; in fact, some

learning community experts consider an integrative assignment to be as fundamental as the use of active and collaborative pedagogies (Lardner & Malnarich, 2008).

Active Learning and Instructional Environments

When choosing from active-learning pedagogies, one of the first considerations must be instructional space because the affordances available within a space shape the specific strategies that can be used. The term *affordances* refers to the characteristics of spaces and objects that determine how those features should be used (Rands & Gansemer-Topf, 2017). For example, the SCALE-UP Project of the Physics Department of North Carolina State University showed that a classroom with round tables is more conducive to both small-group discussion and intergroup sharing than a classroom with fixed seating (Beichner et al., 2007).

Universities are paying increasing attention to the physical spaces of not only classrooms (Rands & Gansemer-Topf, 2017) but also student gathering areas (Morieson, Murray, Wilson, Clarke, & Lukas, 2018), study spaces (Bennett, 2007), and even corridors. Structural changes to these spaces have been driven by theories of cognition, pedagogical responses to those theories, and changes in the characteristics of learners themselves (Oblinger, 2006). Today's students differ from prior generations in that they prefer hands-on learning, rely on media for both social and academic uses, and have more time constraints (Oblinger, 2006). In addition, they are "prosumers," both creating and consuming media content equally (Valenti, 2015, p. 34).

To fit the new paradigm in learning, newly designed classrooms (often termed ALCs—active-learning classrooms) are carefully created to enhance student engagement (Rands & Gansemer-Topf, 2017). Fundamentally, all classrooms reflect what Torin Monahan called "built pedagogy," meaning that the designers' underlying assumptions about education are embodied in the spaces meant for student learning, and characteristics of those structures can proscribe or encourage certain behaviors (2005, pp. 34-35). So, when active behaviors are desired, characteristics that inform the design of ALCs might include density, or ratio of students per space (Graetz, 2006; Herzog, 2007); seating, including the type (Brooks, 2011) and the proximity to the instructor (Herzog, 2007); and technology-rich features (Brooks, 2011). An ideal ALC should have "furniture and technology settings that foster small-group collaboration, a rich-media working environment, and the ability to easily reconfigure within the class period" (Valenti, 2015, p. 36). Other considerations might include easily available lab equipment and means for students to report and display results (Beichner et al., 2007).

Such redesigns of learning spaces spark professional development efforts; for example, the Transform, Interact, Learn, Engage (TILE) program at University of Iowa and the Mosaic Initiative at Indiana University offer workshops, consultations, peer sharing, classroom tours, and research opportunities to faculty (Morrone et al, 2017). As instructors redesign courses and lesson plans to fit new spaces, they engage in critical reflection that enriches their teaching practice in both traditional and new spaces (Gierdowski, 2017, pp. 170-171) and they come to see themselves as learners (Phillipson, Riel, & Leger, 2018). Mills and Mehaffy (2018, p. 59) concluded, "But in fact our job is not to teach. Our job is to create the environment that optimizes learning for our students."

Instructional Environments Outside the Classroom

Another way of optimizing learning for students is to take learning out of the classroom. Although college students are enthusiastic at the words "field trip," most have little idea of the deep learning they will encounter as they use course concepts in real situations. Examples of learning outside of the classroom include service learning, community engagement, internships, fieldwork, outdoor education, and study abroad (Bandy, 2018). Faculty may also capitalize on existing programs or events

offered through student affairs for on-campus but out-of-class experiences (James & Hudspeth, 2017; Lardner & Malnarich, 2008).

In addition to making abstract concepts concrete through participatory experiences, experiential learning has a number of other benefits, depending on design. Students can gain autonomy in solving problems (Perrin, 2014); the capacity to think critically and to apply knowledge to ill-structured problems (Eyler, 2009); the ability to give valuable feedback to peers and to learn from their own feedback (Perrin, 2014); lifelong learning and work-related skills including "soft skills" desired by employers (Bandy, 2018; Eyler, 2009). An off-campus field trip in the first year of college cannot impart all of the above benefits, but it serves as a jumping-off place to get students excited and engaged in their education. Additionally, a field trip can serve as the basis for an integrated assignment in a learning community (see Stebleton et al., 2010, for an example). The key, though, is to make the experience and resultant assignment meaningful, as research shows that students will "persist in their studies if the learning they experience is meaningful, deeply engaging, and relevant to their lives" (Lardner & Malnarich, 2008, p. 32).

Themed Learning Communities

"The Human Story" Themed Learning Community

The setting of this case study is IUPUI, a large urban public research campus of Indiana University (IU) situated within the city's downtown area. Historically at IUPUI, the learning community model has been implemented through "themes" that link a series of general education courses. The case analyzed here is a themed learning community or "TLC" offered during the fall 2018 semester comprising three courses (Introduction to Cultural Anthropology, Understanding Museums, and First Year Success Seminar) and organized around the theme of "The Human Story." The development of this theme focused on two primary questions: How does culture shape people and their unique identities? And how are the stories of individuals and communities preserved and relayed to others through museums in ways that connect to contemporary social issues? These questions then led the three instructors to craft the following learning outcome for the TLC: "Students will demonstrate how the human stories preserved and relayed through museums connect to their own lives and to contemporary social issues." We developed this learning outcome with the recognition, similar to Abma's (2000; as cited in Araujo et al., 2014, p. 23), that human stories are powerful and as such can serve as "tools in learning, because they are the most fundamental ways to order experiences and events." This learning outcome then shaped our development of deliberate integrative activities that were enhanced within and across each classroom space.

The goal and intent of this theme was to enable learners to explore their own stories, as well as to study the ways the stories of others are represented, specifically through the disciplines of cultural anthropology and museum studies.[1] A unique feature of the TLC initiative is the integration of co-curricular activities to enhance the learning process and to facilitate first-year student adjustment and socialization. Such activities require students and their instructors to engage in meaningful, collective activities beyond the classroom. For this TLC, we and our 25 students visited five local museums: the Indianapolis Museum of Art; the Indiana Medical History Museum; the Indiana State Museum; the

[1]The close, often contentious, historical relationship between anthropology and museums was a theme of the Understanding Museums course, particularly in connection to issues such as interpretation of indigenous people, unauthorized display of human remains or objects of cultural significance in museums, and the role museums can play in forming and creating community.

Indianapolis Zoo; and the Eiteljorg Museum of American Indians and Western Art.[2] The exhibitions, programs, and presentations at each selected museum provided visitors with information related to various aspects of human culture, to ensure connection with anthropological concepts.[3] In addition, each museum visit helped students understand more about the city and community in which they were studying, as well as to develop their critical thinking skills, their sense of aesthetics, and their ability to integrate disciplinary knowledge.

A key feature of the TLC model is the collaboration that occurs among co-instructors, who work as a team to incorporate the learning objectives for students across the classes. Teamwork is facilitated through regular meetings and visits to each other's classes. We have been involved in TLCs, both separately and together, for a number of years and thus have a wealth of knowledge and experience to bring to bear as we engaged in purposeful course design for this particular TLC. As we discussed the learning activities for our individual courses and for the shared activities, space became an integral component of the planning process.

Space Matters

Figure 1. An active-learning "Mosaic" classroom at IUPUI, November, 2018. Photo courtesy G. Gibau.

Three types of spaces were considered in designing the pedagogy for this TLC: classroom space, with its attendant technologies; out-of-class learning spaces, such as the library and museums;

[2]We included the zoo as a museum for two reasons. First, museum professional organizations consider zoos to be museums (American Alliance of Museums, 2019). Second, the Indianapolis Zoo's mission to "empower people and communities, both locally and globally, to advance animal conservation" is aligned with the TLC's theme of the human story.

[3]The students did not pay entrance fees to the museums. The Indianapolis Museum of Art and the Eiteljorg provided free admission to IUPUI students; the faculty received free admission to the IMA because they were accompanying a class trip. A subsidy for programming provided by IUPUI's first-year experience program covered the reduced admission costs to the remaining museums. There was no transportation provided, so students either walked or carpooled to the museums.

and a campus meeting room for the pop-up museum exhibits and final presentations. The space of a classroom can influence how a class will be taught. Two of the three courses took place in "Mosaic" classrooms, while the third classroom, which was the laboratory for IUPUI's Museum Studies Program, had flexible seating that could be arranged for student collaboration. The IU Mosaic Initiative is one of many at the national level attempting to transform traditional classroom spaces into new configurations that facilitate active-learning strategies (Beichner et al., 2007; Harvey & Kenyon, 2013; Rands & Gansemer-Topf, 2017). Key to the transformation is embedding advanced and collaborative technologies, whiteboard surfaces, and movable furniture. The idea behind the Mosaic Initiative was to transform existing University classrooms into a "mosaic" of classrooms, each different from the other, as a means of harnessing the flexibility and adaptability of design to accommodate a variety of course offerings (Morrone et al., 2017). The initiative also supports faculty development as they learn how to creatively use the space and technologies within these classrooms. As previous participants of the IU Mosaic Initiative Faculty Fellows program, both the first and third authors engaged with other faculty focused on learning more about active-learning strategies and learning spaces in a supportive cohort-based environment. As an instructor in a traditionally low-lecture but highly collaborative field (the first-year writing program), the second author was accustomed to customizing active-learning strategies for use in low-technology general-inventory classrooms.

The two Mosaic classrooms, housing the anthropology and first-year seminar courses, each seated 25 and 40 students, respectively, and contained a range of low and high technologies: large screens for projection; mounted dry-erase glass or whiteboards; smaller, portable whiteboards hung at the sides of desks; and computers loaded with screen-sharing software such as Solstice, Kaltura desktop recording, and learning management systems (e.g., Canvas). Together, faculty and students arranged the flexible furniture each class period to facilitate peer interaction and collaborative activity. The museum studies classroom featured movable chairs and tables, with whiteboards and a projection screen at the front of the room; it is also used as a laboratory space for museum studies graduate students.

Faculty development coupled with the affordances made possible in an active-learning classroom can result in dramatic changes in pedagogy. For example, the first author's experience as a Mosaic Initiative Fellow as well as teaching in a Mosaic classroom inspired her to shift her former approach in teaching of introductory anthropology, a class that she has taught for the last 18 years. Indeed, the space made a large impact on the instructor and her design and delivery of each session. Once she became aware of the configurability of the furniture, she created and implemented student centered discussions of an assigned ethnography (Figure 1); rather than leading the discussions herself, groups of two student facilitators rotated around to four tables of eight students for a timed discussion period.

Space in Mosaic classrooms facilitates a process whereby the boundaries between instructor and student are decreased. When those boundaries are softened, students feel more comfortable approaching the instructor; students are less intimidated by asking a question or making a comment, since both parties have literally been in closer contact, as the instructor must often maneuver and meander among and around the flexible furniture when checking in on small group discussions, for example. The traditional model of the instructor at the front of the room is disrupted; the front of the room becomes wherever the instructor positions her- or himself. For most of the first author's class periods, the front of the room often was the back of the room, closer to the door through which folks entered and exited.

"Faculty often assume that learning takes place only in class" (Mills & Mehaffy 2016, p. 59). Yet, Mosaic and similar classrooms were not the only "spaces" that were maximized in this TLC. Learning spaces extended beyond the classroom; for example, the museum studies class occasionally

used the adjacent hallway and lobby for group work. Also, during museum visits (Figure 2), students encountered a set of resources and spaces, some of which are readily available to most visitors: museum websites, parking lots, galleries, and guided tours. However, because of their membership in the TLC, students had access to additional resources not available to most museum visitors, such as a behind-the-scenes tour to collections storage in one museum and specially briefed docents during another tour. During most visits, TLC students were afforded the opportunity to interact with museum professionals, and staff at museums consulted with at least three students about their final projects.[4] One student's final project was directly inspired by a museum visit. The visits also provided the opportunity for students to interact with their peers and professors in less formal learning environments, and to apply their learning in new spaces.

Figure 2. IUPUI students at the local museum of art, September, 2018. Photo courtesy F. Kissel.

As noted by Mills and Mehaffy (2016), "Students learn all the time, individually and collectively, within and beyond classrooms and institutions" (p. 59). In this and in all of our campus TLCs, students are assigned individual meetings or group learning tasks in many spaces on campus to increase their sense of belonging as well as to hone their ability to problem-solve. One example is that groups conducted a digital scavenger hunt to familiarize themselves with key campus resources. To develop civic-mindedness, students engaged in a philanthropic fashion show benefiting Paw's Closet, a free clothing store on campus. Hands-on research sessions were scheduled in the library, where students learned to conduct research using digital formats of familiar print media, while also learning about scholarly sources, new to most. Moveable furniture gave way in one classroom to accommodate a large circle of floor space for group community-building and resilience activities. Digital meeting spaces were not neglected; students created videos about potential internships and posted them to the learning management system. Students also used the digital space of the learning management system to respond to prompts from the instructor to reflect on their visits to museums and make connections between what they were learning in class and their field trips. Inherent in the purposeful consideration and use of space is instructors' explicit encouragement of first-year students to leave the classroom,

[4]An educator from the Indianapolis Zoo generously met with the students via Skype to prepare them for their visit. The educator explained the relationship between the zoo's mission and its strategy for interpreting the animals and their habitats. The discussion also focused on the responsibilities that an accredited zoo assumes for the welfare of its animals.

individually or in groups, and thus share ownership of the knowledge created, at times in interstitial learning spaces.

Technologies

Figure 3. A Mosaic classroom at IUPUI, August, 2018. Photo courtesy G. Gibau.
Figure 4. A Mosaic classroom at IUPUI, September, 2017. Photo courtesy G. Gibau.

Technology is not simply that which is plugged into an electrical wall socket or vertical power strip. The term is more capacious and can be conceptualized more broadly. From an anthropological perspective, technology is a tool used by humans to both enhance the lived experience and to express themselves while adapting to their environment (Heidegger, 1977, as cited in Falck, 2014). In the learning environment, students have access to and deploy a myriad of technologies, of the low, middle, and high varieties, as tools with which to acquire knowledge and intellectual growth.

The technologies deployed in this TLC ranged from glass and whiteboards and projection screens (Figure 3) strategically placed around the classroom, to embedded advanced classroom technologies as well as student technologies brought into the classroom in the form of cell phones and laptops. In the anthropology course, for example, students were directed through an exercise in which student and classroom technologies interfaced: For a gender scavenger hunt, students were asked to take pictures outside of class time of collected items and then use Solstice to display and discuss their findings, sharing images from their phones or laptops with the larger projecting screens in the room. For this exercise, several students could upload several photos at a time into the Solstice platform and then wait their turn to present.

However, alongside the advanced technologies, portable and larger mounted glass/whiteboards were used as a technology through which students processed and reflected upon their small group discussions. In the anthropology course, students were asked first to discuss an issue, usually through problem-based inquiry, and then to relay a summary of their discussions, in bulleted list format, on the boards. In this way, whiteboards function as a tool for peer review of thought

processes in problem solving, while stimulating self-reflection (Birdwell, 2018). Students would then share what they wrote with the rest of their peers during a larger group discussion. The use of low-technology tools allows instructors to respond to diverse needs of learners; they appeal to students who appreciate verbal or written engagement, while simultaneously engaging both extroverted and introverted students.

The use of whiteboards in particular (mounted or portable) fosters student collaboration in small groups (MacIsaac, n.d.), serving as a tactile medium with which to ground discussion and problem solving. Whiteboards foster greater dialogue and peer-to-peer learning among students who engage in a more active treatment of the course content as a result. The use of whiteboards as a technology works well in TLCs because it fortifies collaborative learning as an expectation occurring within a community. This type of learning is decidedly more active: It decreases lecture time and empowers students to direct the flow of learning through inquiry and articulation, thus fostering deeper learning, as students learn by doing with others (e.g., "whiteboarding") and not by passively listening to the instructor as a singular source of information.

The instructor's role in this process is to circle the classroom, monitoring the thought process, affirming student progress toward solutions, lifting up student examples within and between groups, and moving on to the next segment of the class when small group discussions veer off topic (MacIsaac, n.d.). In this way, student–teacher interaction and dialogue are also enhanced. Continuing this practice over time effectively blurs the boundary between student and instructor, which can foster significant learning gains and increase students' sense of belonging, particularly in the first year. This has been explained elsewhere (Rands & Gansemer-Topf, 2017, p. 29) as "erasing the line" or the invisible boundary between instructor and students, typical of traditional classrooms.

Integrative Assignment

Another important feature of TLCs is the construction of a culminating "integrative assignment" that spans all of the linked courses. For this TLC, the integrative assignment was a "pop-up" museum exhibit. Pop-up exhibitions, sometimes referred to as pop-up museums, are "ephemeral, experimental" projects (Grant, 2015). Pop-up exhibitions, which take place in sites outside of traditional museums and last for a brief time, ranging from hours to weeks, are a manifestation of museums' attempts to connect people with collections through experiments such as mobile museums (Bernard, 2015; Burns, 2013) and museums without walls. Like more traditional museums, they bring together "objects, visitors, and expertise" (Lubar, 2017), but they are often sited outside of museum buildings, in places such as parks, hospitals, or shopping malls. The experimental nature of these projects has made them popular among educators (Latham, 2017), and for the purpose of this TLC, a pop-up provided the opportunity for students to act as curators of their own exhibits, as they identified their topic, developed a theme, and interpreted objects on museum labels using anthropological concepts (see Appendix A for the project description). Through this integrative assignment, students applied their research and writing skills in a setting beyond the classroom and for an audience beyond their instructors.[5]

We chose to focus on several aspects of the curatorial process: identifying a theme that illustrated a human story; interpreting objects using an anthropological lens; and choosing objects that illustrated those themes. We decided not to focus on "real" three-dimensional objects (although this was in the initial discussion), in part because we had concerns that the students might feel limited by

[5]Audience members included the advisor for the TLC, a school administrator, and a student who had been in the previous year's TLC. And of course, the audience included other students in the TLC, a point that was reinforced by the students' peer feedback forms (see Appendix B).

objects to which they had access. Most students chose to represent their objects using photographs. Some students did use objects, particularly digital objects (e.g., YouTube video of protesters chanting lyrics to a Kendrick Lamar song). These parameters meant that students may have chosen themes that would not have been easily supported by objects in their possession (e.g., violence against women, LGBTQ artists, climate change, the history of Santa Claus). A focus on objects accessible to the students, however, may have resulted in projects in which students had a different type of personal connection.

To complete this assignment, students were required to research a topic of their choosing, identify three objects associated with that topic, and construct an exhibit, inclusive of interpretive labels, that would relay a human story through images of the objects, presented formally by the students through PowerPoint on a 50-inch screen in a meeting room in the campus library. Each student's pop-up exhibit used print-outs from their PowerPoint presentation mounted on walls and columns in a typical conference room, transforming an otherwise rectangular, white-walled room into an exhibition space (Figure 5). This exercise is instructive, as it illustrates how the physical transformation of general use classrooms into active learning spaces does not have to be a cost-prohibitive endeavor dependent upon large-scale institutional funding.

Figure 5. Pop-up museum exhibits, December, 2018. Photos courtesy G. Gibau.

Integrative learning must be scaffolded, hence the benefits of a common assignment with multiple components spread across linked courses. As a means of scaffolding the components of this assignment for the students, each of the instructors created assignments that together supported the students' development and execution of the exhibit. In the first-year seminar course, students conducted research and submitted annotated bibliographies including the images that served as content for the exhibit and the text resources that informed their labels. In the anthropology course, students were required to submit a process paper that served as a means through which students could reflect upon their project and the research conducted to complete it. Finally, in addition to the actual exhibit and presentation, the first assignment in the museum studies course laid the groundwork for the final project by tasking students with reflecting on an object that had personal significance and

delivering a short in-class presentation about that object. Check-in points were built into the syllabus of each class. Additionally, the course included several workshop days during which students worked on their exhibition labels and object research in class.

The space of the classroom and the learning experience facilitated therein is traditionally thought of as controlled principally by the instructor. However, through the presentations of pop-up exhibits in this TLC, the control of the classroom is effectively surrendered to the students. They are charged with presenting information in a captivating way, educating their peers on their topic effectively, and fielding questions thereafter. The space is opened up for students to assume accountability for their own learning and that of their peers. In this way, the project is aligned with what has been referred to as "heutagogy," or the creation of a space by students in which they "assume greater responsibility and control over the content and skills chosen for mastery" (Garner, 2018, p. 1). This space is decidedly learner centered and self-directed; for this project, students are required to "communicate their learning" by creating a pop-up museum exhibit and presenting the research behind its construction (Garner, 2018, p. 2). They function as curators, exhibit designers, researchers, and educators, all roles they learned from field trips and subsequent classwork.

Results and Future Implications

The case of The Human Story TLC illustrates how instructors can work collaboratively and intentionally to ensure student learning through the integration of spaces and technologies. The outcomes related to this case speak not only to the value of interdisciplinary instruction but to the adaptability of this approach to similar courses. While many institutions are constrained by the expense of transforming a traditional classroom into one similar to our Mosaic classrooms, this case highlights how active-learning strategies can be deployed in any classroom, inclusive or devoid of advanced technologies. In our experience, the technologies themselves did not facilitate the active learning, but rather it was the ways in which instructors leveraged spaces and technologies that solidified opportunities for student engagement. Starting with the space is critical; instructors must then envision how the desired learning outcomes can be elicited in a given space, enact pedagogies to facilitate that learning, employ technological tools effectively, and reflect upon their praxis accordingly.

The intent of our TLC was for students to integrate skills and knowledge from all three courses, to create products that combine both visual and textual elements, and to present their work effectively, all as a means of showcasing their learning. In end-of-course evaluations, students cited the activities they completed in small groups and other peer-to-peer activities to be the most valuable of their experiences.[6] As a result of their experiences in this TLC, students engaged in conversations with their instructors about their future career aspirations as shaped from the course content and activities. The students in our courses also exhibited a sense of belonging and acculturation to each other and to academic life. Finally, through interaction with local museums and their staff, students were taught the value of civic engagement and responsibility. The outcomes outlined here contribute to existing literature pertaining to evidence-based practices.

As instructors, we believe strongly in the power of intentional course design and team-oriented pedagogy. While such teaching actions are often situated in the realm of the "experimental," we contend that today's students are best served by such strategies that lead to deeper student learning and engagement. Active-learning approaches powered by effective use of both low and high technologies as well as flexible learning spaces are student centered and thus essential for meeting the

[6] Students were not able to provide feedback on the pop-up exhibit through course evaluations because the exhibit occurred after the online evaluation period had closed.

demands of both students and employers as we attempt to prepare an increasingly diverse student population to live, work, and interact within dynamic and complex communities.

Acknowledgments

The authors extend their gratitude for the invitation to publish in this special issue to its guest editor, Dr. Anastasia Morrone. Additional thanks are extended to Tracey Birdwell and Kelly Scholl of the IU Mosaic Initiative. The authors further acknowledge the direction and support for The Human Story TLC offered by Amy Powell and the IUPUI Division of Undergraduate Education. Special thanks go to Dr. Elee Wood, who helped develop and deliver the first iteration of the TLC with the first two authors in 2017. Finally, the authors acknowledge the area museums and their staff that opened their doors to our students, especially Kisha Tandy, associate curator of social history at the Indiana State Museum; Laurie Christie, program educator, Indianapolis Zoo, and Allie Combs, higher education liaison at the Indianapolis Museum of Art, and the museum's team of docents.

Appendices

Appendix A. "The Human Story" Pop-Up Museum Project

Pop-up museums are temporary exhibits that curators create in places that are unexpected. Some pop-up museums last only one day. In this TLC, you will be working in all your classes to a create a pop-up museum about "The Human Story." As curators, you will be selecting the three objects that you will interpret using anthropological concepts that will help visitors learn more about "The Human Story." Curators not only select objects that they will interpret; they also research the object and write exhibition labels so that visitors can see how the theme supports the object.

In each class in this learning community, you will be completing assignments and exercises that will help you finish the project. These assignments and projects bring together the key concepts in our learning community.

Key concepts in this learning community

Audience	Collections	Cultural relativism
Culture	Curate/Curation	Ethnocentrism
Exhibit/Exhibition	Identity	Museum
Object	Race as a cultural construct	Reflect
Story/Storytelling/History	Self-identity	

Our pop-up exhibition will be on Monday, December 10, in room 1126 of the University Library and will be open from 10:30–3:00 p.m. Some pop-up exhibits bring in artifacts, but ours will be low tech. You will make PowerPoint slides of the three objects you will be interpreting, and post

them on the walls. Visitors will be able to walk around and read your labels, just like at an exhibition. The sky's the limit when it comes to the objects you can choose to interpret.
How the classes connect

- Cultural Anthropology: This is where it all begins and ends. You will choose to interpret an object using the themes that you study in this class. The Process Paper assignment will be based on your experience creating your exhibition.
- Understanding Museums: You've already started thinking about interpreting objects with our first visit to a museum and your personal museum project presentation and essay. As we visit museums, pay attention to the exhibition labels, which we will be working on in this class. The presentation will also be part of this class.
- First Year Success Seminar: You will be selecting the topic you want to interpret and researching your object. The annotated bibliography will include your research into how your objects tell a human story.

Appendix B. Pop-up Museum Presentation Evaluation Form

Student Feedback on Oral Presentations — Please write small, on the front side only Presenter's Name _____ Comments about presentation: Interesting? Thorough? Based on research? Effectiveness of PowerPoint? What did you learn from this presentation that was new to you?

References

American Alliance of Museums. (2019). About AAM. Retrieved from https://www.aam-us.org/programs/about-aam/#

Araujo, N., Carlin, D., Clarke, B., Morieson, L., Lukas, K., & Wilson, R. (2014). Belonging in the first year: A creative discipline cohort case study. *The International Journal of the First Year in Higher Education, 5*(2), 21-31. https://doi.org/10.5204/intjfyhe.v5i2.240

Bandy, J. (2018). Created opportunities for students to apply course content outside of the classroom. Retrieved from https://www.ideaedu.org/Resources-Events/Teaching-Learning-Resources/Created-opportunities-for-students-to-apply-course-content-outside-the-classroom#132498-why-this-matters

Beichner, R. J., Saul, J., Abbott, D., Morse, J., Deardorff, D., Allain, R., Bonham, S. W., Dancy, M. H., & Risley, J. (2007). Student-Centered Activities for Large Enrollment Undergraduate Programs (SCALE-UP) project. In E. Redish & P. Cooney (Eds.), *Research-based reform of university physics* (pp. 1–42). College Park, MD: American Association of Physics Teachers. http://www.per-central.org/document/ServeFile.cfm?ID=4517

Bennett, S. (2007). First questions for designing higher education learning spaces. *Journal of Academic Librarianship, 33*(1), 14-26. https://doi.org/10.1016/j.acalib.2006.08.015

Bernard, E. (2015). A shared mobility: Community curatorial process and the Philadelphia Public History Truck. *Exhibitionist: Journal of National Association for Museum Exhibition, 2015*(Spring), 64-68. Retrieved from https://www.name-aam.org/exhibition_spring2015

Birdwell, T. (2018, August 8). Encouraging group discussion with Verb boards [Blog post]. Retrieved from https://blogs.iu.edu/[university branded ALC]iu/2018/08/08/encouraging-group-discussion-with-verb-boards/

Brooks, D. C. (2011). Space matters: The impact of formal learning environments on student learning. *British Journal of Educational Technology, 42*(5), 719-726. https://doi:10.1111/j.1467-8535.2010.01098.x

Burns, A. A. (2013). *From storefront to monument: Tracing the public history of the Black Museum Movement.* Amherst, MA: University of Massachusetts Press.

Ewell, P., & Wellman, J. (2007). Enhancing student success in education: Summary report of the NPEC initiative and national symposium on postsecondary student success. Retrieved from https://nces.ed.gov/npec/pdf/Ewell_Report.pdf

Eyler, J. (2009). The power of experiential. *Liberal Education, 95*(4), 24-31. Retrieved from https://www.aacu.org/publications-research/periodicals/power-experiential-education

Falck, E. J. (2014). Technology and the memetic self. In S. Thompson (Ed.), *Global issues and ethical considerations in human enhancement technologies* (pp. 225-240). Hershey, PA: IGI Global. doi:10.4018/978-1-4666-6010-6.ch013

Felder, R., & Brent, R. (2009). Active learning: An introduction. *ASQ Higher Education Brief, 2*(4). Retrieved from http://asq.org/edu/2009/08/best-practices/active-learning-an-introduction.%20felder.pdf

Field, K. (2018, June 8). A third of your freshmen disappear. How can you keep them? *The Chronicle of Higher Education*. Retrieved from https://www.chronicle.com/article/A-Third-of-Your-Freshmen/243560

Garner, B. (2018). A look at heutagogy: New opportunities for self-directed learning. *The Toolbox, 17*(2), 1-4. Retrieved from https://issuu.com/nrcpubs/docs/toolbox_17_2_new

Gierdowski, D. C. (2017). The flexible writing classroom as a site for pedagogical reflection. In M. Kim and R. Carpenter (Ed.), *Writing studio pedagogy: Space, place, and rhetoric in collaborative environments* (pp. 155-174). Ranham, MD: Rowman and Littlefield.

Graetz, K. A. (2006). The psychology of learning environments. In D. G. Oblinger (Ed.), *Learning spaces* [EDUCAUSE e-book]. Retrieved from https://www.educause.edu/research-and-publications/books/learning-spaces/chapter-6-psychology-learning-environments

Grant, N. (2015). Pop up museums: Participant-created ephemeral exhibitions. *Exhibitionist: Journal of National Association for Museum Exhibition*, *2015*(Spring), 14-18. Retrieved from https://www.name-aam.org/exhibition_spring2015

Harvey, E. J., & Kenyon, M. C. (2013). Classroom seating configurations for 21st century students and faculty. *Journal of Learning Spaces, 2*(1). Retrieved from http://libjournal.uncg.edu/jls/article/view/578/454

Herzog, S. (2007). The ecology of learning: The impact of classroom features and utilization on student academic success. *New Directions for Institutional Research*, *2007*(135), 81-106. https://doi.org/10.1002/ir.224

James, P., & Hudspeth, C. (2017). How do you take learning beyond the classroom in an interdisciplinary first-year seminar? *New Directions for Teaching and Learning*, *2017*(151), 79-95. https://doi.org/10.1002/tl.20250

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: Association of American Colleges and Universities.

Kuh, G. D. (2016). Student success in college: Creating the conditions that matter [PowerPoint slides]. Retrieved from http://centerforpostsecondarysuccess.org/wp-content/uploads/2016/10/KuhPPT.pdf

Lardner, L., & Malnarich, G. (2008). A new era in learning-community work: Why the pedagogy of intentional integration matters. *Change: The Magazine of Higher Education, 40*(4), 30-37. https://doi.org/10.3200/CHNG.40.4.30-37

Latham, K. F. (2017). The laboratory of museum studies: Museality in the making. *Journal of Education for Library and Information Science*, *58*(4), 219-235. doi:10.12783/issn.2328-2967/58/4/3

Lubar, S. (2017). *Inside the lost museum: Curating, past and present*. Cambridge, MA: Harvard University Press.

MacIsaac, D. (n.d.). Whiteboarding in the classroom. Retrieved from http://physicsed.buffalostate.edu/AZTEC/BP_WB/

Mills, S. A., & Mehaffy, G. L. (2016). Challenging the first year of college: Old models and new imperatives. *New Directions for Teaching and Learning*, *2016*(145), 57-65. https://doi.org/10.1002/tl.20175

Monahan, T. (2005). Globalization, technological change, and public education. Retrieved from https://ebookcentral.proquest.com/lib/iupui-ebooks/detail.action?docID=1111674

Morieson, L., Murray, G., Wilson, R., Clarke, B., & Lukas, K. (2018). Belonging in space: Informal learning spaces and the student experience. *Journal of Learning Spaces, 7*(2), 12-22. Retrieved from http://libjournal.uncg.edu/jls/article/view/1667/1277

Morrone, A. S., Flaming, A., Birdwell, T., Russell, J., Roman, T., & Jesse, M. (2017). Creating active learning classrooms is not enough: Lessons from two case studies. *EDUCAUSE Review*. Retrieved from https://er.educause.edu/articles/2017/12/creating-active-learning-classrooms-is-not-enough-lessons-from-two-case-studies

Oblinger, D. G. (2006). Space as a change agent. In D. G. Oblinger (Ed.), *Learning spaces* [EDUCAUSE e-book]. Retrieved from https://www.educause.edu/ir/library/pdf/PUB7102a.pdf

Perrin, J. (2014). Features of engaging and empowering experiential learning programs for college students. *Journal of University Teaching & Learning, 11*(2), 1-12. Retrieved from https://ro.uow.edu.au/jutlp/vol11/iss2/2/

Phillipson, A., Riel, A., & Leger, A. B. (2018). Between knowing and learning: New instructors' experiences in active learning classrooms. *The Canadian Journal for the Scholarship of Teaching and Learning, 9*(1), 1-20. https://doi.org/10.5206/cjsotl-rcacea.2018.1.4

Rands, M. L., & Gansemer-Topf, A. M. (2017). The room itself is active: How classroom design impacts student engagement. *Journal of Learning Spaces, 6*(1), 26-33. Retrieved from http://libjournal.uncg.edu/jls/article/view/1286

Stebleton, M., Jensen, M., & Peter, G. (2010). Enhancing student engagement in a multidisciplinary, first-year experience course. *College Teaching Methods & Styles Journal, 6*(1), 1-6. https://doi.org/10.19030/ctms.v6i1.5514

Valenti, M. (2015). Beyond active learning: Transformation of the learning space. *EDUCAUSE Review, 50*(40), 31-38. Retrieved from https://er.educause.edu/articles/2015/6/beyond-active-learning-transformation-of-the-learning-space

Zepke, N. (2013). Student engagement: A complex business supporting the first year experience in tertiary education [keynote presentation]. *The International Journal of the First Year in Higher Education 4*(2), 1-14. https://doi.org/10.5204/intjfyhe.v4i2.183

Zhao, C., & Kuh, G. D. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education, 45*(2), 115-138. http://dx.doi.org.proxy.ulib.uits.iu.edu/10.1023/B:RIHE.0000015692.88534.de

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 33-41.
doi:10.14434/jotlt.v8i1.26741

The Language Commons: An Innovative Space Supporting Second Language Acquisition

Judith A. Giering
University of Virginia
jgiering@virginia.edu

Hope Fitzgerald
University of Virginia
hf6v@virginia.edu

Abstract: In 2015, language faculty and administrators at the University of Virginia met to evaluate the needs of the more than 20 language programs offered on campus. A priority emerged for language-learning space better equipped to facilitate authentic interaction and communication. The committee conceived of an alternative language-learning space that would be motivating, collaborative, and inviting and offer a variety of technologies in support of innovative teaching and learning. Now in its second year of operation, the Language Commons facilitates formal and informal learning activities for students and faculty that are aligned with current theory and practice in second language acquisition. Language faculty utilize the space for innovative instructional activities that might otherwise be limited by small, inflexible classroom spaces. This article describes the development of the Language Commons from initial conception through design and the rich array of activities occurring in the space, featuring examples of faculty uses of commons spaces and technologies. Preliminary outcomes suggest the Commons is valued for its support of student motivation, lowering of anxiety, and opportunities for community engagement and as a place to disrupt classroom hierarchies and routines.

Keywords: anxiety, authentic learning, design, motivation, second language acquisition, student centered.

World language study has long been an integral part of a liberal education. The Modern Language Association (2011) has emphasized the importance of language study for purposes of communication, cultural appreciation, economic opportunity, enriching public discussion of current affairs, and humanistic research and inquiry. With over 20 world languages offered, the College of Arts & Sciences (College) at the University of Virginia is committed to students learning a second language. It is a vital part of the College's goals to prepare undergraduate students to be global citizens and participate in a connected, globalizing society; thus language study emphasizes the inseparability of language and culture, building students' linguistic and intercultural communication skills. The scope of the College's language education is not small; students are required to take four semesters of their chosen language. Each year, approximately 3,000 students are enrolled in first- and second-level language courses. Additionally, nearly 200 students major in a world language each year, and about 100 are currently pursuing a graduate degree in a language program. The College's longstanding commitment to world language instruction remains strong in spite of a growing trend nationwide to limit language requirements or cut them entirely and close language departments.

While a commitment to world language study has remained steady, the means through which world languages are taught have evolved over time. As teaching in higher education has generally moved to a more student-centered approach, so has the teaching of world languages. Pedagogical developments such as the widespread adoption of the "communicative approach," with its emphasis on the centrality of meaningful communication to the language learning process, a more intentional

integration of cultural proficiency, and the use of technology, have all impacted the classroom experience for both faculty and students. The College has sought to support these changes through a variety of means, including faculty development in pedagogy and course design, adoption of multiple learning technologies, and most recently, an investment in the spaces faculty and students use for both formal language instruction and informal activities supporting language acquisition. Importantly, work and thinking in each of these areas has informed the others. In this article we describe the development of the Language Commons, a dynamic and flexible space that facilitates language learning, from initial conception through design and the rich array of activities occurring in the space.

Development of the Language Commons Concept

Over a period of several years leading up to fall 2014, concerns arose about the state of the College's language lab. At that time, it was a 48-student space to which faculty brought students for skill and drill activities and assessments. In partnership with the lab, an office supplied faculty and students with technology such as cameras and audio recorders that could be checked out to complete projects. Several challenges existed that needed to be addressed with varying degrees of urgency. First, the lab was facing infrastructure problems in a historic 1898 building. Second, faculty were asking for the ability to conduct other activities in the lab that the technology and staffing were not able to support. Third, the language software licensed to the lab was no longer going to be supported by the vendor, necessitating a search for a new software solution. Fourth, the equipment inventory was becoming unwieldy, with a stash of outdated equipment and not enough funds to update the equipment most in demand. Finally, it was clear that peer universities were moving ahead in reconceiving language labs, and that the lab no longer supported the most current thinking about pedagogy and technology for language teaching and learning.

In response to these challenges, College leadership formed a committee in fall 2014 to assess the current spaces for language learning, investigate peer institutions and best practices around the country, solicit feedback from language faculty, and ultimately make a recommendation on what type of space would best support the goals of language acquisition and pursuit of language degrees. The committee comprised the associate dean for Arts & Humanities, four full-time language faculty, the director of the language lab, the director of Learning Design & Technology, and the director of Space Planning and Management. The committee undertook a number of activities as part of their work. They invited faculty from peer institutions that had already rethought their language labs to campus to discuss those spaces; conducted literature reviews about how space might positively impact pedagogical goals in language teaching; interviewed staff who worked in the lab; and held three town hall meetings for language faculty. The town hall meetings were especially important to the committee, to ensure the faculty voice be strongly represented in their final analysis. At the completion of these activities, the committee wrote a report for the dean with multiple recommendations, including the creation of a so-called Language Commons.

Rationale: Language Learning Spaces in 21st Century Higher Education

Developments in second language acquisition (SLA) theory and practice, along with fundamental shifts in learning technologies, have led to new expectations for language learning spaces in higher education and forced traditional labs to reimagine their role in teaching and learning. From their inception in the 1950s, the mission of these labs was to provide access to technology in support of language learning; however, language-learning spaces are no longer limited by this singular goal. Today, language spaces and centers are being asked to take on new roles beyond technology provision and support. Kronenberg (2017) describes this new model as "moving away from massive technology

installations to more flexible, more adaptable, more diverse spaces. Technology is not necessarily the only focus of language centers, but rather one (albeit often very important) aspect" (p. 162).

Concurrent with changes to the purpose of language labs and centers, developments in SLA theory and practice have influenced the activities taking place in language spaces. Previously, language lab use was largely informed by the audiolingual approach to language teaching. Based in behaviorism and structural linguistics (O'Maggio-Hadley, 2001), audiolingualism relied largely on repetition, memorization, and rote conversation, limiting learners' authentic communicative practice. More recent understandings of language teaching and learning emphasize learners' development of language proficiency—that is, what individuals can "do" with language in spontaneous contexts (American Council on the Teaching of Foreign Languages, 2012). Approaches that can broadly be labeled "proficiency oriented" or "communicative" emphasize the use of authentic, interactive communicative tasks and outcome-oriented activities to engage learners.

Research into affective and metacognitive factors in language acquisition has likewise affected the teaching and learning of world languages. Motivation has been found to be a strong predictor of language-learning success (Skehan, 1989). Erham, Leaver, and Oxford (2003) argued that "providing students with learning experiences that meet their needs for competence, relatedness, self-esteem, and enjoyment" (p. 320) can increase intrinsic motivation to learn a new language, suggesting that learning environments and activities may influence student motivation and, subsequently, success in language development. Anxiety, including anxiety that is specific to language learning, has long been considered to significantly impede the development of world language fluency and performance (Horwitz, Horwitz, & Cope, 1986). Acknowledging and mitigating the effects of this anxiety have become the goals of classroom practitioners eager to encourage student success (see, for example, Young, 1991).

When it came time to envision a new role for our aging language lab (see Figure 1), it quickly became clear that the needs of faculty were in alignment with these more recent developments in SLA theory and pedagogical practice. The former lab was instructor centered both in design and in use, with individual, walled computer stations that obstructed face to face interaction. Pedagogical use of the lab was, therefore, limited by the space itself, with the most common uses being assessment, pronunciation, and drill activities. As a physically inflexible space, the lab struggled to offer faculty the freedom to explore new approaches and new learning activities. Those heavily involved in redesign discussions, with input from faculty and outside experts from language centers across the country, envisioned a space where students would feel welcomed to engage in communicative, collaborative learning activities more in line with current SLA theory and practice. By engaging students in more authentic interactions, these activities would enhance motivation and interest among learners.

Figure 1. The language lab, prior to renovation. Computer stations were separated, minimizing opportunities for interaction.

Beyond providing a welcoming environment, the new space would need to support the efforts of our most innovative faculty, providing nontraditional space, flexible furnishings, and varied resources that would facilitate teaching and learning. It would also need to be spacious enough to accommodate learning activities that could not be accomplished in typical classrooms because of room size, noise interference, or lack of technology. Faculty input also indicated continued interest in a traditional lab space to support specific activities—particularly oral assessment in the College's largest language programs. Thus, a redesigned language-learning space would need to balance some traditional lab activities while opening up opportunities for pedagogical innovation.

Building the Language Commons

Once the recommendation regarding the Language Commons was accepted by College leadership, implementation was turned over primarily to three professional staff at the College: the directors of space planning and management, learning design & technology, and computing services. These staff members worked collaboratively to build out the Language Commons, outfit it with appropriate technology and furniture, staff it, and begin to imagine strategies for engaging faculty and students in the mission and activities of the space. Capital expenses for the project were mostly funded by a significant donation to the College for innovative pedagogical initiatives. An operational budget for the ongoing work of the Language Commons was developed, and it was determined that the director of learning design & technology would oversee this budget, as well as staffing and programming for the Commons.

The lengthy process of rebuilding the lab also included university architects and space designers, information technology services, design consultants, technology suppliers, furnishing vendors, and instructional designers in the College. The new Language Commons was developed in the space of the former language lab, a large rectangular room of nearly 2,000 square feet. On the second floor of a historic building, the space featured high ceilings and a wall of large windows with deep window wells. With the old technology and furniture installations removed, the room was clearly an attractive space with great potential for the new design team. Being located in the same building as the majority of the College language programs made it easily accessible to language classes and their students.

Function, rather than technology, informed the design of the space. The new Commons was created to accommodate several specific uses (class activities, group work, language enrichment/enjoyment, digital project development, presentations of varying sizes) while remaining flexible for as-yet unimagined uses. The final design thus included small group huddle spaces, sound-dampened couch corners for study and discussion, conversation pods with large comfortable chairs, tall group-work tables, and computer workstations, as well as a front desk to be staffed by a student employee (Figure 2). Also incorporated were the hardware and software to support these functions, including monitors with wired and wireless displays, a simple video production space, laser projectors, PC and Mac computers, and a speaker system.

Figure 2. The Language Commons. (Clockwise from top left): standing height tables, group work areas with wall-mounted monitors, conversation pods, couch corners.

With the understanding that the Language Commons would serve not as a technology provider, but rather as a teaching and learning resource hub in the world language ecosystem at the College, the space also incorporated resources identified by instructional designers, faculty, and students to support and celebrate language use. Such resources include multilingual board game and fiction collections, international TV access, immersive technologies (virtual reality headsets and augmented reality resources), and a teaching resource cart[1] of supplies for use in the Commons and/or in the classroom.

A concurrent restructuring of computing services in the College allowed for additional space (a conference room and storage space) to be redeveloped into a small language lab with a more traditional teacher-fronted design. The addition of SANS language lab software (SANS Inc., 2019) to the new lab has enhanced this environment as well, by enabling more student-to-student interaction than was common in the previous lab setup. The new 24-station lab was less than half the size of the previous lab, but large enough to accommodate nearly all language courses in the College. Despite its traditional layout, the new lab is being used for a wider variety of activities, including paired conversation, self-evaluation, research in the target language, and cultural explorations.

The Language Commons in Use

The Language Commons opened in fall 2017, with a week of language and culture activities to draw users into the new space. Since its opening, the Commons has become central to the instructional activities of multiple language courses and programs. To date, 13 of the College's language programs have utilized the Commons for class sessions or departmental activities. Student conversation clubs, dance troupes, tutors, and cultural associations also use the space for language and culture activities. It is hoped that by facilitating these activities, and through programming designed by staff, the Commons will play an active role in extending language learning far beyond the classroom. Activities supported in the Commons have aimed to foster authentic collaboration and interaction, lower learner anxiety, increase community engagement, and enhance motivation, while also providing opportunities for explorations of new approaches to teaching.

[1] The teaching resources cart includes "maker" activity supplies, lap boards, maps, games, and other tools to support interaction and communication in language classes.

Fostering Authentic Collaboration and Interaction

Utilizing the Language Commons has added an element of authenticity to the transactional speaking and listening activities that often form the core of communicative language classes. Japanese language courses, for example, regularly use the Commons as a space for interaction and collaboration across multi-section courses. Students use group work spaces to engage with peers in cross-section conversational and presentational activities, promoting authentic exchange among students who do not know each other well. Adding new students to the familiar class group in this way encourages students to carefully listen and practice asking for clarification, to successfully interact with unfamiliar interlocutors. Other faculty have remarked that the Commons fosters conversational activities that feel less authentic in a traditional classroom space. One Spanish language instructor, reflecting on her students' experience with speaking activities in the Commons, remarked that "it feels more realistic and authentic to have a conversation in the Commons than in a classroom" where an instructor is monitoring and giving feedback on each interaction (S. Rabke, personal interview, December 11, 2018).

Lowering Anxiety and Stress

When final exams begin each semester, the Commons sets up a "stress-free zone" and offers a series of study break activities related to language and culture learning. Popular activities, such as construction and painting of a Catalan *Caga Tió* log in early December, welcome students to practice their language skills, introduce lighthearted cultural information, and provide a fun hands-on "maker" experience. Other activities, such as *origami* and *kirigami*, draw crowds of students who learn a new skill and practice language skills in a no-stakes environment.

Mindfulness activities in the Commons have also been used to lower student anxiety and increase positive associations with language learning outside the classroom. In fall 2018, faculty from the Spanish program organized a *Jornada de Relajacion*, in which they led language students in mindfulness and relaxation activities conducted in Spanish. In addition to such cocurricular stress-relief activities, common class activities in the Commons have also been seen to lower language-learning anxiety and stress. A Spanish faculty member, after bringing her students to the Commons for speaking activities, noted that students seemed less anxious when engaging in speaking practice, as they were not being overheard by their peers (S. Rabke, personal interview, December 11, 2018). Further investigations of the effects of learning spaces and environments on student anxiety and stress in language classes are forthcoming.

Increasing Community Engagement

The large and active Japanese language program has regularly fostered interaction with the local Japanese-speaking community. Small classroom sizes placed limits on the number of community members who could participate in such activities, but the open space and large tables in the Commons allow students and community members to meet comfortably for small group conversations. Students enjoy these unique opportunities to develop oral skills and community connections, and later they may reflect on cultural and linguistic aspects of their interactions in course ePortfolios.

Fostering Motivation

Activities to increase student motivation and interest in language learning, multilingualism, and intercultural communication have been held in the Commons. The most popular of these events to

date was the Last Language Standing challenge. Held in spring 2017, the challenge encouraged teams to keep their language in use for an entire day. It was an experiment in "competitive language practice" that aimed to encourage language use outside of the classroom through a bit of friendly rivalry. More than 350 students, faculty, and staff participated in the challenge by chatting, eating, playing games, and even performing karaoke in their world languages. Teams representing 12 world languages participated, representing more than half of the College's taught languages. Many faculty and students stayed for hours to participate and proudly displayed winners' certificates on departmental bulletin boards. This will in all likelihood be an annual event.

Supporting Innovation in Language Teaching

As part of the College's Learning Design & Technology unit, the Commons' mission also includes a commitment to facilitate course design and support high-quality instruction. Instructional designers work one-on-one with faculty to support course design and pedagogical efforts, and with campus partners to offer workshops for technologies that facilitate language teaching and learning. Course design support, and a materials stipend from the Language Commons, helped one Italian faculty member redesign her third semester final oral exam. Rather than require students to create a formal dialogue with a partner, she organized students into small groups to play board games over the course of two class periods. The instructor moved from group to group to monitor interaction and language use as students engaged in authentic communication with peers to successfully navigate the board games.

In an intensive French writing course, a faculty member invited students to a conversation pod in the Commons to meet for peer review workshops. She used these workshops to coach students through peer review discussions to "model the importance of giving quality feedback" and to show the importance of peer feedback relative to instructor comments (R. Geer, personal email communication, December 11, 2018). The faculty member elected to use the Commons, as opposed to her classroom, to disengage from the built hierarchy associated with classroom spaces. She noted that "the Language Commons felt like a vital space to get away from that built-in hierarchy and the change in physical space felt incredibly helpful for getting them to change their attitudes towards peer review" (R. Geer, December 11, 2018).

Reflecting on the Role of the Language Commons

A Dedicated Language Space

Having a dedicated space for language activities has given faculty the room to innovate in their teaching activities and has helped learners feel excited about the languages and cultures they study or to which they belong. Groups of dedicated users have grown among both faculty and students since the opening. In response to feedback requests, student users have said they enjoy having a space that is dedicated to language learning and those who love languages, like themselves. Daily users stake out their spots for studying, group meetings, and lunch dates with friends.

Faculty who routinely use the Commons have noted its importance in providing "a change of scene" that facilitates new learning activities and breaks up the inevitable sense of routine present in the classroom. Though perhaps it should have been foreseen, the use of the Commons as a place to change up routines has been a key feature of its development. Both faculty and students have commented on the importance of having a space with a decidedly "non-classroom" feel, as a place where interactions take on a more authentic character, anxiety decreases, and language use becomes a natural extension of students' activities, rather than a classroom exercise.

Now entering its fourth semester in operation, the Commons is growing into its role as a hub for language activities, with campus partners recognizing the Commons as a useful space for language and culture events. The Institute for World Languages now holds monthly faculty round table sessions in the Commons. Education Abroad advisors, in coordination with language faculty, conduct occasional study abroad information sessions and program orientations. These and other globally minded campus partners are reaching undergraduate student audiences by connecting their global opportunities to language learning.

Unexpected Uses and Outcomes

A few of the Commons' features and resources have received a positive response beyond original expectations. The teaching resource cart has been extensively used, particularly by lecturers and graduate students in first- and second-year courses. Beyond the classroom, the cart's supplies have also provided creative resources to occupy small children while parents—faculty and community members—engage with students in learning activities. Likewise, mobile glass boards, located around the room, receive considerable use—and not only by language learners; Molecular models and historical outlines are as likely to fill the boards as verb conjugation charts and dialogues.

The existence of the Commons has also had unexpected "washback" effects on other campus learning spaces. While faculty can bring class groups to the Commons for activities, they cannot reserve the Commons as the official classroom for their courses. Once faculty have experienced the types of activities that a space like the Commons supports and enhances, they began to express dissatisfaction with their regular classrooms; many instructors found their class activities constrained by small classroom sizes and inflexible furniture arrangements. Discussions and research around this problem led to a successful request to the Provost's Office for some modest redevelopment of several classrooms, to better accommodate active learning in language classes and support the sorts of active-learning approaches that were successfully being applied in the Commons.

Challenges

In transitioning to a Language Commons and a smaller language lab, hard choices had to be made between supporting communicative, interactive language learning and assessment (clearly a priority for many) and accommodating some of the most common uses of the former language lab. Inevitably, some of the functions performed in the old language lab were lost in the move to the new space, including individual learning activities that require silent or sound-dampened space for intensive listening or pronunciation work.

Developing a large, multiuse space in an historic building has led to some challenges. With an open floor plan, noise carries easily, and the Commons struggles at times to accommodate multiple groups while class activities are taking place. Presentations, in particular, sometimes require imposing a "quiet study" environment in the rest of the Commons so that presenters can be easily heard and not distracted by conversation. Similarly, when the space is sparsely populated, students seem to feel awkward raising their voices in conversational meetings with partners. Scheduling can be challenging, as we seek to accommodate course activities while also welcoming students to study, meet conversation partners, and enjoy the space. These challenges are generally mitigated by moving furniture or playing white noise through the speaker system.

Conclusion

Although the planners of the Language Commons had hoped for a space that would be used often for language-learning activities, the innovation and scope of these activities have exceeded initial expectations, creating a dynamic space that builds community and supports pedagogical goals for language learning. The team attributes this primarily to two reasons. First, many voices, particularly faculty, were considered in the planning process. Second, it was determined that function should inform the technology and features of the space, not the other way around. With these two principles guiding continued work and evolution of the space, faculty and students who use the Commons will be limited only by their own imaginations of what is possible.

References

American Council on the Teaching of Foreign Languages. (2012). ACTFL proficiency guidelines 2012. Retrieved from https://www.actfl.org/publications/guidelines-and-manuals/actfl-proficiency-guidelines-2012

Erham, M., Leaver, B. L., & Oxford, R. (2003). A brief overview of individual differences in second language learning. *System*, *31*, 313–330.

Horwitz, E., Horwitz, M. B., & Cope, J.. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, *70*, 125–132.

Kronenberg, F. (2017). Conclusion—From language centers to language learning spaces. In F. Kronenberg (Ed.), *From language lab to language center and beyond: The past*, *present*, *and future of language center design* (pp. 161–165). Auburn, AL: International Association for Language Learning Technology.

Modern Language Association. (2011). Learning another language: Goals and challenges [Executive Council statement]. Retrieved from https://www.mla.org/About-Us/Governance/Executive-Council/Executive-Council-Actions/2011/Learning-Another-Language-Goals-and-Challenges

O'Maggio-Hadley, A. (2001). *Teaching language in context*. Boston, MA: Heinle & Heinle.

SANS Inc. (2019). Why a language lab technology platform today? [Web Page]. Retrieved May 23, 2019, from https://www.sansinc.com/

Skehan, P. (1989). *Individual differences in second-language learning*. London, England: Arnold.

Young, D. J. (1991). Creating a low-anxiety classroom environment: What does language anxiety research suggest? *Modern Language Journal*, *75*, 426–448.

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 42-59.
doi:10.14434/jotlt.v8i1.26806

Understanding the Role of the Brick-and-Mortar Classroom in Course Design and Implementation of the "Flipped" Classroom: An Exploratory Case Study

Elisabeth Counselman-Carpenter
Southern Connecticut State University
counselmane1@southernct.edu

Alex Redcay
Millersville University
Alex.Redcay@millersville.edu

Abstract: This article presents the results of a 2-year exploratory case study on the impact of the "flipped" classroom design on generalist and advanced-practice social work skills in a large urban graduate university setting and looks at the role physical space plays in student perceptions of learning outcomes. Quantitative data were obtained with the Practice Skills Inventory (PSI) and the Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS). Participants provided qualitative data in the form of weekly reflection journals and evaluations of class activities. A mixed-methods analysis revealed statistically significant improvement in overall general practice skills and in specific play therapy clinical skills. Student-generated feedback on the physical learning environment as well as instructor workload and preparatory requirements are discussed.

Keywords: flipped classroom, active learning, social work, advanced practice skills

Introduction

This article presents the results of a 2-year exploratory case study on the impact of the "flipped" classroom design on generalist and advanced-practice social work skills in a large urban graduate university setting and looks at the role physical space plays in student perceptions of learning outcomes. A flipped classroom is one in which independent and autonomous learning by the student takes place outside the classroom, and group-focused experiential, inquiry-based or active learning takes place within live classroom sessions in the physical classroom (Abeysekara & Dawson, 2015; Bishop & Verleker, 2013; Brame, 2013; McNally et al., 2017). In an advanced clinical skills course, an active-learning strategy was employed through student-led engagement in expressive arts, group work, and play therapy in real time while readings and lectures took place outside of the classroom setting. For a mixed-methods analysis, quantitative data on both generalist and advanced clinical skills were obtained with the Practice Skills Inventory (PSI) and the Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS), respectively, before and after course execution. Qualitative data were obtained from students who completed weekly reflection journals and evaluations of class activities, which were assessed according to Council on Social Work Education Educational Policy and Accreditation Standards to measure learning outcomes. Students' feedback on the physical learning environment, instructor workload demands, and required preparatory work are also discussed. This study is the first to use the PTAKSS and PSI to measure the outcome of play therapy classes for master's of social work (MSW) students and to specifically measure the effectiveness of the flipped classroom model in teaching play therapy skills. Also examined are expected and unexpected limitations of the space, expansion of the classroom through digital platforms, inclusion of differently abled students in the flipped laboratory space, and recommendations for future research and iterations of the course. This

study shows promising outcomes for the use of the flipped model as a way of delivering practice content to students and explores the role and specific impact that weekly sessions in the physical learning environment have on student outcomes.

Literature Review

The Flipped Classroom

Research related to the impact the flipped classroom can have on student learning outcomes and student perceptions of learning is rapidly accumulating, but analysis of the physical space and of the active time spent learning in the classroom remains a significant gap. There is extremely limited research on the role that physical space plays in the learning experience and concrete skill development of students in higher education overall (Nordquist & Laing, 2014) and it is almost impossible to find studies that look at how combining physical and virtual spaces can enhance learning. As students move toward more virtually based classroom learning, questions arise about the role of brick-and-mortar learning spaces. This exploratory case study sought to reveal the skill development and experiences of students who moved from lecture-based learning in the classroom to virtual learning online while classroom time became dedicated to building action-based, experiential skills. Would active-learning strategies in a flipped classroom setting strengthen clinical skills if the theoretical learning was learned in an asynchronous virtual space? This study addressed the role that active learning in real time can play in students' clinical skill development and the impact that the way physical space is used, particularly in this type of learning, can have on the students' experience.

The genesis of this study was student feedback, as the first iteration of this course was taught in a traditional lecture format, with students sitting behind long tables, shaped in a U in front of a whiteboard. Informal evaluations distributed by the instructor and formal institutional course evaluations reflected themes of boredom with the lecture-based format and a lack of confidence in using skills in practice that students had only seen in a video or read about, as well as the universal request to build in time to learn the skills and activities in real time. The primary instructor began researching more action-oriented teaching methods and discovered flipped classroom pedagogy as a growing evidenced-based method to address such student concerns. The need to consider the role physical space plays in the flipped classroom quickly became apparent during the implementation of this study, a point supported by the study of Baepler, Walker, and Driessen (2014).

Within the context of the flipped classroom, the traditional lecture is moved into a technology-based realm and the physical classroom is used for student-led learning or action-based skills work. Typically, the flipped classroom is chosen as a pedagogical method (a) to improve student engagement with course materials and theories, and (b) to promote active learning (Bishop & Verleger, 2013; Blair, Maharaj, & Primus, 2016; McNally et al., 2017). While this model focuses on moving learning from a lecture-based to an asynchronous, student-driven method, there is an unspoken need to consider including in the instructional design a physical space in which the learning is active and skills based, to support the successful execution of the course.

Historically, the flipped classroom has been used in medical and nursing programs to deepen the students' learning experience with the course material (Gillette et al., 2018). Technology is always the core pedagogical focus, particularly as a method of delivering the majority of course content as lectures to be absorbed outside of class time, usually through a video recording posted on an online platform by the professor. The physical classroom space becomes focused on action-oriented engagement, often in the form of skills-based, lab-oriented activities. With the primary focus on "student-owned" learning, students log on during the week between course sessions to watch the video, view course readings, and, customarily, complete a quiz as a measure of their grasp of the week's

material (Hamden, McKnight, McKnight, & Arfstrom, 2013; Sengel, 2016). The student is responsible for grasping the theory presented in the lecture, while the instructor is responsible for building the action-oriented experiences that take place in the classroom. Heijstra and Siguroardottir (2018) found that the more frequently students actually watched the video-recorded lecture, the more likely they were to have higher grades and greater learning outcomes at the end of the semester.

The flexibility of learning offered by a flipped classroom is reportedly one of the method's strengths. Studies have found improved student-reported satisfaction regarding student-centered learning (Baepler et al., 2014; Hao, 2016) and increased student self-sufficiency and motivation (Aşiksoy & Özdamli, 2016). The role of the instructor in this setting becomes transformed from "expert teacher" to guide and facilitator of knowledge (Sun, 2017; Wilson, 2013).

The Role of the Physical Classroom in Flipped Learning

Historically, physical learning spaces have reflected how an institution expresses its values regarding learning and teaching (Nordquist & Laing, 2014; Oblinger, 2006). However, this has been drastically altered by the powerful role technology plays in today's classroom. Current trends in higher education indicate economic and enrollment challenges are making building space, classroom availability, and increased class size significant issues (Roach, 2014). There is a growing need to prepare students outside the physical classroom to function in a technology-mediated world (Baepler et al., 2014; Stockert & Stoica, 2018), but little research has been done on the role of the balance between virtual and on-site learning and the impact of the physical space on active learning.

Traditional classrooms, set in a lecture-based format, often require that students sit in their seats for the majority, if not the entirety of class time. Active-learning classrooms (ALCs), the hallmark of the flipped model with their focus on small-group work, have been found to increase peer collaboration and the efficient use of physical space, even when student–faculty contact is reduced. ALCs may find students moving around, sitting on the floor, or engaging in small-group breakouts for student-led learning (Sun, 2017). Even when actual classroom time is reduced, student learning outcomes have been found to be comparable to, or better than, outcomes in a traditional classroom format, and student perceptions of their learning experience significantly improved (Baepler et al., 2014).

We hypothesized that using the physical classroom as a place for students to move around as they fully participate in creative expressions and art therapy projects, engage in play therapy and activity-based therapeutic games, replicate child-oriented group therapy, and model family therapy sessions would deepen students' relationships with the material, resulting in both a greater understanding of the theory behind the clinical choices and an increased willingness to undertake these techniques with actual clients.

However, there are some clear drawbacks to this method of course delivery for both faculty and students. Faculty typically struggle to manage the technology needed to prepare for the course (Sengel, 2016) and with the amount of time required for a flipped class. In fact, ideally for this exploratory study, this class would have been concurrently compared with the same course taught by a different instructor in the same flipped format. However, no other instructors were willing to flip the classroom in this way, in part, because of the level of presemester and preclass session preparation required, and thus it is a significant limitation of this work. To accommodate this unexpected challenge, we adopted a case study format, and a mixed-methods approach was added to strengthen the validity and reliability of the results.

Research indicates that not only faculty but also students struggle with the considerable amount of outside classroom time and the changes in study habits required for classroom preparation (Chen, Wang, Kinshuk, & Chen, 2014; Gillette et al., 2018). Some students, with increased autonomy

and self-directed learning, have been found to spend less time reading the assigned textbook, or they report wanting more guidance from the instructor and less individual responsibility for learning (Sun, 2017). However, overall longitudinal outcomes regarding self-directed learning in the flipped classroom are only now appearing in current research literature.

Experiential Learning to Teach Generalist Practice and Advanced Play Therapy Skills

The field of social work typically relies on the field practicum model to teach generalist social work practice skills at the bachelor's and master's level, with skill review taking place during a weekly seminar class and feedback provided at the end of the semester through a supervisory evaluation. Historically, teaching play therapy skills, the advanced practice skills taught in this case study course, has included a strong focus on the experiential process, although little research has been conducted on what quantifies effective play therapy instruction, and none of these articles specifically focuses on the setting of the instruction (Lindo et al., 2016, Mullen, Luke, & Drewes, 2007). A limited number of graduate training programs concentrate exclusively on play therapy, but prior research has shown that general hands-on play therapy experience in the classroom can improve students' attitudes, skills, and knowledge about play therapy (Kao & Landreth, 2007; Periera & Smith-Adcock, 2015).

The PSI

The PSI was developed in response to the lack of psychometric instruments that could gather operationalized data on how to measure actual social work practice. "Social work practice skills" is used as an umbrella term to cover all intentional interaction or exchange between clients and clinicians that moves clients toward achieving their intervention goals (O'Hare, Tran & Collins, 2002). The PSI was developed specifically to examine the frequency with which certain intentional practice skills are used to help a client move toward growth and healing (O'Hare et al., 2002). O'Hare and Collins (1997) conducted an exploratory factor analysis with nearly 300 MSW students who were later compared with a cohort of experienced practicing social workers, revealing four factors: supportive, therapeutic, case management, and evaluation skills (O'Hare, Tran & Collins, 2002). The inventory, however, has not been widely tested within social work research settings. The PSI was chosen for this study to capture the experience of students who were in field work and using clinical practice skills but may not have been placed in settings where play therapy was appropriate. This is the first study in which the PSI was used to gain greater knowledge about the use of the flipped classroom.

The PTAKSS and Mixed-Methods Play Therapy

Research in the late 1990s demonstrated that most play therapy practitioners had little to no specific training in play therapy yet were referring to themselves as play therapists and engaging in direct play therapy practice (Kao & Landreth, 1997). As a result, Kao and Landreth (1997) developed a curriculum to train graduate counseling students in child-centered play therapy (CCPT) with a related measurement scale, the PTAKSS. The instrument was designed to measure the respondent's beliefs and patterns of interaction in CCPT and their knowledge of CCPT and to assess their confidence in their play therapy skills (Crane & Brown, 2003). After being used in Taiwan to study play therapy, the PTAKSS was updated in 2007, resulting in a reduced number of items to enhance construct clarity (Kao & Chang, 2007; Muro et al., 2015. This revision was shown to have high internal consistency (α = .95) and solid split-half reliability (r ¼ = .76), with three factors revealed in the factor analysis, accounting for 47.6% of variance of the scale scores (Kao & Landreth, 2007; Lindo et al., 2016.

The PTAKSS has been used to study play therapy coursework with both undergraduate and graduate counseling students (Carnes-Holt & Weatherford, 2013; Homeyer & Rae, 1998; Kagan & Landreth, 2009; Lindo et al., 2016 Pereira & Smith-Adcock, 2013). Past studies have examined short-term models, such as a single 12- to 15-hour training (Pereria & Smith-Adcock, 2013) and a 3-day workshop (Bratton, Landreth, & Homeyer, 1993), while others have looked at semester-long courses, such as Lindo et al. (2016), who used the PTAKSS to measure the impact of an introductory play therapy class for counseling master's students. Lindo et al. (2016) found that posttest scores were significantly higher on all three subscales of the measure and then used structured interviews to gain a qualitative understanding of the students' experience in the class. Muro et al. (2015) used the PTAKSS at intervals to track changes in counseling graduate students before and after a play therapy training class. Measurement points were once before the class (pretest), once after the class (first posttest), and once after an in vivo play therapy experience (second posttest). Students' scores were significantly different between the pretest and the first posttest in all three subscales. In the second posttest, there were significant changes in the students' scores in the knowledge and attitudes subscales (Muro et al., 2015).

While these studies have provided the play therapy training field with valuable information on different pedagogical methods for play therapy, there are still many gaps in the literature. This study is the first to use the PTAKSS to measure the outcome of play therapy classes for MSW students and to specifically measure the effectiveness of the flipped classroom model for teaching play therapy skills (Counselman-Carpenter, 2018).

Methods

Data Collection

This study was approved by the Columbia University's Institutional Review Board. A research assistant collected the participant consent forms and pre- and post-assessment instruments in order to protect participant confidentiality. Participants were assigned unique anonymous ID numbers that were created for the study. To prevent grade bias, participants were anonymous to the professor teaching the play therapy course. No incentives were provided to participants to fill out the quantitative measures. Journals were collected weekly, but in order to prevent grading bias, reflection journals, course evaluations, and email surveys were assessed after the conclusion of the course and the final submission of grades.

Participants and Sampling

Over a 2-year period, all students (n = 46) in a master's level advanced clinical social work course were invited to participate in this study. Purposive sampling was used to recruit participants with some interest in clinical practice and a particular curiosity about play therapy who were willing to receive the flipped classroom intervention. There were 32 participants who agreed to participate in the study over 2 years, although only 26 participants completed all required measures (15 participants in 2017 and 11 in 2018). Participants (25 female, 1 male) had an average age of 26.2 years, and just over 40% (n = 11) had previously taken at least one course in play therapy. The majority of participants (n = 24) were master's level students, and a majority (73%) had no professional clinical experience prior to taking this class.

Measures

Qualitative data was gathered through weekly reflection journals that were submitted through the course's learning management system (Canvas), through a pre-class email survey sent out at the conclusion of the first class and at the conclusion of the last class, and through the final course evaluation which is completed during the final class. The instructor also kept a reflexive journal throughout the semester, following every class, which indicated successes and challenges with the space, the student's level of engagement with the activity and responses to any media shared in class.

The PSI is a validated measure with 18 items for evaluating and assessing patterns of practice skill utilization (O'Hare, Collins, & Walsh, 1998). The PSI has four factors with good internal consistency: support skills (α = .86; 5 items), therapeutic skills (α = .81; 5 items), case management skills (α = .81; 5 items), and insight skills (α = .80; 4 items). For our sample, there was excellent internal consistency for the pretest (α = .94) and good internal consistency for the posttest (α = .88). Responses were made on a 5-point Likert scale of 0 (*no emphasis*) to 4 (*strong emphasis*) with a minimum score of 0 and maximum of 72.

The PTAKSS is a 63-item, self-administered scale with three factors and high internal consistency (α = .95; Kao & Landreth, 1997). The PTAKSS employs a 5-point Likert scale of 1 (*strongly disagree*) to 5 (*strongly agree*), producing a minimum score of 63 and a maximum score of 315. For our sample, there was excellent internal consistency for the pretest (α = .97) and posttest (α = .93). The attitude subscale (23 items) assesses essential beliefs and interaction patterns a child-centered play therapist should hold. The knowledge subscale (18 items) assesses knowledge of play therapy regarding specific terms, playroom processes, and types of play therapy. The skills subscale (22 items) assesses the degree of confidence or perception of skill when using play therapy (Kao & Landreth, 1997).

Intervention: The Flipped Classroom Course Design

Course Design

This particular elective course, Advanced Clinical Practice with Children and Families, is taken in the first semester of the master's student's second year. In the original version of this course, students indicated in discussion, course evaluations, and instructor feedback forms that they needed more time to practice actual clinical skills, as they felt they were not receiving this guidance in their field practicum and felt significant personal discomfort with trying a clinical intervention in a client session without having practiced it first. Students who took this course had the option of enrolling in one of three offered sections, of which one was the flipped classroom.

Before attending their weekly class in a brick-and-mortar setting, students were expected to watch the prerecorded lecture produced by the instructor in Camtasia (lecture-capture software), read assigned readings, and complete a quiz based on the content of both lecture and readings. Lectures and quizzes were recorded in various locations throughout the community, including play therapy spaces, music rooms, and traditional offices, and the videos were hosted on the class Canvas site (learning management system). The weekly in-class section of the course was 1 h, 50 min long and was devoted to a hands-on skills laboratory in which students practiced individual, group, and family play and expressive arts therapy skills as well as generalist group work skills. The Center for Teaching and Learning (supported by a Provost's grant for re-development of this course), was active in training and supporting the instructor's technology needs for executing the flipped aspect of the course.

To support the active learning classroom pedagogy, the instructor requested the following from the facilities team:

- A large room with tables on one side that were easy to move and open floor space on the other. The long tables were to be used for expressive arts techniques and board game play while the open space was to be used for team-building organizational exercises, group work, sand tray training, and kinesthetic group exercises.
- Free-standing chairs so that they could be stacked when the full space was needed and individual/group movement could be maximized. More space in the classroom was also intended to accommodate students with physical needs who used adaptive tools to enhance their movement.
- Closet space for easy transition from storage for laboratory-based supplies.

Data Analysis

Quantitative analysis. SPSS was used to complete descriptive statistics and quantitative analysis and compute Cronbach's alpha for internal consistency. A repeated-measures analysis of variance was completed to determine if there was a significant difference in participant knowledge prior to and after the course intervention for the total scale and the three subscales. Scatter plots and boxplots were used to check for outliers and regularity of the results.

Qualitative analysis. This analysis followed a two-stage approach. During the first stage, a general inductive approach (Thomas, 2006) was used to analyze data from course evaluations, pre- and postclass email surveys, and weekly reflection journals designed to connect the laboratory activity in the physical classroom to the Council on Social Work Education Educational Policy and Accreditation Standards. In this case, the general inductive approach was used to condense the raw data into a clear summary that connected the overarching goals of the project, allowing the findings to be summarized in a transparent manner (Miles & Huberman, 1994; Thomas, 2006). This mixed-method framework with a grounded theory approach (Strauss & Corbin, 1994) allowed us to look at themes crossing all points of data collection, particularly those related to the physical space in the classroom and learning outcomes promoted by the flipped classroom, and to compare pre- and posttest generalist and advanced play therapy skills.

The second stage utilized concurrent triangulation (Creswell & Plano-Clark, 2017), which explores qualitative and quantitative data equally and allows for a comparison of the two types of data once the quantitative data analysis is complete. Similarities and differences between the two types of data can then be identified (Creswell, 2013). This second stage involved remining the data and the themes to compare the qualitative themes with the outcome data that demonstrated statistical significance and the data that did not. To manage validity regarding replication of themes, a graduate student assistant who had not participated in the study also mined the data for themes, which were then compared to the themes identified by the research team.

Results

Quantitative Results

PSI. We found a statistically significant increase between pretest and posttest in the total PSI (Table 1) for both years combined, $F(1, 24) = 13.3$; $p < .001$, $n = 26$ (pretest: $M = 46.23$, $SD = 14.52$; posttest: $M = 54.69$, $SD = 9.60$), with a large effect size ($\eta^2 = .36$; power = .49). The interaction of PSI Total × Year was also significant, $F(1, 24) = 6.3$; $p < .019$, with a large effect size ($\eta^2 = .21$; power = .68; Table 1). Partial η^2 has a small effect size at .01, medium at .06, and large at .14.

Table 1. Factorial repeated-measures analysis of variance of the Practice Skills Inventory (PSI) total scale

Source	*MS*	*df*	*F*	*p*
PSI total	1,137.46	1	13.3	<.001
Year	304.27	1	1.56	.223
PSI Total × Year	541.76	1	6.3	.019
Error	7.77	24		

The PSI total score for the 2 years combined increased from pretest to posttest by 20% but the standard deviation was reduced by over 30% (Table 2). A reduction in standard deviation for the posttest can be interpreted to mean that the data are "tighter" or participant responses were more similar to each other than during the pretest. Upon completing the course, participants showed significant improvement and were more consistent with each other in practice skills when compared to their preclass assessments.

Table 2. Practice Skills Inventory total scale descriptive statistics

Year	Pretest			Posttest		
	N	*M*	*SD*	*N*	*M*	*SD*
2017	15	51.07	11.49	15	54.00	9.54
2018	11	39.64	16.10	11	55.64	10.07
Both years	26	46.23	14.52	26	54.69	9.60

The PSI subscales are support, insight, therapeutic, and case management skills and all showed significant gains after the course intervention. For the PSI support subscale (Table 3), we found a significant increase from pretest to posttest for both years combined, $F(1, 24) = 4.2$; $p = .05$, $n = 26$ (pretest: $M = 12.00$, $SD = 3.48$; posttest: $M = 13.50$, $SD = 2.08$), with a large effect size ($\eta^2 = .15$; power = .51). The interaction of PSI Support × Year was not significant. Unless noted, sphericity was met since the time factor was 2 years, so no adjustments for the *F* statistic were used.

Table 3. Factorial repeated-measures analysis of variance of the Practice Skills Inventory (PSI) support subscale

Source	*MS*	*df*	*F*	*p*
PSI support	32.616	1	4.196	.05
Year	0.020	1	0.002	.963
PSI Support × Year	5.692	1	0.732	.732
Error	7.73	24		

For the PSI insight subscale (Table 4), we found a statistically significant increase from pretest to posttest for both years combined, $F(1, 24) = 8.3$; $p = .008$, $n = 26$ (pretest: $M = 10.00$, $SD = 4.00$; posttest: $M = 12.23$, $SD = 2.58$) with a large effect size ($\eta^2 = .26$; power = .52). The interaction of PSI Insight × Year was not significant.

Table 4. Factorial repeated-measures analysis of variance of the Practice Skills Inventory (PSI) insight subscale

Source	*MS*	*df*	*F*	*p*
PSI insight	78.751	1	8.289	.008
Year	16.653	1	1.399	.248
PSI Insight × Year	36.290	1	3.820	.062
Error	9.501	24		

For the PSI therapeutic subscale (Table 5), we found a statistically significant increase from pretest to posttest for both years combined, $F(1, 24) = 10.8$; $p = .003$, $n = 26$ (pretest: $M = 11.65$, $SD = 5.26$; posttest: $M = 14.65$, $SD = 3.52$) with a large effect size ($\eta^2 = .31$; power = .51). The interaction of PSI Therapeutic × Year was also significant, $F(1, 24) = 4.1$; $p = .053$, with a large effect size ($\eta^2 = .15$; power = .52).

Table 5. Factorial repeated-measures analysis of variance of the Practice Skills Inventory (PSI) therapeutic subscale

Source	*MS*	*df*	*F*	*p*
PSI therapeutic	139.491	1	10.843	.003
Year	54.848	1	2.250	.147
PSI Therapeutic × Year	53.261	1	4.140	.053
Error	12.864	24		

For the PSI case management subscale (Table 6), we found a significant increase from pretest to posttest for both years combined, $F(1, 24) = 6.3$; $p = .019$, $n = 26$ (pretest: $M = 12.58$, $SD = 4.43$; posttest: $M = 14.31$, $SD = 4.55$), with a large effect size ($\eta^2 = .21$; power = .51). The interaction of PSI Case Management × Year was also significant, $F(1, 24) = 6.7$; $p = .016$, with a large effect size ($\eta^2 = .21$; power = .49). Participants did make significant gains in case management skills from pretest to posttest.

Table 6. Factorial repeated-measures analysis of variance of the Practice Skills Inventory (PSI) case management subscale

Source	*MS*	*df*	*F*	*p*
PSI case management	53.734	1	6.282	.019
Year	37.206	1	1.261	.273
PSI Case Management × Year	57.273	1	6.696	.016
Error	8.554	24		

PTAKSS. We found a statistically significant increase in the PTAKSS total score (Table 7) from pretest to posttest for both years combined, $F(1, 24) = 73.13$; $p < .001$, $n = 26$ (pretest: $M = 212.85$, $SD = 34.58$; posttest: $M = 264.54$, $SD = 18.24$) with a large effect size ($\eta^2 = .75$; power = .99). The interaction of PTAKSS × Year was not significant.

Table 7. Factorial repeated-measures analysis of variance of the Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS) total score

Source	*MS*	*df*	*F*	*p*
PTAKSS total	34,817.792	1	73.126	<.001
Year	211.156	1	0.192	.665
PTAKSS Total × Year	250.484	1	0.526	.475
Error	476.137	24		

The PTAKSS total scores for the 2 years combined increased from pretest to posttest by 25% but the standard deviation was reduced by 53% (Table 8). Participants had a statistically significant gain and were more consistent with each other in their PTAKSS total scores at posttest when compared to the pretest at the beginning of class.

Table 8. Play Therapy Attitudes, Knowledge and Skills Survey descriptive statistics

Year	Pretest			Posttest		
	N	*M*	*SD*	*N*	*M*	*SD*
2017	15	213.00	33.90	15	260.93	19.59
2018	11	212.64	37.16	11	269.45	15.77
Both years	26	212.85	34.58	26	264.54	18.24

For the PTAKSS attitude subscale (Table 9), there was no statistically significant increase from pretest to posttest for both years combined, $F(1, 24) = 3.6$; $p = .07$ $n = 26$ (pretest: $M = 98.77$, $SD = 6.17$; posttest: $M = 100.96$, $SD = 5.60$), and the interaction of PTAKSS Attitude × Year was not significant.

Table 9. Factorial repeated-measures analysis of variance of the Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS) attitude subscale

Source	*MS*	*df*	*F*	*p*
PTAKSS attitude	55.008	1	3.573	.071
Year	31.394	1	0.567	.459
PTAKSS Attitude × Year	6.547	1	6.547	.521
Error	15.395	24		

For the PTAKSS knowledge subscale (Table 10), we found a statistically significant increase from pretest to posttest for both years combined, $F(1, 24) = 76.10$; $p < .001$, $n = 26$ (pretest: $M = 50.81$, $SD = 14.91$; posttest: $M = 74.54$, $SD = 8.59$) with a large effect size ($\eta^2 = .76$; power = 1.00). The interaction of PTAKSS Knowledge × Year was not significant.

Table 10. Factorial repeated-measures analysis of variance of the Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS) knowledge subscale

Source	*MS*	*df*	*F*	*p*
PTAKSS knowledge	7375.527	1	76.101	<0.001
Year	50.003	1	50.003	0.627
PTAKSS Knowledge × Year	75.527	1	75.527	0.386

Source	*MS*	*df*	*F*	*p*
Error	96.918	24		

Finally, for the PTAKSS skills subscale (Table 11), we found a statistically significant increase from pretest to posttest for both years combined, $F(1, 24) = 66.1$; $p < .001$, $n = 26$ (pretest: $M = 55.12$, SD=14.60; posttest: $M = 76.81$, $SD = 6.74$) with a large effect size ($\eta^2 = .73$; power = .99). The interaction of PTAKSS Skills × Year was not significant.

Table 11. Factorial repeated-measures analysis of variance of the Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS) skills subscale

Source	*MS*	*df*	*F*	*p*
PTAKSS skills	6170.184	1	66.087	<.001
Year	6.166	1	0.036	.852
PTAKSS Skills × Year	68.030	1	0.729	.402
Error	93.364	24		

After the course intervention, participants made significant gains in total scores and in two of the three subscales: knowledge and skills but not attitude. Attitude had the smallest growth while knowledge had the most significant increase (Table 12).

Table 12. Play Therapy Attitudes, Knowledge and Skills Survey (PTAKSS) descriptive statistics for all subscales

Year	Pretest			Posttest		
	N	*M*	*SD*	*N*	*M*	*SD*
PTAKSS attitude						
2017	15	97.80	7.16	15	100.60	5.30
2018	11	100.09	4.46	11	101.45	6.22
Both years	26	98.77	6.17	26	100.96	5.60
PTAKSS knowledge						
2017	15	51.00	14.71	15	72.67	9.44
2018	11	50.55	15.91	11	77.09	6.86
Both years	26	50.81	14.91	26	74.54	8.59
PTAKSS skills						
2017	15	55.80	13.97	15	75.53	6.93
2018	11	54.18	16.06	11	78.55	3.78
Both years	26	55.12	14.60	26	76.81	6.74

Qualitative Findings

To maximize the number of responses and to control for the limited number of respondents, multiple qualitative data points were used to gather as much as possible of the students' feedback on their learning in the flipped classroom environment, with a specific focus on how they thought the physical space informed their learning and themes related to generalist practice skills, as measured in the PSI, and play therapy knowledge, attitudes, and skills, as measured in the PTAKSS. The three main themes generated from the data were (a) *classroom environment*, that is, the impact on the student of engaging with the materials in the physical classroom with active learning, (b) *generalist skills*, that is, perceptions of and reflections on generalist skills in the class and subsequently with clients, and (c) *play therapy skills*, that is, perceptions of and reflection on skills specific to play therapy, particularly with clients.

Classroom environment. All 26 respondents compared the physical space to the virtual classroom and considered the impact it had on their learning experience. Subthemes related to experiential learning included (a) heightened emotional reactivity to peers due to the intensity of the experiential tasks in the physical space, (b) reflections on group dynamics, particularly the need for more group discussion/process time in the physical space, and (c) increased awareness of the relationship between the space and students with different physical abilities.

General responses to experiential learning in the physical classroom. All 26 students (i.e., all participants across both years) reported higher levels of peer interaction across the semester, and all but one student commented on appreciating the experiential time in the space as a way of interacting more deeply with course material. The outlier missed having lectures in the classroom:

> ...since we as students have to watch modules and do part of the class outside of it I wish we had possibly gotten another [section] for this course...since I specifically did not sign up for an online course and that felt like what I got.

More positive responses to the flipped classroom model included, "I liked getting to practice the techniques we learned in class...[it] was extremely helpful in developing my skills" and:

> I really enjoyed the in class "lab" work we did. It was a really great learning experience and I feel more adept in actually using some of the intervention methods and practices we learned about and discussed in class because we also got to practice engaging in some of them with each other.

Another respondent stated "it is always difficult to imagine [the activity] so I really appreciate learning exactly what to do."

Heightened emotions. The physicality of trying all the interventions with the clinical tools and supplies had a clear impact on the participants. All respondents commented on the visceral reactions they had while trying the exercises, whether they were positive or negative. Students mostly shared this in their reflection journals, recording how particular feelings came up as they experienced each exercise in the physical classroom after reading about it. Typically these were identified as (a) feelings of frustration, (b) feelings of fear, or (c) feelings of surprise related to the intensity of their emotion. As students got more into the semester, active-learning activities were scaffolded, that is, they built on prior activities in terms of complexity, particularly therapeutic complexity, or in the types of coping skills that the activity was meant to address. As the weeks progressed, lab sessions got more physically and emotionally demanding and students reported deeper and stronger reactions to the exercises. For the more intimate activities, more than half the students reported fear of sharing

something personal with the class. In reaction to struggling with the clinical materials, a student said, "...I found [puppet play] to be particularly difficult. As a kid, I was creative, but as an adult, I notice I've lost those skills. I really had no idea how to play. I felt extremely uncomfortable." One student stated in response to a Week 13 activity entitled "Fear in a Bowl,"

> Not knowing whether the fears were going to be read aloud or not, I felt apprehensive about sharing something so personal about myself. I felt exposed, making an extra effort to ensure anonymity: I looked around to see how others were folding their pieces of paper, and made sure mine looked similar.

Another student shared:

> When I was the client, it was overwhelming to pick the miniatures. Everything was put away [by others] chaotically, so it makes me feel out of order, out of control and not so decent. The process of creating the scene was relaxing. I felt a bit sad when it was time to end the class and I had to put the miniatures back.

Group dynamics. Comments related to having to negotiate shared space with their peers also appears as a universal theme through both years, with a particular emphasis on the presence or absence of peer collaboration and how they were confronted with group dynamics because they had to negotiate the shared space. One particular activity, in which the students had to organize themselves in order throughout the room without speaking, provoked strong responses in two-thirds of the reflection journals:

> I had never engaged in an activity like the Zoom exercise, and while I enjoyed it, I also felt like it was fairly anxiety inducing in me at first. I enjoy doing group work and working together, and I think because I am someone who gets overwhelmed and anxious with activities like this, having the group as a support system was nice.

Creating masks also provoked a lot of responses. One respondent reflected, "while everyone was mostly focused on their own work, there were lots of conversations happening across the tables...comparing our work to each other's, exchanging ideas, doubts and insecurities. It was in a way validating."

Increased awareness of students with mobility differences. A few respondents shared how actual experiencing the activities made them aware of the students with mobility challenges as they had to negotiate the space in a different way. Nearly one-fourth of the responses reflected an increased awareness about the adaptability of exercises for those with different physical abilities. One student wrote, "The activity however, may have been restricting to people that have physical limitations that make it difficult to manage the room" while another student stated:

> I noticed one of our classmates had some physical challenges in finishing her paper chain by themselves due to their physical condition. It led me to wonder how children with disabilities would do in group therapy or with art therapy and I don't yet have an answer.

Generalist skills. Support, insight, therapeutic, and case management skills (PSI). The PSI is designed to measure the social worker's therapeutic support and case management skills. All of the action-based activities that took place in real time focused on teaching therapeutic and/or support

skills. Case management skills relating to play, group, and family therapy were mostly reviewed in the course readings and lecture videos and were touched upon in the classroom when reviewing the directives for the activity and through the adaptation of the exercises to various settings such as schools, homes, and hospitals. All respondents who completed the qualitative measures reported increased confidence with therapeutic interventions and both personal/client coping nearly every week, but case management skills were mentioned only minimally. One student commented on the emotional skills being strengthened: "...today's class showed the value in experiential learning. I connected with the activity in a different way than had...just been demonstrated. My understanding was deeper and I was able to come up with process questions." Another student commented on the concrete experience, "I think this exercise helped shape my practice because it helped me to tolerate some of the messiness that occurs in art and play therapy."

Over half the respondents across both years commented multiple times throughout the semester specifically on how the activity helped them cope with their own stress as well as how it might help a client cope better with challenges. Students particularly identified the drawing activities, which were embedded in over half of the experiential lab activities, as "cathartic," "soothing," and "peaceful."

Play therapy skills (PTAKSS). Qualitative themes supported the findings of improved skills in and knowledge of play therapy throughout this class. Students completed 9 weeks of experiential play therapy labs in this particular course, and respondents universally reported personal improvement with skills related to play therapy and improved confidence in using play therapy skills in practice. Over half reported trying at least one activity they had learned during the experiential class times and all but one reported success with trying it after the more in-depth training. One respondent wrote:

> This class is by far the best class I have taken... thus far—I have learnt so many applicable skills that I can use in practice, and I feel as if my social worker skills and therapist skills have developed greatly. I have a renewed sense of confidence in working with children and families, which is what I needed at this stage in my career.

Discussion

Quantitative Findings

Overall, students significantly increased in skills measured by the PSI and the PTAKSS, a finding that was additionally supported by the qualitative data from reflection journals, email interviews, and course evaluations. In the flipped classroom section, all participants demonstrated more consistent practice skills between participants and significant improvement in skills, particularly in specific clinical skills. All four PSI skill subscales (support, insight, therapeutic, and case management) significantly increased after the course intervention. Two of three PTAKSS subscales (knowledge and skills) significantly increased after the course intervention (attitude did not). It may be that students already had the appropriate attitude for play therapy, since the attitude score was very high to start. In addition, there may have been a selection bias: Given that all of the participants voluntarily selected a course that focused on play therapy, they may have been predisposed to have a positive attitude. A comparison group with students not taking a play therapy course would help reveal overall differences specific to students' attitudes.

Experience of the Instructor

Designing and implementing this course highlighted the importance of considering physical space when implementing active-learning courses, even those that have roots in the virtual realm. The instructor experienced two particular challenges: increased workload related to course preparation, particularly space preparation, and management issues related to the physical aspect of the space in the brick-and-mortar classroom. While students and faculty adjusted to the virtual learning within 2 weeks and students were regularly able to track due dates, download and watch videos, and complete quizzes and reflection journals, in the first year the brick-and-mortar classroom proved to be the biggest challenge. Although the instructor had requested tables for the lab portion of the class, which had a large amount of supplies and a high level of interactive activities, the classroom assigned possessed only individual desks, which made group lab work and the hands-on activities significantly more challenging. Other obstacles included lack of storage space and the weekly scheduling of a student-run lunchtime meeting in the same space that ran over anywhere from 5 to 20 min per week, making preclass preparation of the activities virtually impossible. Unexpectedly, in the first iteration of the course, it was the digital classroom that ran the most smoothly. The weekly difficulty of having a space that did not comfortably accommodate a group, was not available for sufficient preparation time, and did not have the right desks, tables, and chairs highlighted the critical importance physical space plays in the success of a flipped classroom. Without an appropriate physical space, it is difficult to fully engage in active learning, which can impair overall course outcomes. In the second iteration of the course, the assigned classroom was adjusted so that it included long tables, which suited the format in a greatly improved fashion. The change resulted in fewer comments critiquing the space in the journals and course evaluations.

There was also a learning curve in how to ground the time in the brick-and-mortar classroom so that there was enough time for activity directions, the activity itself, and post-activity discussion. Although this improved in the second iteration of the course, the ideal balance of this tripart experience was not yet achieved. This instructor's experience was also that the initial time invested in implementing the course in the flipped classroom was higher than in a traditional setting.

During the 2 years this section was taught, there were multiple students with identified physical and learning differences. Three students in particular indicated that the virtual classroom allowed them to access information in ways that supported their learning. One student appreciated the ability to create art and submit assignments online and to delay watching videos if her illness was active. Another student, who identified as deaf, appreciated having the videos captioned and having the option to engage with the materials in real time, making it possible to check for learning and synthesis of course materials with the instructor and peers during the exercises. The third student appreciated being able to work with the instructor to redesign the space weekly based on the experiential activity, which required preclass meetings and preparations in order for the actual class time to run smoothly and accommodate mobility needs. Further research into how physical space in flipped classrooms can support and strengthen students with identified disabilities and different learning needs is vital to fostering inclusive learning environments.

Limitations

Limitations of this case study include the lack of a control group or comparison class and the small sample size, which, due to low enrollments, is a common limitation when conducting applied research in clinical classrooms. The small sample size might also be attributable to the amount of work required for this course. This research would be significantly strengthened by using a comparison group or a control group class to explore several differences, such as between traditional and flipped classrooms

or the impact of different professors. The intervention might also be used to explore the knowledge level of students in a nonclinical course.

Conclusion

This study highlights that one of the key advantages of the flipped classroom, as evidenced by Sun (2017), is the "rich interaction" that occurs between students when they are in the physical classroom space. Our data support Sun's claim that this deepened interaction has valuable outcomes, strengthening both generalist and advanced clinical practice skills. This study also highlights the need to do a thorough analysis of the physical space available to assess how it may need to be adjusted and adapted and the importance of doing this in the planning and implementation phases of a flipped course. Working with the facilities team and classroom scheduling department to secure a brick-and-mortar classroom to support flipped classroom learning objectives of small-group learning, activity-based interaction, and actual "lab" work relevant to the course objectives is critical to the success of the class. This study also demonstrates support for the idea that the flipped classroom format can be highly effective for teaching advanced clinical skills but may not be as effective for teaching general "soft skills" or case management. Suggestions for further research include deepening the understanding of the relationship between physical and virtual space when a flipped classroom design is used; determining the optimal amount of time to spend in an active-learning classroom, with a focus on how this time will be most effectively used; and investigating the longitudinal outcomes for this type of learning versus fully online coursework. Recognizing that the lack of a comparison group was a limitation of this study, we recommend future studies that feature comparison groups and flipped classroom studies that focus exclusively on the relationship between physical space and the virtual learning environment.

References

Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for research. *Higher Education Research and Development, 34*, 1–14.

Aşiksoy, G., & Özdamli, F. (2016). Flipped classroom adapted to the ARCS model of motivation and applied to a physics course. *Eurasia Journal of Mathematics, Science and Technology, 12*, 1589–1603.

Baepler, P., Walker, J., & Driessen, M. (2014). It's not about seat time: Blending, flipping and efficiency in active learning classrooms. *Computers and Education, 78*, 227–236.

Bishop, J., & Verleger, M. (2013). The flipped classroom: A survey of the research. *ASEE PEER*. Retrieved from https://peer.asee.org/22585

Blair, E., Maharaj, C., & Primus, C. (2016). Performance and perception in the flipped classroom. *Education and Information Technologies, 21*, 1465–1482. http://doi.org/10.1007/s10639-0159393-5

Brame, C. (2013). *Flipping the classroom*. Vanderbilt University Center for Teaching. Retrieved from http://cft.vanderbilt.edu.ezproxy.cul.columbia.edu/guidessub-pages/flipping-theclassroom

Bratton, S., Landreth, G., & Homeyer, L. (1993). An intensive three day play therapy supervision/training model. *International Journal of Play Therapy, 2,* 61–79. doi:10.1037/h0089366

Carnes-Holt, K. L., & Weatherford, J. (2013). Intensive play therapy training for rural mental health counselors. *The Family Journal*, *21*, 80–86. doi:10.1177/1066480712456825

Chen, Y., Wang, Y., Kinshuk, & Chen, N.-S. (2014). Is FLIP enough? Or should we use the FLIPPED model instead? *Computers & Education, 79*, 16–27.

Counselman-Carpenter, E. (2018). Efficacy of the flipped classroom to teach play therapy: A mixed-methods study. *International Journal of Play Therapy, 27*, 146–156. doi:10.1037/pla0000076

Crane, J. M., & Brown, C. J. (2003). Effectiveness of teaching play therapy attitudes and skills to undergraduate human services majors. *International Journal of Play Therapy, 12*(2), 49–65. doi:10.1037/h0088878

Creswell, J. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W., & Plano-Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Thousand Oaks, CA: Sage.

Gillette, C., Rudolph, M., Kimble, C., Rockich-Winston, N.,Smith, L., & Broedel-Zaugg, K. (2018). A meta-analysis of outcomes comparing flipped classroom and lecture. *American Journal of Pharmaceutical Education*, *82*, 5: 6898. doi:10.5688/ajpe6898

Hamden, N., McKnight, P., McKnight, K., & Arfstrom, K. M. (2013). A review of flipped learning. Retrieved from http:www.flippedlearning.org/cms/lib07/VA01923112/Centricity/Domain/41/LitReview_Flippedlearning.pdf

Hao, Y. (2016). Exploring undergraduates' perspectives and flipped learning readiness in their flipped classrooms. *Computers in Human Behavior, 59*, 82–92. http://doi.org/10.1016/j.chb.2016.01.032

Heijstra, T., & Siguroardottir, M. (2018). The flipped classroom: Does viewing the recordings matter? *Active Learning in Higher Education, 19*, 211–223.

Homeyer, L. E., & Rae, A. (1998). Impact of semester length on play therapy training. *International Journal of Play Therapy, 7,* 37–49. doi:10.1037/h0089422

Kagan, S., & Landreth, G. (2009). Short-term child-centered play therapy training with Israeli school counselors and teachers. *International Journal of Play Therapy, 18*, 207–216.

Kao, S., & Chang, J. M. (2007). A report on revising the Chinese version of play therapist attitude-knowledge-skills survey. *Psychological Testing, 54,* 121-146.

Kao, S. C., & Landreth, G. L. (1997). Evaluating the impact of child-centered play therapy training. *International Journal of Play Therapy, 2*, 1–20.

Lindo, N., Opiola, K., Ceballos, P., Chen, S., Meany-Walen, K., Cheng, Y., . . . Blalock, S. (2016). The impact of supervised filial therapy training on attitude, knowledge, and skills. *The Family Journal, 24*, 239–246. http://doi.org/10.1177/1066480716648696

McNally, B. Chipperfield, J., Dorsett, P., Del Fabbro, L., Frommolt, V, Goetz, S., . . . Rung, A. (2017). Flipped classroom experiences: Student preferences and flip strategy in a higher education context, *Higher Education, 73*, 281–298. doi:10.1007/s10734-016-0014-z

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.

Mullen, J., Luke, M. & Drewes, A. (2007). Supervision can be playful, too: play therapy techniques that enhance supervision, *International Journal of Play Therapy, 16*, 69-85.

Muro, J. H., Holliman, R. P., Blanco, P. J., & Stickley, V. K. (2015). Exploring play therapy training: An investigation on the impact of practice on attitudes, knowledge, and skills with master's level students. *International Journal of Play Therapy, 24,* 234-247.

Nordquist, J., & Laing, A. (2014). Spaces for learning—A neglected area in curriculum change and strategic educational leadership. *Medical Teacher, 36*, 555–556.

Oblinger, D. G. (Ed.). (2006). *Learning spaces* [EDUCAUSE E-book]. Retrieved from www.educause.edu/ research-and-publications/books/learning-spaces

O'Hare, T., & Collins, P. (1997). Development and validation of a scale for measuring social work practice skills. *Research on Social Work Practice, 7*, 228–238.

O'Hare, T., Tran, T. & Collins, P. (2002). Validating the internal structure of the Practice Skills Inventory. *Research on Social Work Practice, 12*, 653-668.

O'Hare, T., Collins, P., & Walsh, T. (1998). Validation of the Practice Skills Inventory with experienced clinical social workers. *Research on Social Work Practice, 8*, 552–563. doi:10.1177/104973159800800504

Pereira, J., & Smith-Adcock, S. (2013). An evaluation of a child-centered play therapy workshop for school counselors. *International Journal of Play Therapy, 22,* 129-142

Roach, T. (2014). Student perceptions toward flipped learning: New methods to increase interaction and active learning in economics. *International Review of Economics Education*, *17*, 74–84.

Sengel, E. (2016). To FLIP or not to FLIP: Comparative case study in higher education in Turkey. *Computers in Human Behavior, 64*, 547–555.

Stockert, R., & Stoica, G. A. (2018). Finding the right pedagogy and related prerequisites for a two-campus learning environment. In I. Roceanu (Ed.), *Proceedings of the 14th International Scientific Conference eLearning and Software for Education* (vol. 1, pp. 219–228). Alexandria, VA: Advanced Distributed Learning Initiative. doi:10.12753/2066-026X-018-030

Strauss, A., & Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 273–285). Thousand Oaks, CA: Sage.

Sun, Y. (2017). Flipping every student? A case study of content-based flipped language courses. *E-learning and Digital Media, 14*, 20–37.

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, *27*, 237–246. doi:10.1177/1098214005283748

Wilson, S. (2013). The flipped class: A method to address the challenges of an undergraduate statistics course. *Teaching of Psychology, 40*, 193–199.

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 60-75.
doi:10.14434/jotlt.v8i1.26747

Promoting Pedagogical Agility in Learning Spaces: Toward a Comprehensive Framework of Faculty Support and Innovation

Crystal M Ramsay
The Pennsylvania State University
cmg5@psu.edu

Jenay Robert
The Pennsylvania State University
jrr296@psu.edu

Jennifer Sparrow
The Pennsylvania State University
jls997@psu.edu

Abstract: Postsecondary instructors routinely face novel and complex challenges in physical classrooms and informal learning spaces. Instructors often bring these challenges, along with creative and aspirational solutions, to the attention of centers for teaching and learning (CFTLs). Issues span a wide range of topics including blogs, clickers, immersive experiences, active learning, learning analytics, and more. At Penn State, we embrace these challenges and seek to cocreate solutions by providing a wide net of resources and support characterized by (a) instructional technologies, (b) instructional design, (c) faculty development, and (d) research. These elements emerge as a generalizable framework that represents a dynamic research-to-practice cycle. The cycle begins with a combination of problem definition and existing research. An approach is then planned and executed according to the framework. In accord with the cyclical nature of the framework, research findings inform development of future instructional design and faculty development opportunities. These, in turn, inform future practice, and the cycle continues. In our CFTL an educational research team collaborates with an instructional design and development team to support and facilitate this research-to-practice cycle. We illustrate the practical implementation of this recursive and generalizable framework as we report on a case study of one technology-enhanced experimental classroom space. We conclude with a discussion of how the framework might inform larger efforts to integrate research with instructional technology implementation, instructional design, and faculty development.

Keywords: learning spaces, instructional design, faculty development, research.

Like many of our peer institutions, Penn State has worked across the university to provide a stellar educational experience for all students. As the university seeks to create the most impactful learning experiences possible, it leverages existing and original research to inform practice. This informed approach to educational innovations has allowed the university to adopt and adapt practices that are intended to increase student success. One area in which this research-to-practice cycle has been adopted is in technology-enhanced learning spaces.

A learning space is simply a space where learning can happen. Broadly speaking, this could be just about anywhere; a car, a diner, and the forest can be learning spaces. Learning that occurs in such spaces may, or may not, be intentional. In higher education, in contrast, learning spaces are typically those in which learning is *intended* to happen. These may be formal or informal spaces; they may be physical or virtual. Regardless, learning spaces are getting more attention, largely because there is

increased recognition that the learning environment is a critical variable in the learning process (e.g., Graetz, 2006).

It is sometimes overlooked that transforming education requires the transformation of the student learning experience. This can be achieved through the strategic use of digital tools and applications, explanatory and predictive data strategies, and new instructional technologies. At Penn State, decisions to implement potentially transformative tools and approaches are grounded in existing research and further explored through original research. Physical learning spaces can serve as incubators for the implementation and experimentation of new tools geared toward student-centered pedagogies.

The Challenge and Proposed Solution

Faculty need tools and strategies to help solve their instructional challenges and also to inspire their thinking about pedagogical innovations. They also need to feel supported in their own experimentation. At Penn State, the vision is that faculty—regardless of the content they teach, where they teach it, or the modality by which they engage with students—will be sufficiently agile to make optimal pedagogical decisions for their context. To realize this vision, three factors are foundational: space, support, and process. Previously at our institution we had no space designated for systematic exploration and experimentation. Moreover, we lacked a robust system for supporting faculty around the implications and opportunities of technology-enhanced learning spaces. Finally, we needed a process, grounded in research, to drive exploration and innovation.

To address this challenge, Penn State's center for teaching and learning (CFTL), Teaching and Learning with Technology, proposed and deployed a multifaceted approach: (a) Create a space that is equipped with instructional technologies and intentionally designed for pedagogical experimentation, (b) leverage best practices in instructional design and faculty development to provide a unique and far-reaching model of support, and (c) engage in an ongoing research-to-practice cycle to support faculty in their own scholarship of teaching explorations and to inform creation of reproducible models as we scale spaces across our institution. In this article, we begin with an elaborated description of this multi-pronged approach, follow with a report of a longitudinal exploratory case study of its application to a particular space, and conclude with an emergent framework of faculty support.

Create a Technology-Enhanced Space Designed for Experimentation

Instructional technology. The *Oxford Dictionary* defines technology as "the application of scientific knowledge for practical purposes, especially in industry." Our operational definition of *instructional technology* is similarly far-reaching and relevant to pedagogy: the application of functional tools and space to enhance the teaching and learning experience and to promote instructional goals. In our learning spaces, we consider furniture, digital displays, writable surfaces, power sources and outlets, and the flexible space itself to be instructional technologies. Importantly, our perspective is that no instructional technology is inherently valuable. Rather, it becomes valuable and desirable to the extent that it can support faculty and students in solving challenges and exploring and pursuing novel ideas. It is, therefore, our practice to provide faculty with the newest and most innovative tools. It is in intentionally experimental spaces that the viability and efficacy of these tools can then be tested. When instructional technologies are deemed to be valuable, they can then be strategically proliferated across the institution for wider use.

The Bluebox. The room selected for renovation was the only academic classroom in one of our university's science buildings. At 1,263 square feet, its capacity was 100 students (Figure 1). Seats were front facing and fixed to the floor. There was a chalkboard at the front and an area designated as a

stage by carpeted flooring and a cable for instructors to plug in a computer. A projector in the ceiling allowed instructors to project content onto two side-by-side screens at the front.

Figure 1. Classroom before renovation.

In its new incarnation, the classroom now designated the Bluebox is the same square footage, but its capacity is now 44 students (Figure 2). Variable-height tables and chairs allow for unobstructed sight lines to anywhere in the room without having to tier the floor. Furniture is also mobile so the room can be reconfigured to support collaborative and interactive instructional activities. The Bluebox also boasts a variety of writable surfaces: writable walls, magnetic whiteboards, and mobile whiteboards that can also serve as partitions if desired. The projector was replaced with wireless content-sharing capabilities for both faculty and students. A large, touch-enabled digital display replaced the screens and allows for the simultaneous sharing of both static and dynamic content. Electrical outlets and USB ports along the perimeter of the room, as well as power in the floor, provide abundant and anytime access. An adjustable metal structure was installed in the ceiling to facilitate the quick installation of new technology as it is desired for experimentation.

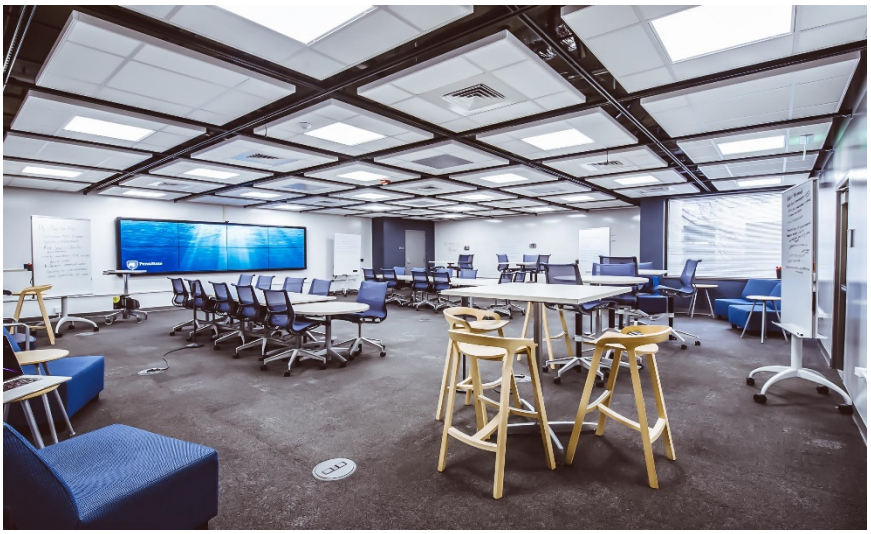

Figure 2. Classroom after renovation.

Provide a Unique Model of Support for Faculty

The ubiquity and importance of technology in higher education (e.g., Becker et al., 2017) requires an accompanying vigilance to understand and promote its effective use. This is especially true to the extent technology can promote or impede learning (e.g., Clunie, Morris, Joynes, & Pickering, 2018; Ross, Morrison, & Lowther, 2010). Therefore, merely equipping classrooms with instructional technologies is insufficient if the expectation is appropriate and successful faculty adoption and implementation. Two decades ago, Rogers (2000) argued that successful technology integration requires accompanying faculty development that is experience based, immersive, and further characterized by the inspiration for invention and responsiveness to the curiosities, concerns, and perspectives of the faculty (McKenzie, 1991, as cited in Rogers, 2000, Table 2, p. 23).

We built upon early models of support for instructors who teach in technology-enhanced active-learning classrooms such as that provided at the University of Iowa for faculty teaching in TILE (Transform, Interact, Learn, Engage) classrooms (Van Horne, Murniati, Gaffney, & Jesse, 2012) and at Indiana University where the Mosaic Active Learning Initiative supports faculty, regardless of discipline, with a "comprehensive set of services and strategies" ("IU creates Mosaic initiative," 2015). Our own model for collaborative work with faculty seamlessly integrates elements of both instructional design and faculty development in such a way that it is often impossible to determine where one ends and another begins.

Incorporating instructional design. Leveraging singular tools for narrow purposes is inefficient and results in missed opportunities for creative learning experiences for students. We endeavor to support faculty in becoming savvy and creative users of the best instructional technologies available. Supporting faculty in becoming *pedagogically agile* requires provision of job-embedded and ongoing opportunities for experimentation and feedback. We addressed this by combining the best attributes of instructional design with faculty development programming.

Instructional designers partner with faculty in experimental learning spaces to explore novel course design possibilities and the implications of the physical space for those designs. This may entail course redesign, implementation of new instructional strategies, or larger scale experimentation with hybrid instruction that bridges both the experimental physical space and an online space. Instructional design support may occur one-on-one or at a group level.

Despite current ambiguity about the specific role of instructional design in higher education (Beirne & Romanoski, 2018; Intentional Futures, 2016), the role of instructional design in our proposed support model is clear: Instructional design skills are leveraged to support faculty in whatever ways their instructional challenges require. Instructional design partnerships are indeed partnerships. Instructional designers do not seek to create pedagogical products for our faculty partners but rather to cocreate and learn *with* them. In all of our efforts we strive to support pedagogical agility. As Beach, Sorcinelli, Austin, and Rivard (2016) have noted, "Faculty development is everyone's work" (p. 7). As such, we consider instructional designers to be central to our wide-ranging system of support. Thus, we often find it difficult to distinguish instructional design from faculty development.

In their recently updated study of the higher education faculty development landscape, Beach et al. (2016) reported the top approaches that faculty developers agree are essential to support faculty. These include faculty learning communities, asynchronous web-based resources, and peer observations of teaching with feedback (Beach et al., 2016). Recognizing these approaches, we designed the following set of faculty development experiences for Bluebox faculty.

- A *tech tour:* Faculty participated in the tech tour prior to teaching in the Bluebox for the first time. Part 1 of the tour was a basic technical tutorial for using the less intuitive instructional

technology (e.g., large touch-enabled display wall). Participants left the tech tour with an assignment: Come back in a week with sample content and ideas about how to leverage this space and its affordances. A week later, the faculty cohort reconvened to share their ideas about how they planned to use the space, and they actually practiced in a modified microteaching session.

- A *faculty-facing website*: We created a website just for faculty teaching in the Bluebox. It included such information as syllabus language relevant to the space and its tools; a first-day-of-class assignment to help familiarize students with Solstice, the wireless content-sharing platform; calendar of classes and instructors scheduled in the room; and resources about active learning.
- A schedule of *check-in meetings*: Regular check-in meetings of the faculty cohort were designed as an open forum for discussing logistical and instructional successes and challenges.

Engage in an Ongoing Cycle of Research to Practice

Existing research. When faculty first share their instructional challenges and aspirations with a CFTL, the search for solutions begins by exploring and leveraging existing research. Inherent in this part of the cycle is a diagnostic assessment of the true challenge. As the problem definition is clarified, CFTLs are well positioned to translate existing research and to collaborate with faculty to imagine novel and useful applications of it to address the challenge. Sometimes this is a solution to address a unique challenge experienced by one instructor. For example, how can an instructor in a large chemistry class use technology to provide more accessible office hour opportunities for students and an overall more efficient approach for the instructor? At other times, groups of faculty face a common challenge. For example, formal and informal faculty learning communities are curious about ways to use active learning techniques in both traditional and technology-enhanced flexible learning spaces. Regardless, with existing research as a foundation, a holistic approach is crafted that includes a combination of the following: appropriate instructional technologies, instructional design and faculty development, and original research.

Original research. Research is, by definition, intentional and systematic. Learning spaces require two types of research exploration: stakeholder research and scholarly research. In the context of learning spaces, at Penn State we define stakeholder research as the systematic investigation of questions that are of interest to our institution's Office of the Physical Plant, institutional committees on physical spaces, the university registrar, and others whose interests reflect the infrastructure, financial investments, and overarching operations of the university. We use common approaches to address stakeholder questions such as administration of pre- and post-occupancy surveys, distribution of questionnaires, and engagement of focus groups. The primary foci of these types of data sources are satisfaction and efficiency. Still, findings are important, as they inform designs of future spaces.

In contrast, we define scholarly research in learning spaces as the systematic investigation of questions about pedagogy, learning, and the teacher and student experience. To address our scholarly questions, we use common instruments such as interviews and focus groups. In addition, we have created multiple new methods of collecting data to better address our scholarly research questions. These are described in detail in the case study below.

Once new learning emerges from original research, we recast it as existing research. It becomes actionable and informs pedagogical practice or space design, and the cycle begins again. Importantly, the separate components of the support model described above do not necessarily occur linearly or independently. Instead, they occur pragmatically, and often concurrently. The case study below exemplifies the process.

Methodology: A Case Study

Since the inception of the Bluebox in fall 2016, our research team has engaged in multiple projects examining the relationship between the Bluebox space (i.e., the space itself, its flexible furniture and tools, and its instructional technology) and the teaching and learning that take place there. Over time, we have accumulated data from multiple sources, including interviews and focus groups with faculty and students, photographs, documents, classroom observation tools, experience sampling, and video and audio recording. Taken together over the course of five semesters, these data have allowed us to curate a longitudinal exploratory case study (Hartley, 2004) of the Bluebox space.

Interviews. Five faculty members and one student representing four content areas engaged in one-on-one interviews in the fall of 2017 and 2018. Interviews ranged in length from 20 to 90 min. The structure of the interviews varied by semester. For fall 2017, interviews were semistructured and focused primarily on follow-ups on the Re-Capture meetings described below. For fall 2018, interviews were open-ended and prompted participants to reflect on their holistic experiences in the Bluebox over time. All interviews were transcribed verbatim, and selected quotes were lightly edited for readability.

Focus groups. Across four semesters, fall 2016, spring 2017, fall 2017, and fall 2018, Bluebox students were invited to six focus-group sessions. Questions at these sessions focused on the student experience, including engagement and impact of the space on learning.

Flashbacks. Flashbacks, a form of experience sampling, were weekly prompts that targeted faculty planning and experiences in the Bluebox (Ramsay, Guo, & Pursel, 2017). We designed them as a frequent yet unobtrusive means to encourage faculty engagement in reflective practice. Faculty responded to the prompts via text or video. A total of 272 responses from 24 faculty members were collected over three semesters, fall 2016, spring 2017, fall 2017. Selected quotes were lightly edited for grammatical correctness and readability.

Re-Captures. Faculty accessed a digital space within the Google Drawing interface to reflect on physical classroom configurations afforded by the Bluebox that helped them meet instructional goals in ways that traditional classrooms could not (Ramsay, et al., 2017). Reflection prompts were embedded within a dynamic visual representation of the Bluebox. This representation included tables, chairs, and mobile whiteboards that could be manipulated using drag and drop functionality. Once in the interface, faculty "re-captured" physical configurations of the Bluebox in response to the prompt and elaborated in a provided text space on its impact. Over three semesters, fall 2016, spring 2017, fall 2017, 19 faculty members shared 19 different configurations of the space and described the difference the configurations made to their teaching. Structured cohort check-in meetings allowed for interactive and cross-disciplinary discussions of these configurations.

Video and audio. Over two semesters, spring and fall 2018, our research team developed a novel 360º video methodology (Robert & Bekiroglu, 2019) to capture the dynamic environment of the Bluebox. We strategically placed a 360º camera and four microphones around the Bluebox to capture a 360º perspective of activity taking place. The video was later analyzed for, and with, faculty. Whereas traditional video methods force a researcher to focus on predetermined areas of interest, 360º technology has allowed our team to observe the Bluebox as a holistic active-learning environment. Three classes participated in this portion of data collection with a total of 13 class sessions being recorded. Segments of these recordings were used as prompts for an interview with one faculty member as well as an interview and a focus group with her students.

Data and Results

Reviewing our corpus of data has led to an understanding that the Bluebox is the epicenter of the overarching framework we have observed emerging in our CFTL. That is, our data indicate that the story of the Bluebox is an outstanding exemplar of educational research, instructional design and faculty development, and instructional technology, all working *in tandem* to support our faculty and students. By design, the Bluebox has been a site for both scholarly and stakeholder educational research. This case study is itself evidence of the experimental nature of the space. Our team has used the room and our collaborative relationships with the faculty who teach there to develop novel methods: Flashbacks, Re-Captures, 360° video, and more. Data from these, as well as more traditional methods, have informed a robust research agenda in the space and also helped inform faculty members' thinking about teaching and learning, thus contributing to the research-to-practice cycle described previously.

Instructional Design and Faculty Development

In addition to the programmatic instructional design and faculty development support provided to Bluebox faculty, their interaction with each other and with the space itself serves as informal instructional design and faculty development support as well. When asked about pursuing more formal modes of support, some faculty who teach in the Bluebox have reported that they are independently thinking about innovative ways to teach their classes, and many of them have participated in extensive programming in the past. For example, in a one-on-one interview [fall, 2018], Darin[1] explained:

> I come into this having spent years working with collaborators in science education…. Plus I also design and teach a bunch of courses online, so I worked with the learning designers going back years. So I guess I had pretty well developed ideas of what I wanted to do before I even got into this space. It was more like, I'm not looking for a ton of new ideas, I'm just looking for a place to implement them.

Bluebox faculty have found that meeting with our education research team and also meeting with each other through research activities have served as a mode of faculty development. In a one-on-one interview [fall, 2018], Trent talked about his relationship with one of the researchers and his engagement in various research activities:

> [The researcher] catalyzed a lot of our thinking about how to use the space. In particular, the first two semesters we were in there, she had meetings of all of the different people who were teaching in there together. And this is something I have to say I was very skeptical of from the beginning. But I learned something at every one of those [meetings].

During Re-Capture discussions, faculty reported on the utility of room configurations that were presented by their colleagues. For example, Emerson commented on a particular configuration: "Though we did not use it this semester, it is a style of activity I would love to try in future classes" [spring, 2017]. For another configuration, Graham said: "I never tried anything like this, but I find it interesting" [spring, 2017]. In this way, faculty who teach in the Bluebox have begun to form an

[1] All participant names are pseudonyms.

informal community of practice, inspiring each other's thinking about the use of the space for innovative and often research-based pedagogical approaches.

In addition to being inspired by each other, the faculty who teach in the Bluebox are inspired by the space itself. Typically, faculty find themselves reflecting on their current use of the space and wondering how they can experiment with the features of the room to make their classes more engaging. We saw significant evidence of this phenomenon in Flashback data. Brent described a situation in which he found the room in an unusual configuration and decided to try it for that day's activities [fall, 2016]:

> We tried it out and it went well. Large group conversation went well in that arrangement and we didn't have our usual small group activity for the last class so it may have been even better than the usual set up for this week.

Faculty also reported that they found inspiration in the interactive digital display in the room (Figure 3). Kristine wrote, "I'm planning to try a bit more with the display in the coming weeks" [fall, 2016]. Brent was interested in incorporating the display to promote sharing work done in small groups in larger group discussions [fall, 2016]:

> So maybe I have to rethink if there's aspects of the Solstice application that I'm not taking advantage of there…. I need to rethink the incentive for students to use the whiteboard and to use the Solstice display, because it seems right now, they're happy to just work within their [small] group and not share [with] the large group.

Figure 3. Demonstration at the display. Faculty and students concurrently share digital content.

Even beyond being motivated to change her pedagogy in the classroom, one faculty member reported that the writable surfaces in the Bluebox "made us think about how writing on the walls could be something to explore in our counseling rooms in [another building]" [Jadelyn, spring, 2017]. Finally, faculty reported that these reflective practices—being inspired by their colleagues' use of the space and by the space itself—led to tangible improvements in classroom practice. For example, Garvin reported:

> As the semester moves along, integration of the various Bluebox affordances is becoming more second nature to us as instructors and as a by-product, class has become a much more active, participatory experience. A lot less time in class is devoted towards traditional lecture. Though we did not set about to "flip" the classroom, the room lends itself to more active approaches to teaching and it is equal parts energizing and effective to take advantage of it. [spring, 2017]

Because our Flashback data indicated that faculty often gained inspiration from the space and their colleagues to modify their pedagogy, we directly asked them about instructional changes in the following Flashback prompt [spring, 2017]: "Do you plan to revise and/or add a learning activity based on your most recent experience in this space? If so, what? Why?" Multiple faculty indicated that they did indeed plan to modify their curriculum to incorporate more features of the space:

> I would like to add in an activity that involves group work, to experiment with how the moveable furniture works.… I also have not [used] the Solstice app very much with students beyond the first-day mapping activity, so I would like to use this more across the semester but haven't yet decided on a way to do so. [Graham]

> As the semester progresses, using the whiteboard for small group brainstorming followed by sharing and class discussion is becoming a bigger and bigger part of the in-class experience. I know I've mentioned it in previous responses, but having the students take advantage of the whiteboard space to demonstrate their knowledge has proven to be a far more effective (and richer) educational experience than simply lecturing for 50 minutes. The more we engage in these sorts of activities, the harder I find it to imagine teaching without them. We have some upcoming team-building and prototyping activities that I would expect will be reconsidered with the whiteboard space in mind, and some traditionally lecture-based content that I think we will revise to take better advantage of the space…. We've also enjoyed our experience using Solstice to encourage student media sharing and would like to continue to integrate that into the course moving forward. [Garvin]

> Currently we do several case studies but I would like to expand the case studies to include having the groups present their findings to the rest of the class by using the white boards and writable wall space. [Jocelyn]

> I want to revise my tutorials so they more strongly encourage students to work things out on the whiteboard space. [Terri]

Faculty tend to come to the Bluebox because they are already self-reflective practitioners who own their own instructional design. Thus, the flexible space serves as a creative canvas that inspires their thinking and facilitates their goals. Furthermore, engagement in our CFTL's research activities allows Bluebox faculty to connect with each other, generating further opportunities for informal instructional design and faculty development.

Instructional Technology

The instructional technology in the Bluebox helps faculty engage students in learning activities and meet their pedagogical goals. Faculty who teach in the Bluebox have consistently reported that one of

their pedagogical goals is to increase student engagement. In an interview [fall, 2018], Trent explained that he and his colleague had been displeased with traditional teaching spaces because it was difficult to get students engaged: "It was hard to make groups among students and have them talk to each other." Even as a self-described lecturer, Darin described the types of interactions he was seeking from his students:

> I have lots of short discussion questions, give them a minute to think-pair-share—not like a voting-style question but a share-out discussion-style question. Then we construct a lot of information together where I will pose a question and leave it up on the screen and then give them time to talk and then we'll, back and forth between us, we'll sort of construct some ideas. Then occasionally I have them do things where it's more structured: Talk in your group, come up with an idea, sketch it out and then everybody share with each other. [Interview, fall, 2018]

Specifically, our data support two conclusions: (a) Access to flexible furniture and digital tools supports student engagement, and (b) students make use of vertical writing spaces to make their thinking visible to each other and to their instructors.

Flexible furniture and digital tools. The overall flexibility of the Bluebox classroom created new opportunities for faculty and student interactions (Figure 4). Like most Bluebox faculty, Darin asserted that the furniture and tools in the room helped facilitate student engagement. In a Flashback, he shared that a visitor to his class shared his opinion:

> One thing that I noticed this week, basically because I had a visitor to my class who sat in and gave me some feedback, and he pointed out that the one thing about the furniture is it makes the students really feel at home. And so he said he felt that that really added to how comfortable they felt in participating in discussions and sharing their thoughts. And so that wasn't something that I would have noticed or considered myself, but he thought it was really something that stood out to him. [fall, 2016]

Figure 4. Multiple opportunities for faculty and student interaction. Each group is able to find a space in the room that meets its unique learning needs and to engage accordingly.

Multiple faculty reported similar experiences via Flashback responses:

> Today, the new furniture was much appreciated. I think students were glad to have some different options to sit around the room. The class environment was helpful as we transitioned between large group discussion and small group discussion several times. [Brent, fall, 2016]

> In addition to the seating flexibility of the room which greatly facilitates our ethics discussions, the graduate students have made significant use of the screen for their videos and PowerPoint presentations. I am working on getting them to incorporate more screen interactions from the "audience," although the verbal exchanges we have already had have really been effective. [Kai, fall, 2016]

> This week I had students discuss a topic in small groups, and the moveable furniture helped to facilitate these conversations. I then had students report their findings on the marker boards around the room.… I found that the groups seemed to converse longer about the topics and presented more detailed findings than other times where I have just had students present their findings orally without writing them on the board. [Graham, spring, 2017]

> The fact that the students can move around AND write on the walls has helped them to be more active participants in the class. When we sat in a traditional classroom, it was difficult to engage many of the students in the middle of the classroom. They tended to lose interest or become distracted. The number of questions and comments and the quality is higher now. [Helena, fall, 2017]

Vertical writing spaces. Faculty have overwhelmingly reported that the vertical writing spaces in the Bluebox support pedagogical goals such as increasing student engagement and learning (Figures 5 and 6). In an interview [fall, 2018], Helena provided a detailed description of an activity that she did with her students in both traditional classrooms and the Bluebox. In short, the activity involved pairs of nutrition students practicing a nutrition counseling session with each other. In a traditional classroom, students would sit in fixed seating and take notes on paper. Helena explained that there were two challenges to this setup. First, it was difficult for her to interact with her students to support their learning:

> In a traditional classroom there is no way for me to see what they're writing from far away…. I'd have to ask them to hand it to me. I'd have to really intervene in the flow in what they were doing…. I felt more intrusive.

Second, she knew that students who were clustered in the center of the classroom and not easily accessible to instructional support were quickly disengaging from the activity:

> There was a large swath of the group, no matter how the classroom is set up in a traditional classroom, all of those middle students…. They were talking about the weather. They weren't doing an assignment.

In the Bluebox, video and audio data [fall, 2018] revealed that students were positioned at the whiteboard walls to take notes for this activity. Their learning and engagement were supported in two

ways. First, Helena was able to visit every pair of students and talk to them about their work, supporting their learning and keeping them on task. Second, when students had trouble with the assignment, they were able to look at other groups' work on the vertical surfaces. This would provide them with the information they needed to continue the activity, staying engaged longer than they would have in a traditional classroom space. In an interview [fall, 2018], Olga, a student in Helena's class, confirmed that the vertical writing spaces supported her engagement with Helena as well as with her peers more than a traditional classroom would:

> I've never ever been in a classroom that we could all just actually interact with each other and then do a task like that.… The whole design of the room makes for the ability to have more interaction.… [Helena] was able to walk around and be like, "Did you get everything there?" … She could observe everything and then we could interact with each other.

Figure 5. Writable magnetic walls. Students sketch a complex process together.

Figure 6. Mobile whiteboards. Students collaboratively brainstorm and then share their work with the rest of the class.

Olga also confirmed our observation that students were looking at each other's work on the vertical spaces in an effort to move past difficulties with the exercise:

> Sometimes if we were stuck we'd look around the room like, "What the heck are other people saying?" … You would see really great—like so many people had really different, creative ideas, and they were all good.… It helped me to be able to see those as well. Once you see something, you can incorporate that into your learning style.… I think it helped my ability to see things.

> Other faculty members reported similar use of the whiteboards in their Flashback responses: We have short discussions where the students are encouraged to share out their thoughts, and we made extensive use of the white boards for this activity again. This simple measure really allows the students to share their ideas in an easy way with each other and to compare and contrast their answers. [Darin, fall, 2016]

> Each group of students could use the movable white boards to brainstorm their questions and potential solutions. Students were given sources for these topics that were available online, and they synthesized their responses based upon those [resources] coupled with in class discussions. [Jaime, fall, 2017]

The flexible furniture, digital tools, and vertical writing spaces of the Bluebox have all facilitated the goals faculty have to engage students more deeply in their classes and improve their learning. Faculty are often surprised at how something as simple as a movable whiteboard can act as a powerful engagement tool in the classroom. In this way, our research helps uncover unexpected solutions, both large and small.

Over five semesters, faculty from across disciplines moved their courses from traditional classroom spaces to the Bluebox, a technology-enhanced experimental classroom. They engaged in faculty development activities, both formal and informal, with one another and with our research and instructional design and development teams. The new insights they gained and the new instructional strategies they applied informed our research and their future practice. This overarching approach to supporting faculty compelled us to consider how to better formalize the process as a framework for comprehensive faculty support and innovation.

Emergence of a Framework

The three-part plan described above was designed to better support faculty in becoming pedagogically agile in any learning space. The Bluebox classroom served as an experimental test space and the faculty who taught in it received the net of support we described. As we documented this process in the Bluebox longitudinal case study, a framework for supporting faculty and promoting pedagogical agility emerged (Figure 7).

The process begins with instructors. They face challenges in their assigned learning spaces. Some challenges can be resolved by applying existing research, strategies, and tools. Others require creative and innovative thinking, new research methods, and a commitment to wide-ranging and ongoing support. It is our practice to make faculty challenges and aspirations our own challenges and aspirations. In support, we cast a wide net of resources: what we know from existing research, appropriate instructional technologies, a combination of instruction design and faculty development skills, programming, and opportunities, and then systematic research to understand the implications. It is not a process that ends; rather, it is a research-to-practice cycle that repeats, each time resulting

in new learning and improved experiences. As solutions are discovered and applied, new challenges emerge and the cycle is set in motion again. The cyclical nature of the process is evident in the ongoing experiences and exchanges we have had with many Bluebox faculty.

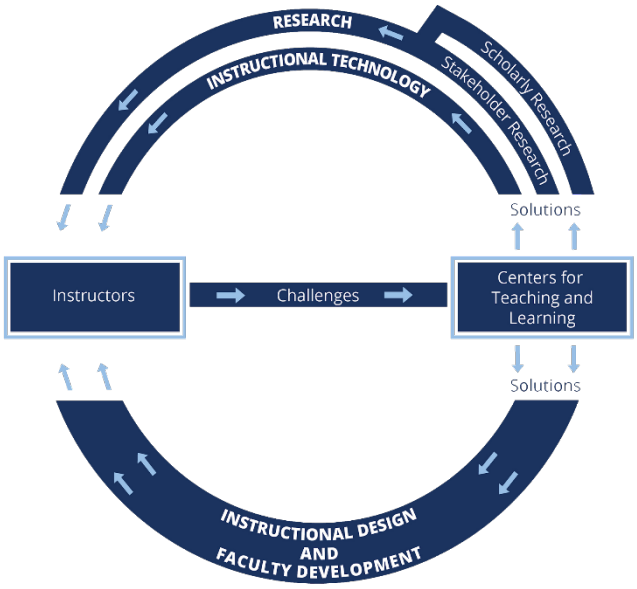

Figure 7. Framework for supporting pedagogical agility. Research, instructional technologies, and a combination of instructional design and faculty development work cyclically and in tandem to support faculty in meeting pedagogical challenges and aspirations for innovation.

Conclusions and Future Directions

We have reported on Penn State's Bluebox learning space and the application of a new framework to challenges related to physical learning spaces. The reasons for the framework's effectiveness, however, are not unique to learning spaces. Faculty were able to imagine and explore new pedagogies over time and in their own environment. The spaces and experiences designed for them were experimental yet authentic (Haras, 2018). Faculty development activities were both job embedded and ongoing (e.g., Caffarella & Zinn, 1999). The framework provided faculty support beyond typical one-time workshops (Henderson & Dancy, 2008; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007) and supported implementation of new instructional technologies that were aligned both with evidence-based and student-centered pedagogies as well as with trends across the higher education landscape (Diaz, Garrett, Moore, & Schwartz, 2009). These important attributes of effective faculty support models are characteristic of what is possible given the framework we propose. From this perspective, we believe this framework might be sufficiently generalizable to address other kinds of challenges faculty encounter (e.g., related open educational resources, learning analytics, blended learning) in ways that integrate research with instructional technology implementation, instructional design, and faculty development.

Learning spaces have a role to play in transforming higher education. When we design spaces that are intentionally experimental, we create environments where innovative and transformational teaching and learning can occur. Experimentation in intentional learning spaces, however, requires more than a novel space appointed with the latest instructional technologies; it requires a mindset and acknowledgment that teaching innovations can be messy and can fail. It requires instructional design and faculty development support; it requires scholarly behaviors such as research and reflective

practice (Borrego & Henderson, 2014). Experimental spaces, coupled with a far-reaching model of support and a culture and process of research to practice can lead to new understandings, best practices, and new classroom designs. The impact of this framework that we have witnessed in the Bluebox raises a compelling question: Should not most classrooms be experimental spaces to support pedagogical agility?

We acknowledge, however, there are challenges. A perennial issue for our institution, and most others we have encountered, is that of scale. When more flexible and experimental spaces come online, how do we scale our research efforts? How do we scale our faculty development? The framework we propose here inherently supports, to a great extent, our scaling efforts. For example, research does not have to occur in every space to inform efforts in many spaces. We endeavor to conduct deep research in one space and then quickly return our findings to faculty teaching in other similar spaces through our faculty development efforts. Another solution to scale, not surprisingly, is varied modes of faculty development: online, face-to-face, faculty learning communities, and more.

While our data help articulate a broad research-to-practice framework, our findings also chart a course for those of us who conduct research on learning spaces. For example, future research must continue to explore questions at the intersection of learning spaces and learning design. What are the creative ways we can bring more students into our most flexible learning spaces, even when course enrollments exceed seating capacities? How do we effectively scale faculty development to support increasingly more diverse courses in a wider range of spaces? There are questions at the intersection of learning spaces and instructional technology. What is the tipping point where simple tools (e.g., writeable surfaces) outweigh sophisticated technologies in terms of impact on learning?

We need to continue to do this work, and we must continue to document it through mixed methodological approaches. Communities of research and practice centered around flexible learning spaces need rich sources of evidence about the nature of teacher and learner experiences—about what promotes quality experiences and about what impedes them. The richness of qualitative approaches and the documentation of exploratory and explanatory processes can benefit us all.

Acknowledgment

We acknowledge and appreciate the photographic and graphic design support of our colleague Geoffrey King.

References

Beach, A. L., Sorcinelli, M. D., Austin, A. E., & Rivard, J. K. (2016). *Faculty development in the age of evidence*. Sterling, VA: Stylus.

Becker, S. A., Cummins, M., Davis, A., Freeman, A., Glesinger Hall, C., & Ananthanarayanan, V. (2017). *NMC horizon report: 2017 Higher education edition*. Austin, TX: The New Media Consortium. Retrieved from https://www.learntechlib.org/p/174879/

Beirne, E., & Romanoski, M. P. (2018, July). Instructional design in higher education: Defining an evolving field. In *OLC outlook: An environmental scan of the digital learning landscape*. Newburyport, MA: OLC Research Center for Digital Learning & Leadership. Retrieved from https://olc-wordpress-assets.s3.amazonaws.com/uploads/2018/07/Instructional-Design-in-Higher-Education-Defining-an-Evolving-Field.pdf

Borrego, M., & Henderson, C. (2014). Increasing the use of evidence-based teaching in STEM higher education: A comparison of eight change strategies. *Journal of Engineering Education*, *103*, 220–252.

Caffarella, R. S., & Zinn, L. F. (1999). Professional development for faculty: A conceptual framework of barriers and supports. *Innovative Higher Education*, *23*, 241–254.

Clunie, L., Morris, N. P., Joynes, V. C. T., & Pickering, J. D. (2018). How comprehensive are research studies investigating the efficacy of technology-enhanced learning resources in anatomy education? A systematic review. *Anatomical Sciences Education*, *11*, 303–319.

Diaz, V., Garrett, E. K., Moore, J., & Schwartz, C. (2009, March 28). Faculty development for the 21st century [Blog post]. Retrieved from https://er.educause.edu/articles/2009/5/faculty-development-for-the-21st-century

Graetz, K. (2006). The psychology of learning environments. In D. G. Oblinger (Ed.), *Learning spaces* [EDUCAUSE E-book] (Chapter 6). Retrieved from https://www.educause.edu/ir/library/pdf/PUB7102f.pdf

Haras, C. (2018, January 17). Faculty development as an authentic professional practice [Blog post]. Retrieved from https://www.higheredtoday.org/2018/01/17/faculty-development-authentic-professional-practice/

Hartley, J. (2004). Case study research. *Essential Guide to Qualitative Methods in Organizational Research*, *1*, 323–333.

Henderson, C., & Dancy, M. H. (2008). Physics faculty and educational researchers: Divergent expectations as barriers to the diffusion of innovations. *American Journal of Physics*, *76*, 79–91.

Intentional Futures. (2016, April). *Instructional design in higher education: A report on the role, workflow, and experience of instructional designers* [Online report]. Retrieved from https://intentionalfutures.com/wp-content/uploads/2017/08/Instructional-Design-in-Higher-Education-Report.pdf

IU creates Mosaic initiative to support active learning environments: The Mosaic Active Learning Initiative enhances learning with portable whiteboards, movable furniture, and more (2015, October 13). *Indiana University IT News and Events.* Retrieved from https://itnews.iu.edu/articles/2015/iu-creates-mosaic-initiative-to-support-active-learning-environments.php

Ramsay, Guo, X., & Pursel, B. K. (2017). Leveraging faculty reflective practice to understand active learning spaces: Flashbacks and re-captures. *Journal of Learning Spaces*, *6*, 42–53. Retrieved from http://libjournal.uncg.edu/jls/article/view/1526/1162

Robert, J.R, & Ozkan Bekiroglu, S. (2019). *Using multimodal data to construct a narrative of student engagement in an "Active Learning Classroom.* Manuscript in preparation.

Rogers, D. L. (2000). A paradigm shift: Technology integration for higher education in the new millennium. *AACE Journal*, *1*, 19–33.

Ross, S. M., Morrison, G. R., & Lowther, D. L. (2010). Educational technology research past and present: Rigor and relevance to impact school learning. *Contemporary Educational Technology*, *1*, 17–35.

Van Horne, S., Murniati, J., Gaffney, J. D. H., & Jesse, M. (2012). Promoting active learning in technology-infused TILE classrooms at the University of Iowa. *Journal of Learning Spaces*, *1*(2). Retrieved from https://libjournal.uncg.edu/jls/article/view/344

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). Reviewing the evidence on how teacher professional development affects student achievement (Issues & Answers Report, REL 2007–No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 76-86.
doi:10.14434/jotlt.v8i1.26889

Ready for Equity? A Cross-Cultural Organizational Framework to Scale Access to Learning-Ready Classrooms That Support Student Success

Teggin Summers
San Francisco State University
teggin@sfsu.edu

Maggie Beers
San Francisco State University
mbeers@sfsu.edu

Abstract: There is a national urgency in higher education to close the achievement gap and increase graduation rates for first-generation, low-income, and underrepresented minorities, and classroom environments are integral to the student learning experience. The authors propose shifting learning-space discussions away from building an historically small number of active-learning spaces toward a larger number of what they term "learning-ready classrooms," which apply universal design principles to support the multiple teaching identities, perspectives, and philosophies of faculty and the physiological, cultural, and cognitive needs of all students. Equitable access to learning-ready classrooms means they must be built at scale, so it is imperative to earn campus-wide commitment to this goal by honoring the multiple perspectives, priorities, and cultures of the academy. The authors propose a cross-cultural organizational framework, embodied in the example of a Classroom Readiness Committee charter, that unites and aligns the different organizational perspectives and efforts of its members through clearly articulated mission, vision, function, and belief statements. This case study suggests that institutions can engage and mobilize multiple stakeholders to address the common goal of providing equitable access to learning-ready classrooms as long as the goal aligns with the core values and priorities of the institution, is clearly articulated and communicated, and honors the cultures of the academy.

Keywords: accessibility, classroom, equity, organizational change, organizational culture, student success, universal design

Problem Statement: The National Urgency to Address Student Success

There is a national urgency in higher education to close the achievement gap and increase graduation rates for first-generation, low-income, and underrepresented minorities, and classroom environments are integral to the student learning experience. The proven advantages to earning a baccalaureate degree are clear, since it is the most important indicator of financial success and prepares the graduate to perceptively navigate the complex social, political, and cultural contexts of modern society as a working professional. These cognitive, social, and economic benefits are passed on to future generations and positively contribute to building healthy families, strong economies, and socially just societies (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006).

Although the majority of students graduating from high school begin postsecondary studies with the intention of completing a bachelor's degree, most are presented with multiple personal, professional, and academic challenges and distractions that can deter or delay their graduation. These disappointing time-to-completion and graduation rates call into question the current ability of

institutions of higher education to provide a sufficient number of college-educated working professionals to sustain local state and national economies (Johnson, Mejia, & Bohn, 2015).

Whereas the 1960 California master plan for higher education set forth a tripartite system of community colleges, state teaching colleges, and research universities that ensured its citizens equitable access to public postsecondary education and a path to financial stability upon completion (Holy, 1961), this access and quality of education have been threatened over recent decades by systematic reductions in funding, increased student enrollments, and changes in student demographics.

The California State University (CSU) system, situated in the master plan between the community colleges and research universities, is strategically positioned to prepare its graduates to meet the workforce demands of the state. With 23 campuses serving 500,000 students, it is the largest, most diverse university system in the country and is committed to decreasing time-to-degree and increasing graduation rates for all students. In particular, through the Student Success and Graduation Initiative (SSGI) 2025, the CSU system is determined to close the equity gap for students who are the first in their family to attend college, come from underserved communities, lack college readiness, or face economic and financial challenges (California State University, 2018).

San Francisco State University (SF State) is one of the largest CSU campuses, with 30,000 students and 1,600 faculty. An urban comprehensive university, its history harkens back to an era of political activism that led to the longest student strike in U.S. history in 1968, which produced the first and only College of Ethnic Studies in the country. SF State's primary mission focuses on social justice, with an emphasis on diversity and inclusion, and its localized SSGI plan aims to promote success for historically underrepresented populations through improved course availability, strategic advising, student support systems, first-year experiences, and faculty development programs (San Francisco State University, 2017).

We propose an additional area of improvement to support student success at SF State: coordinating campus efforts and resources to enhance the often-neglected general classrooms, to ensure instructors and students receive broad and equitable access to physical learning spaces that meet their fundamental needs. Due to chronic underfunding over the years, many of its 400 instructional spaces have suffered from deferred maintenance and their furniture and audiovisual equipment have not always kept pace with current teaching approaches. The poor condition of these rooms and the knowledge that environmental factors can have a significant impact on feelings of inclusion, belonging, and general well-being (Couper, 2019; Steinfeld & Maisel, 2012) have prompted an urgent need for cross-functional collaboration within and between units and campus cultures.

Solution: Learning-Ready Spaces Foster Faculty and Student Success

To address this shortfall in available funding to meet the needs of classrooms requiring modernization, we suggest shifting the focus of learning-space discussions away from creating an historically small number of resource-intensive active-learning spaces and toward a larger number of "learning-ready classrooms" (Beers & Summers, 2018), which apply universal design principles to support the multiple teaching identities and philosophies of faculty and the physiological, cultural, and cognitive needs of all students.

Learning-ready classrooms embrace the complexity of teacher identities, perspectives, and philosophies by providing flexibility to support a wide range of faculty throughout their careers. Teacher identity is a framework for instructors to construct their own ideas of how to be, how to act, and how to understand their work and their place in society (Olsen, 2008). Teacher identity can serve as a frame through which to examine teaching, with the understanding that teacher identity is an ongoing process that involves both a person and a context. This identity shifts as instructors advance in their professions and gain experience, and instructors can also possess, and develop, multiple

subidentities over time as they exert agency over their professional development and career choices (Sachs, 2005).

Teaching perspectives are philosophical orientations to knowledge, learning, and the role and responsibility of being a teacher, based on a teacher's unique blend of beliefs, intentions, and actions (Pratt, 2002). Pratt has identified multiple teaching perspectives, which include an emphasis on transmission, apprenticeship, development, nurturing, and promoting social reform, and has concluded that individuals highly identify with one perspective, but rarely more than two. Successful teaching and learning experiences occur when instructors' beliefs, intentions, and actions are aligned during the act of teaching. Therefore, instructors who are assigned to a classroom that has been designed with an incompatible pedagogical bias will face difficulty when aligning their actions with their beliefs, leading to an unsatisfactory experience for instructors and students alike.

Similarly, instructors hold a variety of teaching philosophies that can be categorized according to student-centered philosophies that encourage hands-on experimentation, teacher-centered philosophies that focus on the study of provable fact and development of core skills, and society-centered philosophies that are interested in social progress and responding to societal norms through beneficial stimuli (Gutek, 2014). Rather than focusing on their pedagogical differences, it is important to recognize that each of these educational philosophies has the potential to foster learning, when expertly facilitated, with the appropriate group of students in a classroom that supports its corresponding teaching activities.

The consideration of teaching identities, perspectives, and philosophies illuminates the act of teaching as a complex and nuanced activity, to which instructors bring a lifetime of personal and professional experiences. A classroom design needs to facilitate, not impede, the effective learning and development of identity that takes place among an instructor and students. The learning space should foster the multiplicity of teaching perspectives within the university, as well as the variance of student experiences and needs.

Student needs and classroom interactions are complex and should be considered from multiple angles when designing learning-ready classrooms. Students often come to institutions of higher learning with a variety of challenges ranging from food and housing insecurity to learning differences to family responsibilities. Citing a report generated by the Center for First-Generation Student Success that suggests institutions would do well to shift from focusing on whether a student is "college ready" to addressing whether the institution is "student ready," Whitford (2018) encouraged college leadership to reflect on and change policies and procedures that might inhibit student success.

This call for institutions to become student ready speaks to the argument posited in this article for institutional learning spaces to be learning ready in ways that promote well-being and inclusiveness for both the students and instructors. Learning-ready spaces that meet human cognitive, emotional, and cultural needs in ways that lead to inclusiveness and increased well-being can become environments that welcome students and facilitate teaching, the achievement of learning outcomes, and persistence toward a degree.

The eight universal design goals developed by the Center for Inclusive Design and Environmental Access at the University of Buffalo provide a useful framework with which to begin to address the cognitive, emotional, and cultural needs of the diverse students in learning-ready classrooms. Building on the concept of universal design, first introduced by architect Ronal Mace (North Carolina State University Center for Universal Design, 1997), the eight universal design goals embrace the act of intentional environmental design for diversity as a form of social justice. The first four goals (body fit, comfort, awareness, and understanding) are related to human performance, and the last three goals (social integration, personalization, and cultural appropriateness) address social participation outcomes. The fifth goal (wellness) bridges the two dimensions (Steinfeld & Maisel, 2012).

The troubling notion that good design is only available to those who can afford it prompted the development of these goals and the encouragement that they be used to support access to education, as well as other social resources, for groups that have been historically excluded from full participation. To support diversity and inclusion, the learning-ready classroom applies the eight universal design goals in the following ways:

1. *Body fit.* Classroom desks support left- and right-handed users, accommodate a wide a range of body sizes and abilities, and include additional tables that can be raised and lowered to the appropriate height;
2. *Comfort.* Desks, tables, and chairs are on wheels so they can be easily moved and require less than 5 pounds of pressure to raise or lower;
3. *Awareness.* Phones are provided in each classroom, and contact information and instructions indicate how to get support for technical, facility, or security issues;
4. *Understanding.* Audiovisual controls are intuitive and consistent across classrooms, and instructors can preview classroom setups prior to using them;
5. *Wellness.* Furniture is ergonomic, aesthetics are clean, colors span warm and cool tones, and air, light, and temperature levels are easily controlled;
6. *Social integration.* Furniture and room layout support good-quality communication by allowing for appropriate social interaction distances to maintain a sense of respect and dignity, whether working individually, in groups, or in a lecture setting;
7. *Personalization.* Individual desks with wheels, movable tabletops, and space for personal belongings let students enjoy a sense of personal space, place themselves in different parts of the room, and determine social distance, based on individual preference;
8. *Cultural appropriateness.* Natural elements, such as wood, images from nature, and views of the outside world reinforce shared cultural values across humanity; and universally accessible furniture, technology, and aesthetic elements that welcome and support positive and productive social interactions among diverse individuals, regardless of ability, cultural identity, educational experience, or socioeconomic level, contribute to feelings of inclusion and belonging.

Although the active-learning spaces that have become so popular in recent years typically support multiple teaching approaches and address many of these student needs, often because they invest a great deal of human and material resources in ensuring the success of those using them, there is often a gap between the vast majority of general-purpose classrooms and the handful of innovative active-learning spaces on most campuses. The large number of outdated general-purpose classrooms that exist on an underresourced campus, such as the one in this case study, warrant attention since their design and condition often neglect the cognitive, emotional, and cultural needs of the diverse group of students the campus serves.

Figure 1. Learning-Ready Classroom Prototype Side-by-side photos show the same classroom prior to renovation and in its completed state.

Strategy: Engaging and Aligning the Six Cultures of the Academy

Equitable access to learning-ready classrooms means they must be built at scale, so it is imperative to earn campus-wide commitment to this goal by honoring the multiple perspectives and priorities of all members of the institution to align efforts and resources. Bergquist (1992) and Bergquist and Pawlak (2008) provided a valuable framework for understanding academic culture, enabling institutions to recognize the multiplicity of identities within higher education and embrace this variety of constituent values when enacting organizational development. They identified six cultures (collegial, managerial, developmental, advocacy, tangible, and virtual) that constitute the context of higher education. Each culture is defined by the beliefs, work processes, and language that its members share.

These cultures and one's membership within are fluid, in that differences can occur both within and across the cultures. However, each culture has emerged from the need to define itself in direct contrast to its natural counterpart. For example, the collegial culture highly values faculty autonomy while the managerial culture favors identification and achievement of institutional outcomes; the advocacy culture argues for free and equitable access to opportunities and resources while the developmental culture values and expects continuous personal and professional improvement; and the tangible culture primarily values face-to-face exchanges in a physical space while the virtual culture seeks flexible, open, and collaborative educational environments and distributed access to global learning networks. The learning-ready classroom supports the ideals of each of the six cultures, and the creation of these classrooms enables each culture to achieve its expected outcomes within its institutional role, although these outcomes may at times appear to be in opposition.

Collegial and Managerial Cultures

The collegial culture favors faculty autonomy and academic freedom, and it sees the role of the academy to be the creation and dissemination of knowledge, so the learning-ready classroom provides flexible and mobile furniture, expansive writing surfaces, and intuitive audiovisual systems to allow the faculty members to align their teaching beliefs, intentions, and actions with their individual teaching perspective. The managerial culture focuses on organizing, implementing, and measuring outcomes with the goal of enabling students to develop the skills and knowledge they need to become successful citizens, so the learning-ready classroom is a fiscally responsible, long-term investment to

support student success and provide maximum seating capacity to maintain enrollments; it is efficiently scheduled and maintained to support a variety of activities.

Developmental and Advocacy Cultures

The developmental culture values openness and service to others and promotes cognitive, affective, and behavioral growth for students, faculty, and staff, so the learning-ready classroom provides an environment that supports experimentation and innovation, within the individual's zone of proximal development (Vygotsky, 1978). The advocacy culture ensures multiple constituencies are represented in decision making and promotes equitable access to beneficial opportunities and resources, so the learning-ready classroom is scalable to ensure broad availability, universally accessible to include people with disabilities, and pedagogically agnostic to support the multiple teaching perspectives and philosophies of the instructors.

Virtual and Tangible Cultures

The tangible culture highly values the unique traditions of the institution and considers in-person exchanges fundamental to the educational experience, so the learning-ready classroom applies environmental design factors that affect student and faculty well-being, such as good air quality, ergonomic furniture, visual aesthetics, connection to nature, soothing colors, and adjustable lighting (Couper, 2019). The virtual culture values open, collaborative, and flexible educational systems, so the learning-ready classroom supports access to distributed resources and connected learning with global learning networks by providing wireless network access, high-lumen projectors or displays, and inputs for multiple personal devices.

Intercultural Exchange

When working within the academy, it is important to approach strategic decision-making processes with an intentional curiosity to learn and to avoid suppressing or ignoring the different perspectives represented by members of each culture. In its best form, this intercultural exchange can bring about greater understanding of each individual's perspective and interests, and it can ultimately foster greater empathy, appreciation, and alignment toward common ideals.

Case Study: Establishing Mission, Vision, Functions, and Beliefs at Scale

We propose a cross-cultural organizational framework for creating learning-ready classrooms at scale, embodied in the example of a Classroom Readiness Committee (CRC) charter that unites and aligns the different organizational perspectives of its members through clearly articulated mission, vision, function, and belief statements (San Francisco State University, 2018). The CRC is a cross-campus partnership that spans three presidential cabinet divisions. In its previous iteration, this entity was named the Classroom *Renovation* Committee and met infrequently each year to distribute a modest budget to upgrade general classrooms. The members represented the interests of academic affairs, classroom scheduling, facilities and maintenance, audiovisual design and installation, finance and procurement, and universal access for people with disabilities, and its members tended to operate within their own scope of responsibility. Its previous focus on classroom renovation meant that only one or two classrooms were supported each year, which affected the teaching and learning experience of only a small percentage of our faculty and students.

The committee has since replaced the word "renovation" with "readiness" and shifted its focus to maximizing impact through the development of a larger number of learning-ready classrooms, based on evidence-based design principles. The CRC has revised our mission to "promote faculty and student success by equipping and enhancing learning-ready classrooms that support the multiple teaching identities and philosophies of faculty and the physiological, cultural, and cognitive needs of all students" (San Francisco State University, 2018). The focus on building the more attainable learning-ready classrooms at scale has energized committee members, and this alignment with institutional priorities serves as an example of how to effect organizational change by addressing the needs of the six cultures of the academy.

To honor the perspectives of the six cultures of the academy, the CRC first agreed to a common definition of learning-ready classrooms and then articulated the mission, vision, functions, and beliefs of the committee in support of that definition. Its core values target the university's strategic commitment to student success by supporting teaching, learning, equity, and social justice, as well as emphasizing student learning needs, faculty success, and the symbiotic relationship between space, technology, and pedagogy.

To gain campus-wide relevance, the CRC leveraged the catalytic spark that technology initiatives can produce to positively contribute to campus priorities, in particular the student-success initiative. To this aim, the committee developed a charter that articulates the shared mission, which is why the CRC exists; the vision, which is what the CRC strives to achieve; the functions, which describe the activities the CRC engages in; and the beliefs, which highlight the core values that guide and inform the CRC's efforts.

The CRC Charter

Mission: We exist to…

> Promote faculty and student success by equipping and enhancing learning-ready classrooms that support the multiple teaching identities and philosophies of faculty and the physiological, cultural, and cognitive needs of all students.

Vision: We strive to…

- Apply Universal Design principles to ensure classroom equipment, facilities, and furniture are intuitive, ergonomic, and universally accessible;
- Manage campus resources responsibly by ensuring equipment, facilities and furniture choices are affordable, durable, sustainable, and space efficient;
- Apply evidence-based principles to design flexible classrooms that support a variety of effective and inclusive pedagogical practices; and
- Honor the human factors that contribute to a sense of belonging and well-being by ensuring the classroom interior is comfortable, aesthetically pleasing, and culturally sensitive.

Functions: We engage in activities to…

- Develop campus standards for equipment, facilities and furniture that uphold the mission and vision of the university;
- Prioritize campus resources to provide the most positive impact on teaching and learning conditions within the centrally scheduled classroom inventory;

- Collaborate across administrative divisions to achieve the mission and vision of the university;
- Identify products and suppliers that meet the campus standards and effectively manage these relationships;
- Consult and partner with academic constituents to design, equip, and enhance discipline-specific classrooms.

Beliefs: We are guided by the shared beliefs that…

- The University mission and commitment to teaching, learning, equity and social justice can be supported through broad access to learning-ready classrooms that promote faculty and student success;
- Students are more ready to learn when the learning environment meets their human needs; and
- Faculty are more successful when they are able to engage with their students in a learning environment that supports their pedagogical and disciplinary needs.

Technology

A core responsibility of the CRC is to make informed decisions with respect to technologies that contribute to the student and faculty experience, including audiovisual equipment, network connectivity, lighting controls, and air systems. Bergquist and Pawlak (2008) indicated that technology can be a catalyst for organizational change, since new applications of technology change the way in which campus constituents work in and relate to the world around them.

Technology is a ubiquitous component of the everyday work and social lives of nearly every member of the institution, so each campus user is a vested stakeholder with personal beliefs about its use and value. However, technology is also its own discipline and culture, and campus technology teams share their own technical language, work processes, and assumptions about how best to implement and support technology for the campus. Technology initiatives can be the nexus of change when leaders seek not only to understand but also to appreciate and honor the perspectives and values of the cultures that interdependently create the academy.

Proof-of-Concept: Developing Learning-Ready Classroom Prototypes

Preliminary observations suggest that institutions can engage and mobilize multiple stakeholders toward the common goal of providing equitable access to learning-ready classrooms as long as the goal aligns with the core values and priorities of the institution, is clearly articulated and communicated, and honors the perspectives of the six cultures of the academy. While multiple forms of technology, including lighting, audiovisual, and network technologies, have provided the impetus for change in the approach to classroom design and equipment, ultimately the CRC addresses the needs and priorities of all of the cultures of the academy to further the development of learning-ready classrooms. The CRC has worked to develop campus standards for equipment, facilities, and furniture that uphold the mission of the university. The CRC has developed a series of learning-ready classroom prototypes, including a baseline general classroom, a discipline-specific classroom, and a video-conference-enabled distance education classroom, all of which employ the newly established campus standards and can be developed at scale. These classrooms, as well as subsequent spaces that build on these prototypes, enact the vision and functions of the CRC charter, which is to ensure universal

accessibility, sustainability, evidence-based support for teaching and learning, and a sense of belonging and well-being among its students and faculty.

For our prototype classroom, we included light paint colors on the walls, with a blue-gray accent wall at the front of the room to provide students with a focal point that minimizes glare, increases visual contrast, and reduces distractions. This also adds to the aesthetics in the room, creating a clean, modern, and minimalist feeling. The finishes of the chairs are also coordinated with the wall colors. Additionally, when possible, we selected wood finishes and natural colors for tables and additional furnishings. Aesthetic components that embody the natural world contribute to a space where people from all backgrounds can connect, which supports cultural inclusivity. A clear line of sight out of the window further connects students to the natural world, enables students to refocus by exercising the depth of field in their eyesight, and provides natural light, which promotes a sense of well-being within the student. Moreover, having furniture that can be moved to suit the needs of the students and faculty provides the potential for a more student-centered layout and pedagogical approach, helps welcome students, and contributes to cultural inclusion. The student-centered emphasis of moveable furniture promotes cultural inclusion by indicating the value placed on student comfort, communication, and collaboration, which may also foreground the cultural identities and experiences students bring with them into the classroom. Including inclusive images, such as murals emphasizing diverse perspectives, is foundational for fostering cultural inclusion within the learning space. Additionally, natural art provides representations that can promote connections across cultures and backgrounds.

The learning-ready classroom also demonstrates responsibility in terms of representing choices that are affordable, durable, sustainable, and space efficient. It uses light-harvesting fixtures to save on energy costs, reduce impact on the environment, and replicate natural lighting. We also researched a variety of chairs, tables, desks, and teaching stations to identify options that were mobile, cost efficient, and comfortable. Additionally, the chairs and desks needed to be able to provide flexibility while also maintaining a small footprint to accommodate larger class sizes. We were successful in finding a swivel chair, flip table, self-contained student desk, student table compliant with the Americans with Disabilities Act (ADA), and teacher station that met all of our requirements; however, we continue to work with vendors to discuss ways to increase the comfort, functionality, and price points so they can be affordable for all levels of society.

To serve the multiple teaching identities and philosophies of our instructors, the furniture is flexible and mobile so the same room can enable lecture, group, and seminar teaching styles as desired throughout the semester. The furniture and equipment are ADA compliant to support the physical needs of the instructor, since the teaching table and stool are height adjustable and the audiovisual controls are intuitive and universally accessible. A phone is within easy reach to request technical support at any time throughout the day.

Where faculty are concerned, it is important to acknowledge the biases of the people designing the spaces, developing the classrooms, and providing potential faculty professional development workshops on the use of these spaces. The authors consider our own backgrounds that lean heavily toward constructivist pedagogical approaches. We may be tempted to design and develop classrooms based on our own experiences with teaching and considerations of the effectiveness of constructivist pedagogy; however, our goal in creating learning-ready spaces is to design environments that foster success for students and faculty, and faculty come from a variety of pedagogical backgrounds, as well as disciplines, that lend themselves to a range of teaching approaches. These values relate to the six cultures of the academy, and much of the success of the CRC is connected to its inclusion of many cultures, creating a positive environment for collaboration and development for the University.

Discussion: The Future of Learning-Ready Classrooms

This case study sets forth an argument for institutions to focus campus resources on a coordinated effort to develop what we have called learning-ready spaces. As outlined in these pages, the standards and principles of a learning-ready space are informed by critical theories of equity, inclusion, access, universal design, teacher identity, teaching perspectives, and educational philosophies. To ensure broad availability of these classrooms, we have proposed a cultural framework for organizational change that honors and addresses the perspectives, priorities, and needs of all members of the institution, as defined by Bergquist and Pawlak's (2008) six cultures of the academy.

A strong governance structure, as outlined in the clearly articulated and agreed upon mission, vision, functions, and beliefs in the CRC charter, has enabled wider communication of the organizational impact that this cross-functional body can effect if provided appropriate resources and authority. As the CRC continues to develop and scale learning-ready classrooms on campus, it maintains the acknowledgment of the role technology plays as a catalyst for organizational development and change. In the design of learning-ready classrooms, every useful element of the classroom has been incorporated into the high-profile discussion that technology can command, ranging from the high-tech wireless network access, audiovisual displays, and Web-conferencing capabilities, to the mid-tech lighting fixtures, air systems, and user input controls, to the low-tech furniture, whiteboards, and window blinds. This has allowed every individual on the committee to contribute specialized expertise to the development of standards and has empowered each one to advocate for the adherence to these standards from the positionality of their unique roles on campus.

The acknowledgment of the national need to close the achievement gap and increase graduation rates for first-generation, low-income, and underrepresented minorities, as addressed by the CSU system's SSGI 2025, ultimately calls for organizational change in varying and nuanced ways across different institutions. Our institution is making progress toward providing equitable access to learning-ready classrooms by working toward a common goal and honoring the six cultures of the academy.

We also see a larger goal of making learning-ready classrooms more feasible at scale and at additional institutions. To this purpose, we implore our industry partners to provide universally accessible, flexible, and affordable furniture and audiovisual systems. Affordability is a crucial factor in the ability to meet the human needs of faculty and students, at all levels of society, and the furniture and technology industry has a responsibility to meet the needs of their stakeholders. Moreover, we call on campuses to strategically align themselves with the goal of broad and equitable access to learning spaces to support the success of students and faculty. In addition to continuing to create specifically focused active-learning spaces, it is imperative to consider the ways in which broad access to learning-ready spaces can have a significant impact on the success of all students, especially those who have been historically underserved.

References

Beers, M. & Summers, T. (2018, May-June). Educational equity and the classroom: Designing learning-ready Spaces for all students. *EDUCAUSE Review, 53(3)*, 54-55.

Bergquist, W.H. (1992). *The four cultures of the academy: Insights and strategies for improving leadership in collegiate organizations*. San Francisco, CA: Jossey Bass.

Bergquist, W. H., & Pawlak, K. (2008). *Engaging the six cultures of the academy*. San Francisco, CA: Jossey Bass.

California State University. (2018). *Redefining historically underserved students in the CSU: Moving beyond race and economic status to close equity gaps*. Retrieved from

http://www.dashboard.csuprojects.org/rethinkingthegap/Historically-Underserved-Student-Factor-Model.pdf

Couper, L. (2019). *Student success in the classroom: Environmental factors that affect well-being* (Unpublished master's thesis). San Francisco State University, San Francisco, CA.

Gutek, G. L. (2014). *Philosophical, ideological, and theoretical perspectives on education* (2nd ed.) Boston, MA: Pearson.

Holy, T. (1961). California's master plan for higher education, 1960-1975: A factual presentation of an important development. *The Journal of Higher Education, 32*(1), 9-16.

Johnson, H., Mejia, M. C., & Bohn, S. (2015, October). Will California run out of college graduates? (Public Policy Institute of California report). Retrieved from https://www.ppic.org/publication/will-california-run-out-of-college-graduates/

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). What matters to student success: A review of the literature (Commissioned Report for the National Symposium on Postsecondary Student Success). Retrieved from https://nces.ed.gov/npec/pdf/Kuh_Team_Report.pdf

North Carolina State University Center for Universal Design. (1997). The principles of universal design (Version 2.0). Retrieved from https://projects.ncsu.edu/design/cud/about_ud/udprinciplestext.htm

Olsen, B. (2008). How reasons for entry into the profession illuminate teacher identity development. *Teacher Education Quarterly, 35*(3).

Pratt, D. D. (2002). Good teaching: One size fits all? *New Directions for Adult and Continuing Education, 93* (pp.5-16).

Sachs, J. (2005). Teacher education and the development of professional identity: Learning to be a teacher. In P.M. Denicolo, & M. Kompf (Eds.), *Connecting Policy and Practice: Challenges for Teaching and Learning in Schools and Universities* (pp. 5-21). London: Routledge, Taylor and Francis Group.

San Francisco State University. (2017, April). Student success plan. Retrieved from https://sfsu.app.box.com/s/p9rzht21p5i7xfsbnxv94maopm7dax4a

San Francisco State University. (2018). *Classroom readiness committee charter*. San Francisco, CA: Author.

Steinfeld, E., & Maisel, J. (2012). *Universal design: Creating inclusive environments*. Hoboken, NJ: Wiley.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Whitford, E. (2018, October). Maximizing student success for first-gen college students. *Inside Higher Ed*. Retrieved from https://www.insidehighered.com/news/2018/10/04/institutional-change-required-better-serve-first-generation-students-report-finds

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 87-98.
doi:10.14434/jotlt.v8i1.26793

Reframing Writing Instruction in Physical Learning Environments: Making Connections Between Digital and Nondigital Technologies

André C. Buchenot
IUPUI
buchenot@iupui.edu

Tiffany A. Roman
Kennesaw State University
troman5@kennesaw.edu

Abstract: Physical learning environments offer many affordances that one can choose from when designing instruction. For courses where student writing is central to course learning outcomes, a challenge exists in that innovative digital technologies may take precedence over nondigital tools, such as paper-based student writing. We argue that treating student writing as a technology can increase opportunities for active learning within physical learning environments. In this article, we describe an approach to writing instruction that builds intentional connections between paper-based texts and digital technologies to increase opportunities for active learning. We explain the rationale for the design decisions in an introductory composition course taught in a technology-enhanced, Active Learning Classroom through a design case model. Classroom applications relevant to any course in which student writing is a central learning activity are discussed.

Keywords: learning environments, active learning, student writing, course design, design case, pedagogy.

In this article, we describe an approach to writing instruction that builds intentional connections between digital technologies and nondigital technologies with a focus on the physical learning environment in which the instruction takes place. The technologies discussed include not only innovative digital tools but also familiar resources whose technological character might be obscured by routinized use. In particular, we are interested in paper-based student writing. We argue that treating paper-based student writing and other documents as technologies draws attention to their material affordances and links them with more visible, digital technologies. Further we argue that attending to these affordances and making connections with digital technologies creates opportunities for active learning across physical learning environments. In the first-year composition course examined, this approach was marshaled to help students engage in and learn about the labor of reading and writing—the physical and mental effort of understanding and composing texts—in a sustained, reflective way. In other disciplines, this approach might be adapted to serve a range of learning outcomes, including deepening content knowledge and focusing in-class discussion.

Our analysis of the design choices animating this approach to treating paper documents as a technology supports the widely documented promise of Active Learning Classrooms (ALCs; Baepler, Walker, Brooks, Saichaie, & Petersen, 2016) while also suggesting that a more intentional application of technology might lead to better instructional outcomes in more conventional physical learning environments as well. Although digital writing activities may be more commonly discussed in instructional technology literature, we want to shift the discourse to the intentionality of using paper-based documents—particularly student writing—in physical learning environments.

In what follows, we present a definition of technology that promotes connections among digital and nondigital technologies, including paper-based student writing. A clear picture of the

instructional setting is established before we present a rich description of a design case (Boling, 2010; Howard, Boling, Rowland, & Smith, 2012) that illustrates the potentials of this approach for writing instruction. To provide a rich description of the design case (see Smith, 2010), we articulate the key decisions made, the rationale behind these decisions, how design decisions were judged to be useful or not given the affordances of the learning space, and why the proposed technology of paper-based student writing was believed to be the best practice in this particular learning environment and instructional context.

Defining Technology

We define technology as any socially situated, material object that mediates human activity (Dryer, 2016; Russell, 1997). This definition places both novel, digital devices such as touch-sensitive displays and data projectors in the same conceptual category as familiar, nondigital tools such as moveable furniture and whiteboards (Koehler & Mishra, 2009). Juxtaposing the novel and the mundane in this way highlights the tendency of a technology to become invisible as its use is embedded into everyday life, a process that Bruce and Hogan (1998) call the "disappearance of technology" (p. 270). They pointed to the landline telephone as an instructive example of this phenomenon, arguing that while it was initially an intrusion into American life, the telephone has become so routine that an individual might describe "talking" with a friend "without feeling the need to mention that the telephone was a necessary tool for that conversation to occur"[1] (p. 270). In this example, the complex technology of the landline telephone has become so embedded in the user's life that it is subsumed into a basic human function; in effect, this technology disappears. Newer technologies such as smartphones, in contrast, have not been integrated into everyday life to the extent that they have disappeared; that is, this technology still feels like an intrusion. In fact, smartphones remain novel enough that employing them in an ALC is widely presented as an innovative design choice (e.g., Coca & Sliško, 2017; Yip, Wong, Yick, Chan, & Wong, 2019).

When a technology disappears, users tend to naturalize its operation, following the implicit program of its design without much reflection. Most Americans over 30, for example, are still able to answer a call on a landline telephone without giving much thought to how to hold a receiver or how loudly to speak. Such familiarity benefits a user by creating more fluid operation and, arguably, more efficient operation of technology. That same familiarity might discourage critical attention to the possibilities and limitations of a tool. Put plainly, once a technology has disappeared, it becomes easier to use but harder to consider in a critical way. One often overlooked technology is writing, which for the purposes of this article we define as a shared, linguistic symbol system (e.g., an alphabet) used to translate thought into a physical form (e.g., pixels on a screen) that can mediate human activity (e.g., reading written instructions for an assignment). Although it takes years of use, the technological character of writing disappears for most writers and simply becomes a way of being in the world (see Ong, 1982/2002, for more on the internalization of the technology of writing).

Writing's status as a technology is complicated by the fact that it depends on other technologies to come into being. Technologies for writing such as styli, touchscreens, and dry erase markers are used to bring writing into a physical space, a process Haas (1996) called writing being "made material through the use of technologies" (p. 3). These technologies for writing have physical

[1] It is important to note that individual users experience technology differently; there is no universal technological experience. To extend Bruce and Hogan's example, factors such as hearing impairment, poor or absent infrastructure, or a lack of financial resources might impede or prevent the disappearance of the telephone. Regardless of how embedded it becomes into everyday life, many users will continue to "see" a technology long after it has disappeared for others. See Star (1990) for more on the limits of technical networks.

forms that mediate an individual's ability to make marks on a surface that correspond to a symbol system (i.e., to write). Using a pen and a pad of notebook paper to compose an essay, for instance, is a materially different experience from composing the same text with a virtual keyboard on a smartphone. However implicitly, writers attend to both writing *as* technology and technologies *for* writing to exploit their affordances.

The complex relationship of writing and technology is relevant for instructors because it represents opportunities to promote active learning. Attending to writing as a technology means attending to its capacity to mediate activity, a process similar to what instructors do when designing lessons with classroom technologies. We argue that making purposeful connections among technologies—digital and nondigital, visible and invisible—might lead to more intentional instruction that might be marshaled to support active learning.

Methods

Participants

The participants in this study consisted of 20 undergraduate students enrolled in a first-year writing course at an urban, midwestern university. Nineteen of the students had freshmen or sophomore standing. Students came from five different schools on campus; none were seeking degrees in English or any other major in the School of Liberal Arts. To protect students' privacy, data on age, gender identity, race, and ethnicity were not collected. The instructor was an assistant professor of English with a specialization in writing studies and a research interest in digital literacies.

Procedure

Capturing teaching and learning activities in a physical learning space requires intentional data collection activities, as one needs to examine the physical classroom features while focusing on the interactions of the instructor and the students. Small classrooms, which serve at most 24 students, are particularly suited to video platform data collection (Roman & Uttamchandani, 2018). Video platform data involves recording classroom interactions by coupling a fixed-position camera (e.g., wall-mounted camera, external webcam) with lecture-capture software (e.g., Kaltura, Echo360) and audio recording capabilities. In this study, a high-fidelity wall-mounted camera was used in conjunction with Kaltura lecture-capture software. Such software enables an instructor to automate classroom recordings; recordings can be scheduled, started, ended, and stored on a university server automatically, streamlining the data collection and repository process. Wall-mounted cameras allow for data collection to occur without the imposition of a camera operator within classroom space (see Derry et al., 2010) or tripods positioned within the room, which is critical as the classroom in question was designed to be reconfigured. Video recordings produce data that are rich in detail and reliable. This data can be revisited and reanalyzed by multiple researchers (Derry et al., 2010; Pea, 2006).

The data collected within this study consisted of six full class session recordings that transpired between March and April 2017. In addition to video recordings, detailed analytic memos (Saldaña, 2015) were composed by the faculty member who taught the course. Additionally, 11 writing assignments (three first drafts, four revisions, two reflective pieces, and two student-assembled portfolios) were collected electronically at data collection points throughout the semester.

Analysis

Using the video, analytic memos, and writing samples, we analyzed the findings from the study as a design case (see Boling, 2010), or a rich description of a "real artifact or experience that has been intentionally designed" (Boling, 2010, p. 1). The intent of a design case is to provide precedent for other individuals who can learn from the lessons of the case to make similar or divergent instructional decisions (Howard et al., 2012). In the sections below, we present the design judgments of the instructor through a rich description of the instructional context and argue for making purposeful connections across digital and nondigital technologies to support active learning. We are interested in how student writing in a tangible, paper-bound form might be entered into the inventory of technological options presented in a classroom—particularly in a classroom featuring prominent digital technologies as described below.

Writing Instruction and Programmatic Goals

The course described in this article was part of a first-year writing program with a shared set of curricular standards. The standards explain that the course teaches students "skills of critical reading, thinking, and writing" by asking them "to read…to analyze…and to write about" a variety of "written and cultural texts" (W131, 2018). Notably, written work from students in the class (e.g., drafts of essays, reading notes) are included in the category of "written and cultural text" described in the standards, along with scholarly articles, textbooks, and other class materials. The institutional documents continue to explain that these texts might be used to help students "develop strategies" for "reading rhetorically," "writing rhetorically," and "engag[ing] in inquiry" (W131, 2018). Rather than treating these texts simply as a static body of content to master, the course asks students to focus on how they are able to use them. This approach focuses students' and instructors' attention on the labor of reading and writing in an effort to promote abilities that might "transfer" from the first-year classroom to other writing situations (sæ Wardle, 2007).

Physical Classroom Description

A second context shaping design choices of the instructor was the physical learning space itself.

Figure 1. The Active Learning Classroom.

The course was taught in an ALC (see Figure 1) designed to "[encourage] students to use mobile devices in conjunction with team-based learning activities to solve challenging problems and engage in hands-on collaboration" (University Information Technology Services, 2019). To that end, the room featured a wireless content-sharing system that allowed students to project information from their personal devices onto a large "interactive touch video wall" for group discussion (University Information Technology Services, 2019). Complementing these digital classroom technologies were nondigital technologies including whiteboards and moveable furniture. In describing the physical context of this ALC, we seek to highlight the specific technologies integrated into this particular space and to suggest that this integration shaped instruction. Technology-enhanced learning environments can provide a positive and significant impact on student learning when all mediating factors are held constant (Brooks, 2011). Such impacts occur in all classrooms, whether they are richly appointed or modestly provisioned. The approach to writing instruction described in this article owes something to the affordances of the classroom technologies listed above, but it could be adapted to a variety of physical learning spaces.

Why Paper?

Examining student writing during class is a familiar move in composition pedagogy. While the reasons for examining students' writing vary, the writing itself often takes a familiar form: word-processed text printed onto sheets of white paper, 8.5 in. wide and 11 in. tall. Exceptions exist—particularly in courses focused on multimodal production (see Shipka, 2011) and in situations where material conditions restrict the availability of paper (see Prendergast & Ličko, 2009)—but computer-composed text printed or photocopied onto U.S. letter-sized paper has a long history in composition classrooms. Building on this tradition, the instructor of the course described here set course policies and designed learning activities that required students to submit their written work electronically via a learning management system no fewer than 5 hours before the scheduled class meeting time—a practice that afforded the instructor time to review submissions, select useful examples, and print paper copies to review in class. This practice enabled the regular, sustained use of paper documents. The choice to put paper at the center of a class that met in a digitally enhanced ALC might be seen as anachronistic. Why should students and instructors review paper documents in a learning space where screens are readily available? The answer, we argue, is in the intentionality of the instructional design judgment made within this particular learning context.

The affordances of paper documents can be marshaled to mediate learning in ways that are difficult and/or cost- prohibitive to replicate with digital technology. On a student draft printed on paper, for example, a student can circle a problematic phrase, draw an arrow to the margin, or jot down a response more efficiently and effectively than with most digital technologies. Similar functions are available on tablet computers but require institutions and/or students to make financial investments that far exceed the cost of photocopies and ballpoint pens. As with any technology, instructors must weigh the efficiency, access, cost, and effectiveness of the tools to be integrated. Ultimately, the instructor's decision to embrace paper was not a rejection of the digital but an attempt to put it into dialogue with a nondigital technology.

Classroom Applications

In the following sections, we describe three activities that were developed using the approach described in this article. For each activity, we discuss pedagogical goals and classroom applications.

Anonymized Student Writing

Overview and Goal. This first application, anonymized student writing, is a process of using deidentified paper copies of student-composed drafts to facilitate writing seminars. Harris (2010) defined a writing seminar as a teacher-led "conversation about a text written by one of the students in the room," the purpose of which is to "frame a lesson on writing for everyone in the class" (p. 147). Rather than suggesting revisions for the author, class participants discuss ideas and issues they see represented in the writing in an effort to answer the question "'What can we learn as writers from this text?'" (p. 147). The goal of using anonymized student writing is to allow student interest—expressed in the text under review and in the responses to it—to guide a discussion of course concepts. In first-year composition, course concepts might include ethically representing the ideas of others through quotation and paraphrase; making and supporting claims; and topics from scholarship in the field of writing studies. In other disciplines, course concepts might include field-specific research or disciplinary writing conventions. Regardless of their content area, we argue, instructors may wish to consider using anonymized student writing in physical learning environments to encourage student-led discussion of texts, as it relates to the specific course concept identified.

Using photocopies of drafts to discuss writing is not a radical idea in writing instruction; however, thinking about student-written paper documents as technologies—as objects that mediate activity—can build on conventional uses of student writing by fostering approaches to teaching that better exploit the affordances of this and other technologies.

Connecting digital and nondigital technology. Using anonymized student writing requires an instructor to review electronically submitted student-composed texts before class to identify texts that might support a writing seminar. Using a word processor, the instructor replaces names with pseudonyms (e.g., "Student 1") and adjusts spacing and margins to allow for handwritten comments. No "corrections" are made to grammar, spelling, or style. While this work happens outside of the physical learning space, we discuss it here because (a) it shapes in-class activity and (b) it highlights the relationship between nondigital and digital iterations of student writing. The key affordance of the digital technology used in this phase (i.e., word processing software and files) is "computability," or the capacity for software to modify writing as digital data (Dush, 2015, p. 176; see also Manovich, 2001). This affordance makes it possible to more easily format documents in ways that encourage student-led discussion of texts.

After being formatted and reproduced, the anonymized student writing is distributed during class. Volunteers read each section aloud while their colleagues follow along and take notes in the margins. In the ensuing discussion, students are asked to reference the anonymized document and their notes. The key affordance of the nondigital technology used in this phase is fixity. Students can handwrite on the surface of their paper, and are encouraged to do so, but they cannot delete or rewrite the text as they could with a digital text. This affordance reinforces the writing seminar's goal: to discuss the ideas represented in the text rather than to revise the way the text is written.

The use of anonymized student writing was augmented by the moveable small tables and chairs, both on casters, in the classroom. In one representative class meeting, students began in rows turned toward the "front" of the room (see Figure 2). Then, they arranged their tables and chairs into a circle for a full-group, seminar-style discussion (see Figure 3). At the end of the large group discussion, students reflected on the seminar in pairs by turning in their seats (see Figure 4).

Figure 2. Students face the instructor and interactive video wall at the start of class.

Figure 3. Room arrangement configured to facilitate seminar discussion on student texts.

Figure 4. Students turn to work with partners to reflect on seminar discussion.

The key affordance of this nondigital classroom technology is its modularity. The trapezoidal tables were designed to fit next to one another in rows, circles, or pairs, making for easier transitions between configurations. This transition between classroom configurations could be replicated in a variety of physical learning environments.

Shuttling Between Page and Screen

Overview and goals. Shuttling between page and screen is an activity that uses paper documents to identify course concepts and digital technologies to productively complicate the concepts. The goal of shuttling between page and screen is to enhance discussions with interactive examples that highlight the differences among media. In first-year composition, an instructor might use this activity to explore how the labor of reading and writing is shaped by digital technologies (e.g., How does revising using Microsoft Word differ from revising using a printout?). In other disciplines, an instructor might use this activity to provide more engaging illustrations of course concepts (e.g., augmenting a textbook with additional examples) or to demonstrate research methods (e.g., using a field-specific database to locate a reference).

Connecting digital and nondigital technology. Developing an activity that shuttles between page and screen starts with the identification of a text that will ground classroom interactions in a shared conceptual space. This grounding text—which might be taken from a student writer, a published source, or other instructional materials—is presented to students before the class meeting as a reading assignment. In class, students consult a paper copy of this text in small or large groups. The key affordance of this nondigital technology is replicability. Barring minor variations, one printed document is effectively the same as another—especially if that document is processed by the instructor before distribution. When students examine the document, they have reasonably comparable experiences because the technology functions in the same way for everyone.

The central digital technology in this application is not a screen itself but a screen in conjunction with a device connected to the Internet. In a "shuttling" activity, the screen/device combination is used to display materials suggested or generated by students. These materials might be transferred directly from students' devices or routed through an instructor-controlled interface. The key affordance of this digital technology is its responsiveness. This affordance allows for examples to be suggested and explored in the moment, which, we contend, might create possibilities for unexpected connections. Although the classroom studied in this article benefitted from a large, touch-sensitive display, this technology is not necessary for a successful shuttling activity; the activity could be replicated in any classroom with an Internet-enabled device and a data projector or other screen.

In a particularly fruitful class meeting within this design case, students engaged in a shuttling between page and screen activity to explore the affordances of online texts and Dush's (2015) use of *content* as a metaphor to understand contemporary composing practices. First, they huddled their desks into small groups to identify key terms from Dush's "When Writing Becomes Content" (2015) using paper copies of the article. To facilitate discussion, the instructor wrote down student-suggested key terms on a whiteboard (see Figure 5).

Figure 5. Small-group discussion using paper copies of Dush's (2015) "When Writing Becomes Content" with instructor-facilitated input at whiteboard.

Following the small-group discussion activity, students suggested websites that they might analyze using the key terms they identified. Guided by students' comments, the instructor displayed websites on the screen and then revealed one website's source code (demonstrating its "nature as digital data") and examined another's social media sharing features (exploring the website content's "fluidity in terms of... shape"; Dush, 2015, p. 176). With each key term, attention was drawn from the page (where students took notes) to the screen (where examples were shown and manipulated) and back as students participated in a multimodal engagement with course concepts (see Figure 6).

Figure 6. Use of interactive video wall to apply key terms to student-suggested examples.

Networked Note Making

Overview and goals. The networked note-making activity asks students to discuss a paper document and then to work together to translate their discussion into writing using Web-based word processing software. The goal of this activity is to capture ideas shared in class in a form that can be

revisited by students both in and out of class. In first-year composition and other disciplines, this technique might be used to document class discussions, to model note-taking practices, and to build connections across meetings.

Connecting digital and nondigital technology. This activity begins by identifying a paper-based grounding text. As with the shuttling between page and screen activity, the grounding text might be taken from a student writer or other source and should be incorporated into a reading assignment either before or during the class meeting. The key affordance of this nondigital technology is, as before, the replicability that allows students to have a comparable experience with the document and a shared point of reference for class discussion.

The central digital technology of this activity is the Web-based word processor that is used to capture and/or represent work completed in the classroom. This software should be continuously available during the class meeting to encourage use. As in the anonymized student writing activity, the key affordance of the Web-based word processor is its computability; unlike in the earlier activity, computability is marshaled for the purposes of recording, storing, and sharing writing rather than formatting it. The nondigital and digital technologies work together in this activity to create multiple entry points for students to engage with course concepts.

In one recorded class meeting, students were asked to use a networked note-making activity to collaboratively define assessment criteria for an upcoming assignment. They were given a paper copy of a rubric created by the university's writing program administration and used across all sections of the course. In groups, the students worked together to identify key terms and type them into a shared Google Docs file using their personal devices. Rather than nominate a single student to work with the Google Doc, two of the three groups elected to have multiple group members contribute to the document simultaneously (see Figure 7). Because the document was shared across all students, the instructor was able to monitor their progress on his workstation and, after small group discussion had finished, project their work on the video wall for full class discussion. At the end of the class meeting, students had a paper copy of the rubric as well as a digital copy of classroom notes from multiple small groups. Ideally, these two technologies could be used by students outside of class to better understand their upcoming assignment.

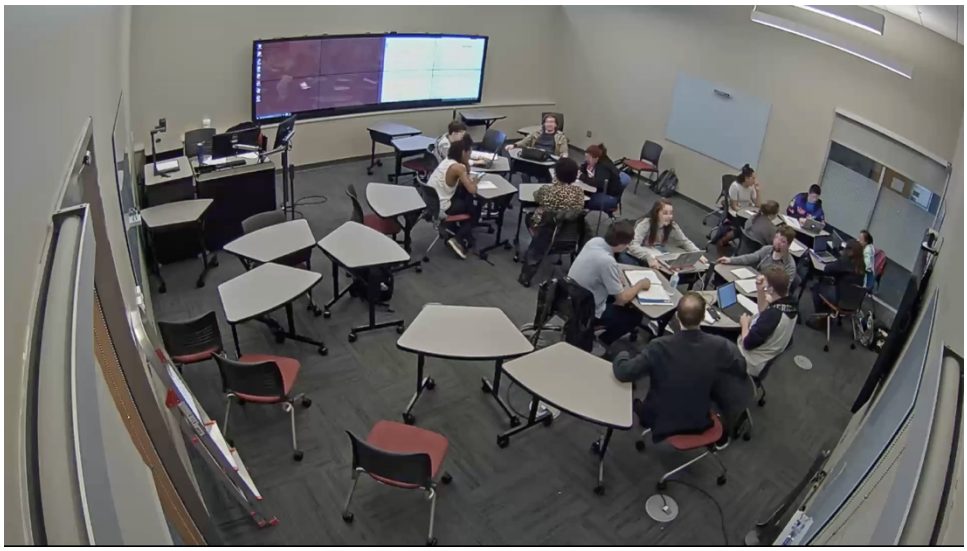

Figure 7. Students contribute to a group networked note-making activity using personal mobile devices.

Future Directions

This article describes an approach to writing instruction that seeks to build connections between digital and nondigital technologies with a special focus on paper-based student writing. We argue that understanding paper-based student writing as a technology—that is, as a socially situated, material object that mediates activity—draws attention to the affordances of these documents, affordances that might be used to create active-learning activities such as those described above. In sum, the complex relationship of writing and technology presents opportunities to promote active learning in physical learning environments.

While our research was restricted to a first-year composition course, we posit that each of these activities might be adapted to courses from other disciplines. For example, anonymized student writing about an economic principle might be used to facilitate an in-class discussion grounded in student interest in and (mis)understanding of that principle. One future direction for research and practice might be to take these approaches to student writing to other disciplines to see how they operate in these contexts.

Another future direction might be to adapt the broader approach to understanding paper texts as technologies to different physical learning environments. Although the design case described in this article was set in a technology-rich ALC, the approach to connecting nondigital and digital technologies might be similarly useful in a more "traditional" classroom. For example, the networked note-taking activity could be applied within a classroom with a data projector, a standard monitor, or no shared screen at all. So long as students have access to paper documents and an Internet-connected device, connections between digital and nondigital technology can be made. We hope these future directions underscore our argument that understanding paper-based writing as a technology might be a useful approach to designing active-learning activities.

References

Baepler, P., Walker, J. D., Brooks, D. C., Saichaie, K., & Petersen, C. I. (2016). *A guide to teaching in the active learning classroom: History, research, and practice*. Sterling, VA: Stylus.

Boling, E. (2010). The need for design cases: Disseminating design knowledge. *International Journal of Designs for Learning, 1*, 1–8. https://doi.org/10.14434/ijdl.v1i1.919

Brooks, D. C. (2011). Space matters: The impact of formal learning environments on student learning. *British Journal of Educational Technology, 42*, 719–726.

Bruce, B., & Hogan, M. (1998). The disappearance of technology: Toward an ecological model of literacy. In D. Reinking, M. McKenna, L. Labbo, & R. Kieffer (Eds.), *Handbook of literacy and technology: Transformations in a post-typographic world* (pp. 269–282). Mahwah, NJ: Erlbaum.

Coca, D. M., & Sliško, J. (2017). Software Socrative and smartphones as tools for implementation of basic processes of active physics learning in classroom: An initial feasibility study with prospective teachers. *European Journal of Physics Education*, *4*, 17–24.

Derry, S. J., Pea, R. D., Barron, B., Engle, R. A., Erickson, F., Goldman, R., ... Sherin, B. L. (2010). Conducting video research in the learning sciences: Guidance on selection, analysis, technology, and ethics. *The Journal of the Learning Sciences*, *19*, 3–53.

Dryer, D. B. (2015). Writing is not natural. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 17–34). Logan, UT: Utah State University Press. https://doi.org/10.7330/9780874219906.c001

Dush, L. (2015). When writing becomes content. *College Composition and Communication*, *67*, 173–196.

Haas, C. (1996). *Writing technology: Studies on the materiality of literacy*. Mahwah, NJ: Erlbaum.

Harris, J. (2010). Workshop and seminar. In J. Harris, J. D. Miles, & C. Paine (Eds.), *Teaching with student texts: Essays toward an informed practice* (pp. 145–157). Logan, UT: Utah State University Press.

Howard, C. D., Boling, E., Rowland, G., & Smith, K. M. (2012). Instructional design cases and why we need them. *Educational Technology, 52*(3), 34–38.

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, *9*, 60–70.

Manovich, L. (2001). *The language of new media*. Cambridge, MA: MIT Press.

Ong, W. J. (2002). *Orality and literacy: The technologizing of the word*. London, England: Routledge. (Original work published 1982)

Pea, R. D. (2006). Video-as-data and digital video manipulation techniques for transforming learning sciences research, education, and other cultural practices. In J. Weiss, J. Nolan, & P. Trifonas (Eds.), *International handbook of virtual learning environments* (pp. 1321–1393). Dordrecht, The Netherlands: Kluwer Academic.

Prendergast, C., & Ličko, R. (2009). The ethos of paper: Here and there. *JAC, 29*, 199–228.

Roman, T. A., & Uttamchandani, S. (2018). Researching pedagogy within small active learning classrooms: Examining enacted pedagogies of learner and instructor interactions. *International Journal of Research & Method in Education*, *41*, 447–467.

Russell, D. R. (1997). Rethinking genre in school and society: An activity theory analysis. *Written Communication*, *14*, 504–554. https://doi.org/10.1177/0741088397014004004

Saldaña, J. (2015). *The coding manual for qualitative researchers* (3rd ed). Thousand Oaks, CA: Sage.

Shipka, J. (2011). *Toward a composition made whole*. Pittsburgh, PA: University of Pittsburgh Press.

Smith, K. M. (2010). Producing the rigorous design case. *International Journal of Designs for Learning, 1*, 9–20. https://doi.org/10.14434/ijdl.v1i1.917

Star, S. L. (1990). Power, technology and the phenomenology of conventions: On being allergic to onions. *The Sociological Review*, *38*(1_suppl), 26–56. https://doi.org/10.1111/j.1467-954X.1990.tb03347.x

University Information Technology Services. (2019). Immersive showcase classroom. Retrieved from https://uits.iu.edu/learning-spaces/immersive

W131: Reading, writing, and inquiry. (2018). [Course description]. Retrieved from https://liberalarts.iupui.edu/english/pages/writing-program-folder/courses.php#rtab2

Wardle, E. (2007). Understanding "transfer" from FYC: Preliminary results of a longitudinal study. *WPA: Writing Program Administration*, *31*, 65–85.

Yip, J., Wong, S. H., Yick, K. L., Chan, K., & Wong, K. H. (2019). Improving quality of teaching and learning in classes by using augmented reality video. *Computers & Education*, *128*, 88–101.

Journal of Teaching and Learning with Technology, Vol. 8, Special Issue, pp. 99-107.
doi:10.14434/jotlt.v8i1.26744

Strange(r) Places: Collaborative Creativity in Real and Virtual Spaces

Tanya Perkins
Indiana University East
talperk@iue.edu

Abstract: In the writing classroom, collaborative learning often takes the form of coauthoring, peer workshops, or critique sessions. While these are useful, what other active-learning approaches might be effective, particularly in light of the range of media with which students are increasingly familiar? World building—creation of an alternative/speculative or futuristic land, world, or universe—offers an approach to fiction writing amenable to both creative collaboration and digital modalities. This article examines how a team-based world-building project in an advanced writing course leverages both physical and virtual space as creative collaborative environments by building upon the multiple modalities and genres through which many students already engage with fiction (video, online and/or fantasy role-playing games, horror, speculative and science fiction). With this approach, students in a seated class team up to create original alternative worlds in an online environment—including production of both digital and physical artifacts—within which their own (individual) stories are set. The result is movement between real and virtual space, as well as between shared creative acts and personal imaginative writing.

Keywords: collaboration, active learning, creative writing, world building, learning environments, social space, virtual space

In the physical classroom, courses on writing commonly promote collaborative learning through peer workshops or critique sessions. Since its early use in the University of Iowa graduate program in the 1930s, the workshop model has spread to undergraduate and even secondary classrooms. Typically under this model, the student whose work is critiqued remains silent while the rest of the class discusses the work's strengths and weaknesses. Despite its popularity, however, the workshop model's ability to foster creativity and innovation has been questioned. Students can end up with conflicting opinions that vary wildly in quality or, worse, feel pressured to conform to a group consensus. Coauthoring is another collaborative strategy, but it is less used; in fact, it is viewed somewhat suspiciously by writers, as Bishop and Starkey (2006) noted, referencing one national book contest's manuscript requirement that submitting writers assert they are sole author (p. 29). None of this is to suggest that these practices necessarily fail students or should be abandoned; rather, the goal of this article is to offer another take on the role of collaboration and more particularly, how a revised understanding of physical and virtual space can be employed to support collaboration and creativity.

As an active-learning strategy, collaboration has the potential to contribute to development of better problem solving, verbal expression, creativity, and engagement with challenges that speak to the kinds of so-called soft skills increasingly valued by 21st-century employers (Lin, Mills, & Ifenthaler, 2016; Walker, 1996). Collaborative learning has been linked positively to a range of essential skills, including critical thinking, creativity, literacy, and "intercultural effectiveness" (Kilgo, Sheets, & Pascarella, 2015; see also Huggins & Stamatel, 2015). Moreover, because teamwork tends to shift attention away from the production of any one individual, it can potentially reduce performance stress within a supportive milieu (Archer & Kelen, 2015). To the two collaborative forms mentioned thus far—peer workshops and coauthoring—Reither and Vipond (1989) added knowledge making: "We make our meanings not alone, but in relation to others' meanings, which we come to know through reading, talk and writing" (p. 862). Although their reference is to literary studies, I would argue that

the same can be said about creative writing, as noted by Richardson (2016): "Artistic knowledge production occurs in a dynamic between independence and cooperation" (p. 2259).

The Learning Challenge

Yet for many students who are studying writing, collaboration as a creative strategy is not without unique tensions. The image of the solitary writer alight with personal genius owes much to 19th-century romanticism (Inge, 2001). Writing does, in fact, often require alone time but that does not eliminate the need for what Becker (1982) called "networks of cooperation and assistance" (as cited in Richardson, 2016, p. 2260; see also Yancey & Spooner, 1998). Richardson (2016) used that phrase to explain how artistic knowledge originates not from any single writer but from repeated interactions between individuals (p. 2260). Although she examined the practices of professional writers in a specific locale, I would argue that it has relevance for educational settings as well. If professional writers benefit from such interactive social "networks," then perhaps students might, too. Interestingly, Bishop and Starkey (2006) suggested that creative writing is particularly amenable to an approach that allows for both collaborative and solitary phases, noting that:

> writing is not entirely a social activity, nor is it a provably solitary one. It is at once an act of individual cognition but also always an act of intellectual and social negotiation with other thinkers. We think and write in the presence of and as a result of our influences. (p. 33)

Aside from the creative benefits of such social negotiation, collaboration as a marketable skill is increasingly not just a bonus but a requirement in the eyes of many employers (Brown, Ernst, Clark, DeLuca, & Kelly, 2017). As Johnson, Johnson, and Smith (1990) noted, "knowledge and skill are of little use if a student cannot apply them in cooperative interaction with other people" (as cited in Glasgow & Bush, 1995, p. 32). As students have opportunities to practice collaboration in a variety of settings, including the creative writing classroom, they strengthen this valuable skill for practice beyond graduation.

Set against the backdrop of such benefits are 21st-century students' own familiarity with a range of media and/or genres such as video, online and/or fantasy role-playing games, horror, speculative and science fiction, via laptops, tablets, and cell phones. These devices have become ubiquitous in the brick-and-mortar classroom, adding the dimension of virtual space to what traditionally had been limited to the square footage of the assigned classroom. World building—creation of an alternative/speculative or futuristic land, world, or universe—offers an approach to fiction writing amenable to both creative collaboration and digital modalities. The scope of the project creates room for multiple voices, facilitating collaborative use of physical classroom space along with shared virtual space. This happens when, for example, teams draw maps on whiteboards or cluster together at tables to argue about social structure or act out how a character walks or fights and then bring their creative decisions to life within a shared website, using images, sound, and written text. All of these offer avenues that harness teamwork as a springboard to individual and personal creative acts.

The interest in connecting the physical to the virtual is reflected in the early-21st-century evolution of interactive digital narratives, such as *34 North 118 West* (Hight, Knowlton, & Spellman, 2003, as cited in Rettberg, 2015, p. 177), which engages readers in moving through the streets of Los Angeles as they "read" the digital text. Reframing the reader–screen–physical setting triangle finds more intense expression in immersive virtual reality experiences, although engaged embodiment is not dependent on headsets and wands, as Rettberg (2015) explained:

> Readers are not necessarily sitting in a chair in front of a screen. **T**hey are just as likely to be moving through a narrative situated in physical space, or moving through the virtual space of an augmented reality environment...or encountering a digital narrative in a communal experience of a performance. (p. 178)

If true of readers, then it may also be true of writers as they create immersive fictional experiences. In particular, it is the idea of the communal experience in Rettberg's list that is of relevance to the collaborative, physical–digital navigation of world building as a learning activity.

At this point, it is useful to consider the term *individualized collaboration*, used by Ward & Sonneborn (2009) to designate how players in virtual worlds create individualistic experiences for themselves within a shared online environment. They described how players of the video game Second Life individualize aspects of their graphical interface and personal representation, even while acting as a team member and problem solving with other players: "Personalization extends into the virtual space itself and to the user's experience of that space" (p. 219). Although empirical research is still needed, Ward and Sonneborn suggested that the power to customize one's experience of what is essentially a group interaction may possibly catalyze players to more imaginative and/or greater roles in the collaboration, thus strengthening group creativity overall (p. 219). Ward and Sonnemon's argument has interesting crossover to collaborative learning in considering how online spaces offer creative opportunities for both individuals and groups through the kinds of activities peculiar to digital environments. For example, freedom from the constraints of the brick-and-mortar world encourages "freewheeling thought" (p. 218), which in turn supports brainstorming, perhaps leading to ideas that otherwise would have been unattainable. Interestingly, one of the students in my world-building class referenced such a moment when he met with his team at a coffee shop to work on the website for their fictitious alternative world: "We were able to just go off on random tangents and even make weird and sometimes inappropriate jokes about our world to see what worked and what didn't." Thus it was the more informal space, encompassing both the physical and digital, that promoted creativity and expression, as I explain further.

There are two takeaways from Ward and Sonnemon's arguments that are particularly useful when it comes to learning spaces and collaboration. First, the environment in which collaboration takes place can have a direct effect on the nature of the collaboration, particularly with respect to the kinds of creativity that spring from it (see also Skill & Young, 2002). In this regard, virtual space offers unique, creative possibilities, as Ward and Sonnemon argued. Second, collaboration can offer productive benefits to both the group and the group project but also to individuals, particularly within a digital environment. This occurs when individuals have scope to customize their contribution so that it not only supports the group goal but also has particular use or meaning to their own personal ends. The question remains, however, as to whether such individualization will actually have positive results for the group as a whole (Ward & Sonnemon, 2009, p. 219). Nevertheless, the concept itself illuminates the learning potential of projects such as world building that offer both collaborative and individual components. Specifically, it is the idea that collaboration can be undertaken not solely with the goal of producing a team project but also as a springboard for an individual student's own project, in that the student is free to shape her or his contribution so that it can be used later to further that student's own personal creative work. Even if a student does not approach the contribution with that deliberately in mind, the give-and-take process of discussion may sow the seed for that student's own project, as is suggested by the case study that follows.

Solution Attempted

ENG W401 is an upper-level course in the theory and practice of fiction writing and as such allows for considerable variation in content and pedagogy. As a teacher, my goal across creative writing courses is to engender students' initiative and creativity, to push them to try something new, maybe even uncomfortable. At the same time, I want to offer them content amenable to course learning goals but that they will also find engaging and motivating. World building as a route into all the fictional elements that I need to teach—character work, plot, setting, dialogue, thematic nuances, tension, and more—makes sense in that it builds upon the genres and modalities with which college students already engage, such as horror, science and fan fiction, fantasy role playing, video games, and movies. As a project, it opens the door for engagement in both physical classroom space and virtual space (see as a similar example, Rish & Caton, 2011).

Course activities were organized to move between whole-class discussions of assigned readings by writers such as Tolkien and Gaiman, team-based world-building work, and short in-class writings. We also discussed theoretical and practical elements such as ideology, internal consistency, and the role of technology and/or magic. Students organized themselves into teams based on their preference for science fiction or fantasy; as a small class of just six students, it worked out evenly, with two teams of three students each. The teams collaborated on world building during the first part of the semester; during the second half, students independently wrote two short stories, one set in their own team's world and the second set in the other team's world. The world-building assignment consisted of six deliverables, each designed to draw upon a variety of skills and abilities, but all located within the team-set parameters of the group's alternative world. These included a wiki defining tangibles (weapons, food, housing, tools, etc.) and intangibles (religious beliefs, political system, historical events, reproductive practices, etc.); a map; a timeline; a speech delivered by a significant character (campaign speech, religious ceremony, artistic manifesto, etc.); an object of meaning; and a creative application (board game, visual art, or other creation).

Each team created a website as a common virtual space for the artifacts, using Wordpress, Wix, or another template-based free site, to which all members had administrative access and shared control. Teams were expected to have at least one laptop up and open during class work sessions—since students regularly had laptops with them, this did not pose a problem. Seamless transition between physical and virtual learning spaces was encouraged as teams held face-to-face discussions at the classroom's round tables, which would lead to writing together on their websites. These sessions had a fluidity to them as, for example, team writing might give way to members working individually on their own laptops, perhaps even physically moving to another table, only later to call out to each other, with one member leaping up to diagram something at the whiteboard, which would lead in turn to further collaborative revisions on the website.

Teams were encouraged to be creative in how they wanted readers to understand and navigate the world's site. So, for example, one team presented their site as a quasi-authentic historical archive documenting extraterrestrial control over 20th-century activities including an alternative timeline of historical events. The fictional elements of their world were overlaid onto actual history, mixing the real with the imagined in mockumentary style, using images, diagrams, text, and sound. The range of assignments allowed for considerable interpretation and differentiated individual work, so students could work on project components that best matched their own interests and strengths and that they could later leverage within their own stories, but even this independent work would need to be negotiated within the group to ensure that all work got completed. Such dialectic give-and-take opened up avenues of creative insight, not just for the collaborative project but also for students' own, independently written work. As one student noted: "As we chatted about what our world was like, it helped me to come up with the story I eventually used."

As mentioned, class time was spent between discussions, short writing assignments, teamwork sessions, and, later in the semester, whole-class workshops of the stories students wrote on their own. Thus, although the short stories were independently written, they also received a measure of collaborative attention. Instead of remaining silent, as often is the case in traditional workshops, the student whose story was being considered led the discussion, asking questions and focusing the group's attention on the parts of the story where the student specifically wanted help. Taken together, these phases might be viewed holistically as "networks of cooperation and assistance," by means of which "artistic knowledge" is produced (Becker, 1982, as cited in Richardson, 2016, p. 2260). Discussions were particularly insightful when a student's story was set in the other team's world, letting them see how their world was being interpreted by a writer from the "outside."

As a face-to-face class, we met twice weekly in our assigned classroom, which had an open layout, extensive whiteboards covering the length of one long wall, and tables and chairs instead of fixed desks. Teams were able to take advantage of the ample, rounded tables, some at conventional table height and some at bar height, as collaborative workspaces and so naturally sat together, one team per table. As Cornell (2002) noted, "furniture is both tool and environment" (p. 33), and so tables became the common workspaces whereby students spread out texts, opened individual laptops and spoke face to face as they worked through the assignments. This environment supported students' freedom of expression and ability to learn from each other through spontaneous conversation and writing together on their team website. Similarly, the long whiteboards adjacent to the tables became the medium for capturing and illustrating ideas in process. These physical affordances enabled the ongoing real-time discussions that were part of the collaborative creation of the virtual and imaginative spaces. World elements such as physical geography or social hierarchy came into being through discussion, were sketched out on the whiteboards using dry erase markers, captured on students' cell phones, and then developed into virtual artifacts situated within their worlds' websites. The creative process thus traversed social, physical, and digital space within a classroom environment that supported "real and virtual collaboration" (Skill & Young, 2002, p. 26).

Qualitative Analysis of the Solution

Following course completion and institutional review board exemption, a survey was distributed, aimed at assessing students' experience of the world-building assignment, collaboration, and the role of physical and virtual space. The class size was very small, just six students, of which four (or two-thirds) responded to the survey. All respondents were white males; a larger and more varied demographic might offer additional insights. Nevertheless, small numbers can still be useful in providing a qualitative, contingent "understanding of particularity" characteristic of a unique situation (Baker, Edwards, & Doidge, 2012, p. 30). Overall, surveyed evidence suggested that the collaboration worked to support students' creativity, as did specific aspects of the physical environment. Following is a discussion and analysis of student responses to key questions.

How Useful Was the Collaboration Overall in Conceptualizing and Developing an Alternative Fictional World?

Students were divided on this question, with half responding "useful to very useful" and the other two responding neutrally (and no one reporting that it was not useful). The two students who found the collaboration useful/very useful offered similar reasons—the team sessions enabled them to voice their thoughts and exchange ideas about what would go into their team's world. One student noted that "it enabled us to come up with things I would not have come up with myself... At the same time, I was able to bring my own strengths to the table—writing and imagination—and execute those parts

of the project as well." Another stated that "it was helpful to articulate my ideas and talk about different ideas to go into the world." Two students identified lack of participation by a group member as an impediment, yet one of those two, who was neutral on the question of usefulness, described how he and the remaining group member were able to "work together well...to generate their world." Thus, it seems that unresponsiveness on the part of a team member was enough to pull down perceptions of usefulness of the collaborative sessions. This is understandable, given that the core of collaboration is reciprocal and evenly distributed participative effort. The second neutral student admitted that he just did not like teamwork, yet he still acknowledged that "teamwork and collaboration can be vital skills for writers."

Which Did You Enjoy More—The Collaborative Sessions in Teams or Your More Solitary Sessions in Writing Your Own Stories?

It might be expected that fiction writers would prefer independent writing, yet three of the four students were exactly in the middle, with only one student strongly preferring solitary sessions. One student summed up the productive tension between group work and individual creation: "A lot of good ideas came out of those sessions, but most of the real work happened individually." Another offered a similar appraisal: "I liked talking about the world and building it with my groupmates but I also really enjoyed attempting to write short stories in both my world and the other groups [*sic*]." A third offered an interesting shift, noting that while he "most enjoyed the writing," it was once the world building was well along that he began to look "more and more forward to writing." This suggests that collaboration had a catalytic effect on his personal desire to write. Only one student strongly preferred independent work sessions, "crafting the story in my own vision," as he put it, as the most enjoyable phase. This is not unexpected, given the highly personal nature of creative writing. Yet the fact that three of the four students were unable to definitely elevate either phase as more enjoyable than the other seems to suggest that creative work was occurring during both autonomous and collaborative sessions, supporting Richardson's (2016) assertion that "artistic knowledge production occurs in a dynamic between independence and cooperation" (p. 2259). There is no question that solitary intervals are critical to writing a short story, when imaginative impulses and reflection can let a writer's "own vision," to repeat the student's phrase, productively develop. At the same time, these findings, taken together, offer an example of how shared experience may be as much a part of what Richardson called "the geographies of creative writing" as are periods of isolation (p. 2260).

What Was the Most Useful or Enjoyable Aspect of the Collaborative World-Building Assignment for You as a Writer? What Was the Least Useful or Enjoyable?

Again, two of the four students identified brainstorming as the most useful aspect. Noted one student:

> I really appreciated seeing how to write and create the different aspects of the world, and coming up with a number of different things that I never thought of before as being really important to the world, such as what the characters believed, or ate, and how they lived.

Another described "seeing how other students did their writing and comparing my own writing to their and to other works we read in class." Interestingly, a third student described writing a story set in the *other* team's world as the most enjoyable part of the collaboration. All three responses speak to what Richardson (2016) described as "forms of shared experience" making up the landscape of creative writing (p. 2260). In the class, this encompassed talking about elements of fictitious worlds,

discussing the works of published authors, and studying the products of both collaborative and independent work sessions. In identifying the least useful or enjoyable aspect, students' responses varied. One student disliked having to create a website with his team, although admitted that "it wound up being much better than I originally thought." Another disliked the map assignment, although recognizing its importance to the world-build. A third mentioned, again, lack of participation by a team member.

Did the Teamwork Sessions Help You Generate Ideas for Your Own Stories (Either During the Course or Afterward)?

Three of the four students confirmed that the collaboration helped them with their own ideas, with only one responding negatively. "The sessions definitely helped develop ideas for my stories because we were able to fully understand the world and the different aspects in play," said one student. Another noted, "I found the teamwork sessions extremely useful for crafting my own story for our world. As we chatted about what our world was like, it helped me to come up with the story I eventually used." This suggests the potential of a collaborative dynamic to spark both pragmatic knowledge ("understand...different aspects") and more personal, creative knowledge ("develop ideas") that students could later use for their own stories during solitary writing sessions. Working together, teams generated nuts-and-bolts facts about their world, which were then captured in their website. The websites functioned as a kind of digital reservoir, from which students could later draw useful information as needed when working on their own at home or other off-campus sites, mixing and/or reinterpreting it within their own fiction.

How Useful Was the Physical Environment to Your Overall Learning and/or Creative Experience? To the Teamwork Sessions?

Three of the four students described the physical environment—specifically, the open space of the classroom, ample tables, and long whiteboards—as being very helpful. "It was great for both the class and teamwork sessions," one student said. "I utilized the whiteboard while creating my group's world, filling it out to put things in certain categories." Another student noted, "During the first group session, we had the entire [whiteboard] covered with ideas and details of our world. We then took a picture of it to be able to refer back... It guided us throughout the entire project." As students created their alternative worlds on their laptops, the table where they gathered as a team became, for the duration of each class session, their own "team space." As their instructor, I respected those spaces, not interjecting myself or my opinion—although their sometimes avid conversations were within earshot—unless invited. Students were able to maintain control of both their team's virtual space, the website, and the physical space that they occupied within the classroom. A third student, while also confirming the highly useful physical environment of that particular classroom, mentioned the coffee shop where his team would meet for additional sessions: "The somewhat informal setting of the class and then later, the local coffee shop where my team met up to brainstorm really helped." Thus both the classroom and off-campus site(s) came to fit what Skill and Young (2002) described as "meaningful, student-controlled learning communities" (p. 25). In their discussion of individualized collaboration, Ward and Sonnemon (2009) argued that creativity cannot be entirely separated from the environment in which people find themselves. Interestingly, as quoted earlier, this same student described the team sessions in the coffee shop as "organic and fun" because they felt free to "go off on random tangents and even make weird and sometimes inappropriate jokes about our world to see what worked and what didn't." Thus, although Ward and Sonnemon were making specific application

to virtual space, the same can be said for physical spaces as well and—more interestingly—the affordances of physical and virtual space together.

Reflection on the Implications

While students overall found the world-building project to be an enjoyable creative experience, this was the first time I taught this version of the course, and so it was not without its challenges. Lack of participation and/or initiative on the part of one or more students created difficulties for both teams, a fact many students may rediscover as part of a future workplace team. Honest instructor–student conversations can help identify root problems, while grading flexibility may alleviate anxiety on the part of students who fear they will be penalized unfairly. The next time I teach this course, instead of trying to solve the problem, it may be more productive to help students develop work-around strategies that they can draw on when this inevitably crops up again in future courses and/or jobs. To bolster students' extrinsic motivation to work together, the world-building project was originally intended to result in a single, collective grade for each team, but when it became clear that this would not be fair due to lack of participation by a team member, the assignment was adjusted so that students each received their own grade. In the future, a self-evaluation for team members may be added partway through the project so that students can reflect on their role and the nature and extent of their participation. This would further assist in fair and authentic grading. A separate issue surrounded the configuration of the classroom chairs, which caused difficulties for a student of size who commented on the need for "sturdier, padded chairs for the sake of my tailbone." As the American population becomes physically larger, institutions need to accommodate a range of sizes and this should be reflected in such environmental elements as chairs with more adjustments, moveable (or no) armrests, and larger frames.

Aside from these observations, the world-building course demonstrated that, just as creative knowledge does not rise from a void, neither does productive collaboration. The production of collaborative work, as well as the nature and progress of collaboration, is bound up by the material spatial affordances in which it occurs. How students act and the range of actions optionable to them are closely dependent on the nature of the space in which they find themselves (Cornell, 2002). Students and educators are familiar with classrooms filled with rows of bolted-down chairs facing forward, situating students as uniformly passive listeners, an artifice left over from the medieval university that suffered from a scarcity of books. By the start of the millennium, as the Internet became ubiquitous, educators were recognizing the need for a blended model of both digital and physical spaces that together would enable "interactive and learning-by-doing strategies" (Skill & Young, 2002, p. 24).

With that in mind, the design of the world-building course facilitated interaction between social, digital, and physical space by making each equally necessary and relevant to the success of students' work—and, more importantly, by seeking to make each team member necessary and relevant to the success of the project. The world-building project itself was intended to be too much work for any one student; to accomplish the project, students *had* to figure out how to work together across social/physical and digital spaces, and this they did, for the most part. For example, one team cowrote and produced a podcast set in their alternative world, in which all three members took on character roles to debate the presence of extraterrestrials, which they then posted to their website. That production which was highly successful, could not have been completed without interaction across social space (the give-and-take of figuring out their roles), physical space (finding a physical setting conducive to rehearsing and recording the podcast), and digital space (editing and importing the recording to their website, with appropriate headings, visuals, and textual introduction). No one element was removable without the experience being diminished or even made impossible.

In looking at assessment, grades trended higher on students' first individually written story when compared to the same assignment in the advanced fiction course taught 2 years earlier, which had a similar student demographic and enrollment, but without the collaborative world-building focus. (Both versions of the course also included a second story assignment, but the grading method differed, preventing comparison.) Higher scores may be a result of students working together on their created worlds for an extended period of time prior to starting to write their own stories. This extra time spent on collaborative creative activity, immersion in their alternative worlds, and hammering out ideas may have better prepared students for their own independent writing, so that when they confronted the blank page to begin their own stories, they had more material to draw from and a heightened mental image of characters and setting, leading to better use of imagery, plot, and other elements. However, it is difficult to make a determination without additional data. Interestingly, students' own perceptions of their learning, as indicated in the course evaluations, were also higher compared to the same advanced fiction class taught 2 years earlier. This includes scores for the following (on a 1 to 5 scale, with 5 signifying the strongest agreement): *Course assignments contributed to my learning* (4.8 vs. 4.2); *the level of intellectual challenge was high* (4.5 vs. 4.0); *found the text course material useful* (4.8 vs. 3.6). More surprisingly, however, was the increase in the following: *The instructor respected students and their ideas* (5.0 vs. 4.0). This last score suggests that the emphasis on collaboration across physical and digital spaces affected not just the students but me, the instructor, as well.

In making an argument about political/urban spaces, Henri Lefebvre (1991) asserted that "new social relations demand a new space" (p. 59). In considering the tenets of both critical pedagogy and active learning, which together work to change the social order of the classroom in favor of a "student-controlled learning community," to return to Skill and Young's (2002) term, it would then seem reasonable that the way one thinks about learning space—the nature of what constitutes that space—would have to be renovated. What implications might this have? For one, the need to move from considering space on the basis of either/or (as in either physical space or virtual space) to that of both/and (see Bishop & Starkey, 2006, p. 33). Almost two decades ago, Skill and Young (2002) called for "a learning environment that pushes us to work at the intersections of virtual and physical spaces" (p. 31). As prescient as this was, perhaps a reevaluation of the intersection metaphor is worthwhile. In the middle of a physical roadway intersection, the two streets merge. It becomes impossible to differentiate one street from the other where the boundaries are swallowed by the new space created by the blending of the two. Similarly, the intersection of virtual, physical, and social space creates a new hybrid space where no one part of the tripartite learning space can be identified in isolation, without necessary reference to and reliance on the other two parts.

In the world-building course, social space was produced through the cooperative actions of team members creating virtual artifacts within the digital space of their websites. Those collaborative websites then became raw material for individually written stories, which, in turn, were read and discussed during group workshop sessions led by the student writer. The collaborative digital space was facilitated by physical spaces—the long whiteboard where teams diagrammed their ideas, the round tables where they spread out their laptops and conversed face to face, the informal setting of the coffee shop where one team convened. Thus, the learning experience as a sustained event was dependent on the dynamic between collaborative and independent work within the confluence of all three kinds of space. With this view, space is understood as not just the walls and tables of a physical classroom or the digital spaces of a website or even the social configuration of student teams but as all of these taken together, each necessary and interdependent on the presence of the other two to create a productive learning environment for both collaborative and independent creativity.

References

Archer, C., & Kelen, C. (2015). Dialogic pedagogy in creative practice: A conversation in examples. *Pedagogy, Culture & Society*, *23*(2), 175-202. http://dx.doi.org/10.1080/14681366.2014.932301

Baker, S. E., Edwards, R., & Doidge, M. (2012). How many qualitative interviews is enough?: Expert voices and early career reflections on sampling and cases in qualitative research (Working Paper). Brighton, England: University of Brighton. http://eprints.brighton.ac.uk/id/eprint/11632

Bishop, W., & Starkey, D. (2006). Collaboration. *Keywords in creative writing* (pp. 29-36). Boulder, CO: University Press of Colorado. https://doi.org/10.2307/j.ctt4cgr61.11

Brown, R., Ernst, J., Clark, A., DeLuca, B., & Kelly, D. (2017). Best practices. *Technology & Engineering Teacher*, *77*(2), 30-34.

Cornell, P. (2002). The impact of changes in teaching and learning on furniture and the learning environment. *New Directions For Teaching And Learning*, *92*, 33-42.

Glasgow, J., & Bush, M. (1995). Promoting active learning and collaborative writing through a marketing project. *The English Journal*, *84*(8), 32-37. http://www.jstor.org/stable/821185

Huggins, C., & Stamatel, J. (2015). An exploratory study comparing the effectiveness of lecturing versus team-based learning. *Teaching Sociology*, *43*(3), 227-235. http://dx.doi.org/10.1177/0092055X15581929

Inge, M. T. (2001). Collaboration and concepts of authorship. *PMLA*, *116*(3), 623-630. https://www.jstor.org/stable/463502

Kilgo, C., Ezell Sheets, J., & Pascarella, E. (2015). The link between high-impact practices and student learning: Some longitudinal evidence. *Higher Education*, *69*(4), 509-525. http://dx.doi.org/10.1007/s10734-014-9788-z

Lefebvre, H. (1991). *The production of space* (D. Nicholson-Smith, Trans.). Malden, MA: Blackwell.

Lin, L., Mills, L. A., & Ifenthaler, D. (2016). Collaboration, multi-tasking and problem solving performance in shared virtual spaces. *Journal of Computing in Higher Education, 28*(3), 344-357. http://dx.doi.org.proxyeast.uits.iu.edu/10.1007/s12528-016-9117-x

Reither, J., & Vipond, D. (1989). Writing as collaboration. *College English*, *51*(8), 855-867. https://www.jstor.org/stable/378091

Rettberg, S. (2015). Posthyperfiction. In H. Koenitz, G. Ferri, M. Haahr, D. Sezen, & T. İ. Sezen (Eds.), *Interactive digital narrative: History, theory and practice* (pp.174-184). London, England: Routledge.

Richardson, L. (2016). Sharing knowledge: Performing co-production in collaborative artistic work. *Environment and Planning A*, *48*(11), 2256-2271. http://dx.doi.org/doi:10.1177/0308518X16653963

Rish, R., & Caton, J. (2011). Building fantasy worlds together with collaborative writing: Creative, social and pedagogic challenges. *English Journal*, *100*(5), 21-28.

Skill, T., & Young, B. (2002). Embracing the hybrid model: Working at the intersections of virtual and physical learning spaces. *New Directions for Teaching and Learning*, *92*, 23-32.

Walker, A. (1996). Cooperative learning in the college classroom. *Family Relations*, *45*, 327-335.

Ward, T. B., & Sonneborn, M. S. (2009). Creative expression in virtual worlds: Imitation, imagination and individualized collaboration. *Psychology of Aesthetics, Creativity and the Arts*, *3*(4), 211-221.

Yancey, K., & Spooner, M. (1998). A single good mind: Collaboration, cooperation, and the writing self. *College Composition and Communication*, *49*(1), 45-62 https://www.jstor.org/stable/358559

Reviewers

Serdar Abaci, Newcastle University

Tessa Bent, Indiana University

D. Christopher Brooks, EDUCAUSE

Martyn Keeler Clark, University of Maryland

Sam Craighead, Ohio State University

Jean Florman, University of Iowa

Rebecca Frazee, San Diego State University

Dana Gierdowski, EDUCAUSE

Alia Katherine Lancaster, University of Maryland

Megan Christina Masters, University of Maryland

Peggy McCready, Northwestern University

Jeremy Price, Indiana University-Purdue University

Joshua Quick, Indiana University

Jae-Eun Russell, University of Iowa

Stephanie Serriere, Indiana University-Purdue University Columbus

Lisa Stephens, SUNY-Buffalo + FLEXspace

Heath Tuttle, University of Nebraska-Lincoln

JD Walker, University of Minnesota

Ava Wolf, University of Illinois-Champaign Urbana

Meina Zhu, Wayne State University

Contact Info for the Journal

Michael Morrone, Editor-in-Chief
Christopher J. Young, Managing Editor

Anastasia (Stacy) Morrone, Guest Editor

Cover art by University Information Technology Services (UITS), Indiana University

JoTLT Editorial Office

Indiana University
Bryan Hall, Room 203 B
107 S. Indiana Avenue
Bloomington, Indiana, 47405
jotlt@iu.edu

ISSN: 2165-2554