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Leveraging Faculty Reflective Practice to Understand Active Learning Spaces: Flashbacks and Re-Captures

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Although learning spaces research is not new, research approaches that target the specific teaching and learning experiences of faculty and students who occupy active learning classrooms (ALCs) is nascent. We report on two novels data collection approaches: Flashbacks and Re-Captures. Both leverage faculty reflective practice and provide windows into the rich and varied teaching and learning activities that active learning spaces afford. Findings suggest that in ALCs, faculty are easily able to design "activity strings," multiple active learning activities knitted together within the same instructional period. Further, over time, activity strings become regular occurrences, manifesting as "instructional routines."

Introduction

Increasingly in higher education, there is recognition that the design of learning spaces influences the nature of the pedagogies that occur in them (e.g., Baepler, Walker, Brooks, Saichaie, & Petersen, 2016; Brooks, 2011, 2012; Rook, Choi, & McDonald, 2015). That is, we dictate pedagogy, either intentionally or unwittingly, by the learning spaces we design. These *built pedagogies* (Monahan, 2002) shape the teaching and learning experiences of faculty and students. Traditional classroom spaces, for example, which are characterized by fixed and forward-facing chairs, a clear front orientation defined by a black or white board, and little else in terms of amenities or flexibility imply that communication is unidirectional and instructor-centered, expectations are low for interaction among learners, and information is simply to be acquired in the space. In contrast, technology-enhanced learning spaces are characterized by flexible layouts, multi-height seating, interactive displays, screen-sharing capabilities, writeable walls, wireless projection, multi-access power, and changeable infrastructure to allow for easy installation of new technologies. These kinds of spaces imply interaction, collaboration, and co-construction of knowledge.

In the current parlance of learning spaces research, technology-enhanced learning spaces are commonly referred to as Active Learning Classrooms (ALCs) because of the kinds of learning experiences that can be facilitated in them. Not surprisingly, some existing pedagogical approaches are more easily implemented in ALCs than in traditional spaces (e.g., Morrone, Ouimet, Siering, & Arthur, 2014; Najmabadi, 2017). Group work, as one example, is more easily conducted in a room appointed with tables than in a room with individual desks fastened to the floor. Such non-traditional classroom design characteristics also afford opportunities for new pedagogies. ALCs, by their very design, lend themselves to experimentation and exploration of new ways of engaging students. Identifying and understanding these new pedagogies, however, remains elusive in learning spaces research.

Learning spaces research is not new, but narrow approaches limit our understanding of ALCs. Several categories of data collection methods are reported in the learning space research literature and include both quantitative and qualitative methods. Quantitative data sources include post-occupancy surveys or evaluations for students (Cotner, Loper, Walker, & Brooks, 2013; Dori & Belcher, 2005; Harvey & Kenyon, 2013; Henshaw, Edwards, & Bagley, 2011; Lee, Boatman, Jowett, & Guenther, 2014; McArthur, 2015), for instructors (Lasry, Charles, & Whittaker, 2014), and for both (Pavlechko, Jacobi, Jones, & Hesser, 2016). Pre- and post-test scores (Dori & Belcher, 2005; Muthyala & Wei, 2012) and course grades (Baepler, Walker, & Driessen, 2014; Chen & Chiou, 2014; Cotner et al., 2013; Ogilvie, 2008; Yuretich & Kanner, 2015) have been collected as well. Qualitative sources include classroom observations (Brooks, 2012; Dori & Belcher, 2005; Henshaw, et al., 2011; Horne, Murniati, Gaffney, & Jesse, 2012; King, 2016; Lasry, et al., 2014), student interviews (Beckers, van der Voordt, & Dewulf, 2016; King, 2016; Van Horne et al., 2012), and instructor interviews (Gebre, Saroyan, & Bracewell, 2014; Lasry et al., 2014).

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Current approaches, however, fail to capture in-the-moment teaching and learning experiences and the routines that emerge over time. To be fair, some novel data collection strategies have been reported. These include daily usage checklists (Morrone et al., 2014), instructor activity logs recording cumulative time on different course activities (Komulainen, 2015), instructor journals reporting classroom activities that had to be modified or changed as a function of the classroom space (McArthur, 2015), student journals describing their experiences and reaction to a learning space (Parsons, 2016), screen video archived capturing student activity (Kim & Ke, 2016), and machine learning sound capture and analysis (Owens et al., 2017).

Most approaches for capturing rich ALC experiences, however, require instructors and students to reflect back—and remember—over many weeks. Video data provide some perspective, but even these fail to capture the nuances of instructional decision-making and activity. One parallel to draw is that of data collection methods found in online learning environments, where very granular data can be captured and analyzed. While it is very difficult to capture nuanced interaction data in a residential course, in an online environment the details of nearly every interaction can be captured, including student-to-student interactions, student-to-instructor interactions, and student-to-content interactions (Macfadyen & Dawson, 2010). These interactions can be used to illuminate and model new pedagogies (Greller & Drachsler, 2012; Shum & Crick, 2012), as well as better understand each student's level of engagement at specific points in a course (McBrien, Cheng, & Jones, 2009). Is it possible to create new, novel data collection approaches applied to physical learning spaces, that provide the same level of depth of methodologies used to study online learning spaces? As more novel spaces are designed, how do we learn and share what creative faculty are devising as new instructional strategies? To move beyond the pedagogies we currently know and recommend, we need clearer and more frequent glimpses into the teaching and learning experiences that occur.

To overcome these limitations, we developed two novel approaches, Flashbacks and Re-Captures, to help us better understand what faculty and students experience in technology-enhanced classrooms. Faculty who engage in these new approaches reflect, not simply to remember, but to learn and to share with others. Therefore, we situate these approaches within the tradition of reflective practice (Schön, 1983). Education philosopher John Dewey said, "We do not learn from experience; we learn from reflecting on experience" (1916). More recently, Donald Schön applied this notion to organizations and professions, particularly nursing and education (Thompson & Thompson, 2008). Schön argues that simply having professional knowledge (e.g., of content, of technology, of pedagogy) is insufficient for transferring that knowledge to professional practice (e.g., to teaching in an ALC). Reflection is needed to connect knowledge with practice. The approaches we developed prompt such reflection.

We experimented with Flashbacks and Re-Captures in one of our institution's ALCs, the "Bluebox." In the Bluebox, all of the furniture is moveable, all of the walls are writable with additional mobile whiteboards available for instructors and students, and technology allows for wireless screen-sharing from any device with an internet connection to a large, multi-panel display on one wall. Faculty members teaching a wide range of courses in the Bluebox used Flashbacks and Re-Captures to reflect on their experiences in the space. In this paper, we report on these two data collection methods, sharing what we learned and articulating about them in a way that they easily can be replicated by others.

Table 1. **TPACK Dimensions and Corresponding Prompts**

Targeted TPACK Dimension	**Sample prompt**
Technological Pedagogical Knowledge (TPK)	How did the Bluebox Studio's environment support your pedagogical approach this week?
Technological Content Knowledge (TCK)	Describe how students used technology this week in your class to explore or interact with course content.
Technological Knowledge (TK)	In what ways did you take advantage of the technology in the Bluebox this week? This can include the whiteboards, student-owned technology, the display wall, or technology you brought to the classroom.
TK/TPK	Did you have students use the display technology in the BlueBox classroom this week? If so, in what context(s)?

Flashbacks

How they work. Flashbacks are weekly instructor reflections on their experiences in a learning space. Each instructor in the targeted learning space receives an electronic link to a reflection prompt thirty minutes after his

or her last class meeting of the week. A unique Gmail account is created for the purpose of disseminating prompts which are pre-scheduled using Boomerang (Moore, Chin, & Moah, 2014), a Gmail plug-in. For example, an instructor who only teaches on Monday evenings until 7:00 pm receives her prompt at 7:30 pm on Monday night. Another instructor who teaches Monday through Friday until 10:30 am receives his prompt at 11:00 am on Friday morning. Both instructors receive the same prompt. An example of a Flashback prompt is: "*Describe how students used technology this week in your class to explore or interact with course content."* Each email message contains a link to a Qualtrics survey where prompts are presented as survey items. Some prompts loosely reflect the Technological Pedagogical Content Knowledge (TPACK) framework of Koehler and Mishra (2006, 2009). Table 1 presents examples of several TPACK-related prompts. (Appendix A contains a list of other Flashback prompt examples to target different aspects learning in ALCs.)

Once they click the link to access the survey, instructors can choose to respond either in text or via video. Generally, we find that fewer people choose the video option than the text option, but those who choose video tend to use more words to register their response. For example, one prompt directs faculty to reflect, "In what ways did you take advantage of the technology in the Bluebox Studio this week? This can include the whiteboards, student owned technology, the display wall, or technology you brought to the classroom." A typical text response is:

> *During activity toward the end of class, students use their own computers to display computing results on the front screen. A student example was used to show the class additional steps in the activity. Students were working in groups at the tables in the room for discussions throughout class as well as the activity at the end.* (Instructor, Statistics)

Another instructor responded to the same prompt via video. The transcription read:

> *So not much different to report this week compared to last week. The students seem to have settled into their spots, so we don't see too much change between where people are sitting a little bit. And when I asked them to discuss things in groups, I do push them around a little bit when you have one person sitting over here. But for the most part, the bigger tables seem to be more popular. By bigger, I mean most seating.*
> *Still making great use of the white boards. I love that I can move them around, turn them around. Use the white board right next to the front screen, use the white board on the side walls. Students are still using the white boards, by where they're sitting. So that's by far the most useful aspect of the room for me.*
> *Students still haven't done much putting their own images up on the display, so I'll make it a point to try to encourage that. I have had the students I put an image up and have them do some discussion of that image. But that's nothing that requires any sophisticated technology. So I guess not much really not much different than what I said last week. And we'll see if anything changes. Thanks.* (Instructor, Astronomy)

Researchers retrieve responses, regardless of format, from within the Qualtrics interface.

Unique prompts are presented one time or can be repeatedly administered to capture change over time. We repeatedly administered TPACK-inspired prompts four times across an academic semester, roughly every four weeks. General prompts were included as well.

What they tell us. Weekly Flashbacks provide a rich window into ALC experiences. In the Bluebox, beyond affirming that flexibility in the space is essential, two major insights emerged. First, when teaching in an ALC like the Bluebox, faculty develop "activity strings" to engage students. That is, they string activities together to create instructionally diverse learning experiences. One example of an activity string is:

> *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. We then went around the room and each group orally presented their findings, using what they wrote on the walls and marker boards as a "visual aid." 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.* (Instructor, Communication Arts & Sciences)

Our second insight was that, over time, activity strings and other practices become "instructional routines." Instructors routinely use a set of activities. In their Flashbacks, these were sometimes reported almost apologetically, as instructors felt compelled to share something new when, in fact, they had settled into a habit of using activity strings on a regular basis. An example of an instructional routine reported by a Psychology instructor was, *Pretty consistently with the way I have used it all along, I presented material electronically on the large board and I drew [on] the portable boards to facilitate discussion of the material.* (See Appendix B for additional activity strings and instructional routines.)

Additionally, Flashbacks reveal contextual strategies for functioning within an ALC. Two examples to highlight relate to the display wall and team teaching. First, the large touch screen display, when combined with Solstice technology for screen-sharing, allowed instructors to display

multiple pieces of content simultaneously. This became a powerful feature, as revealed in Flashbacks, when instructors reported displaying both static content (i.e., content that persisted over time, such as activity instructions or guiding questions) on one side of the display and dynamic content (i.e., content that changed, such as images, figures, or conceptual examples) on the other side of the display. This combination represented a stark contrast from the more traditional sharing of one slide at a time.

Their strengths and limitations. Flashbacks solicit brief but thoughtful reflections on teaching and learning experiences that occur over the span of a week. This enables a more *in situ* reaction than reflections captured at the end of a semester, for example. Automated email delivery and the invitation to respond either in text or via video makes Flashback delivery and response unobtrusive and convenient. Once weekly responses have been recorded, it is easy for researchers simply to download them from Qualtrics.

Despite these strengths, there are also challenges to using Flashbacks. For example, we found that faculty did not necessarily respond to prompts at the level we specified. That is, regardless of nuances among the TPACK prompts, for example, our faculty tended to report "what I did." To address this, we recommend a combination of prompt variety and clear communication about expectations. For example, one of the prompts asks faculty, "Did the affordances of the Bluebox classroom allow you to exercise students' higher level, or critical thinking, skills this week? If yes, please describe." One faculty response to this prompt read:

> *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.* (Instructor, College of Science)

Clearly, this is not a reflection on students' critical thinking. The TPACK-inspired prompts such as this were similar but definitely different. It is possible, however, that for faculty who routinely provide responses across a semester, there may appear to them to be little difference among the specific prompts. We recommend a simple reminder that each prompt targets something specific and that reflections focused on the specific prompt are appreciated. Another way to address this is to craft prompts that are clearly unique each week. Obviously, which approach is best is dependent on the research questions of interest and what researchers hope to learn from the Flashbacks.

Flashback prompts administered repeatedly across the semester did not provide insights about change over time. While it is entirely possible that there simply was no change in the nature of the responses throughout the term, it is also possible that different prompts would yield different results.

Re-Captures

How they work. Instructors are invited to reflect on—to re-capture, in fact—how classroom configurations impact their instruction. Re-Captures have two components: (1) Re-Capture-Configure, a data collection component where data are faculty-created visual representations of classroom configurations they find valuable; and (2) Re-Capture-Consider, a faculty development component, in which faculty share their configurations with a multi-disciplinary group of teaching colleagues.

Re-Capture – Configure. Re-Captures (Configure) require faculty to engage with a digitized graphic rendering of their classroom space. We leveraged Google's Drawing application to create a templated perimeter of our Bluebox classroom with moveable furniture and white board pieces. (See Figure 1.) Adjacent to the spatial representation, we included the following directions: "In the diagram at the left, please drag and drop tables, chairs, whiteboards that help you to: *Re-capture a configuration of the space that allows you to do something different (instructionally, pedagogically) in your course that either you could not do before or that was difficult* [in a traditional classroom space]."

The cloud-based template is replicated, and a unique link is generated and sent to each faculty member. Respondents visit their Re-Capture link at their convenience to supply both a graphical response to the prompt and details about how that configuration adds value to their pedagogical approach. Responses are saved as portable document formats (PDFs) and curated by researchers for analyses and sharing. Table 2 shows examples of faculty-generated configurations and their accompanying explanations.

Re-Capture – Consider. After all configurations and their accompanying explanations are collected, the faculty are convened to consider and discuss together the room configurations and their implications for teaching and learning. Such conversations serve as valuable and rich faculty development experiences. We used two questions to drive the Re-Capture conversations:

1. What configurations are most compatible with the pedagogical goals of the faculty? (This is a research question.)
2. How can we leverage our data collection process to provide an opportunity for faculty engagement and cross-disciplinary conversation? (This is a faculty development question.)

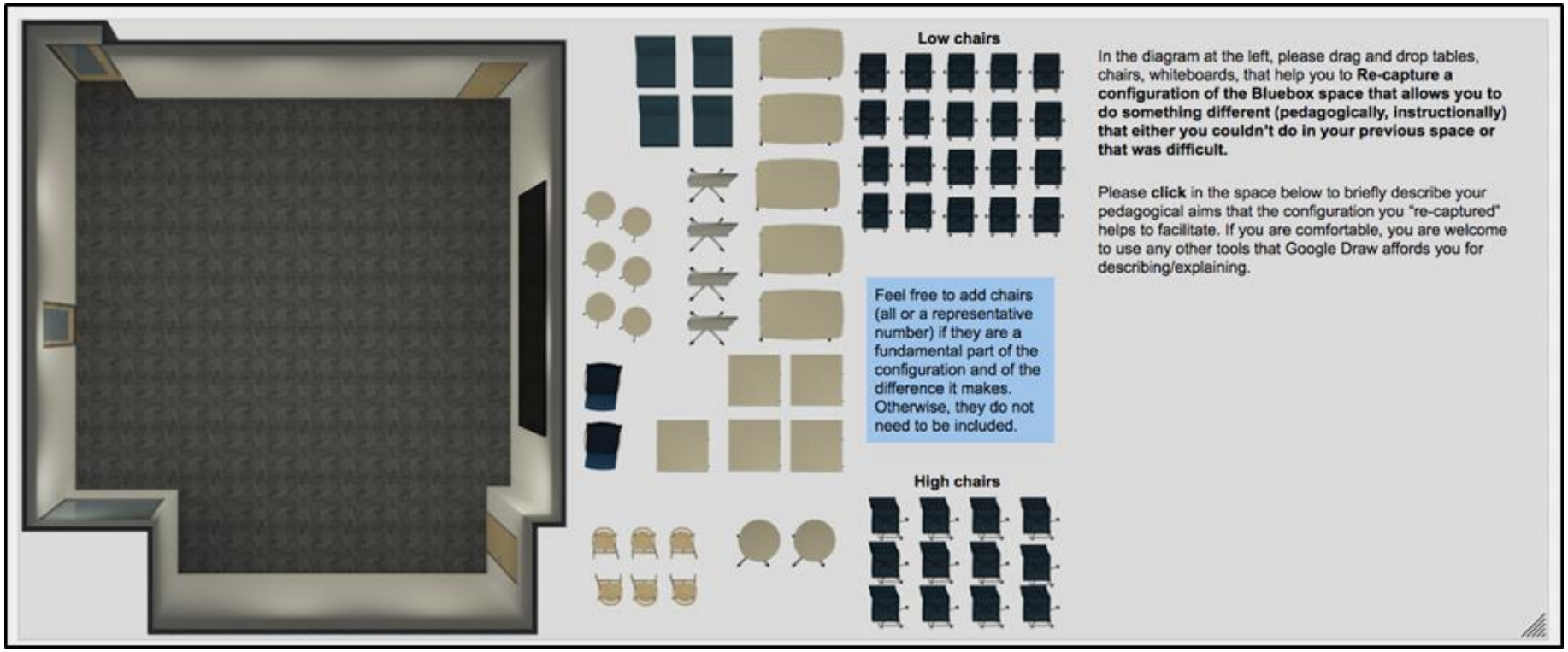

Figure 1 (above). **Re-Capture template for Bluebox in Google Drawings.**

Figure 2 (below). **Set of images provided to faculty participants during a Re-Capture session. Each configuration was printed as a PowerPoint note on a single side of 8 ½ x 11 paper.** ***Note:*** **To aid communication of findings, it is helpful to refer to each configuration by a name that conjures a mental image of the space and of the kind of activities that might occur there. For example, the configurations below may be labeled as (1) debate, panel; (2) small groups or clusters; (3) presentation, demonstration; (4) group circle or fishbowl (if a second concentric circle is added); and (5) reception, poster session.**

Table 2. **Example Configurations and Accompanying Responses to the Provided Prompt**		
Course context	**Faculty-generated room configuration**	**Instructor's pedagogical aims that the configuration helps to facilitate**
Instructor A taught a 400-level course in Nutritional Sciences. The focus of the course is nutrition counseling. There were 27 students enrolled.		"I was able… to divide the groups into two or three students and place them around the room and on both sides of the white boards and they were able to brainstorm and work in small groups standing up while I was able to physically SEE what they wrote and easily move around the room and interact with them. I was able to "catch" them doing their work well and also correct misconceptions easily. In the traditional classroom, all of their work was done sitting down and on paper and I never had the ability to interact with each small group in the same manner."

Instructor B taught a section of CAS 100, a course on public speaking. There were 26 students enrolled in the course.		"Because public speaking is a nerve-racking activity, in typical classrooms students tend to hide behind the podium as much as possible. In the Bluebox Studio this isn't possible! So, I have noticed that students seem to use the space in the front of the classroom much better in this space than in traditional classrooms. Students move around more to emphasize key points of their speech, for instance and they are more attuned to body language."

What follows is a description of how our team prepared to engage the faculty around the above research question. The researchers prepared a set of PowerPoint slides with pre-determined configurations for the instructors to consider. The configurations were selected from among those that the faculty cohort created in Google Drawing. These were not, however, presented as slides. Instead, at the meeting each instructor was presented a hard copy set of PPT images printed in "notes" format. There were five sheets, each with a configuration at the top of the page with space for notes at the bottom. Figure 2 depicts the set of configuration images provided to faculty.

Instructors were then directed to rank the configurations on the basis of their compatibility with the faculty member's instructional goals. Further, they were asked to provide a brief explanation to support each rank and to describe how the configuration does, or could, add value to their course. Figure 3 shows the instructions that accompanied the images.

Instructors took approximately 15 minutes to complete their rankings and explanations. After that, one researcher facilitated a discussion. Rankings were tabulated and instructors were invited to share their rankings and their justifications of ranks. Table 3 shows rankings for two cohorts of Bluebox faculty.

STEP 1

Rank the 5 configurations in order from *Most compatible alternative/option* (#1) to *Least compatible alternative/option* (#5). Number each page in rank order.

Most compatible alternative/option = Well-matched to at least one of your instructional goals; you believe this configuration could add value to your students' learning experience; you might consider actually setting the room up this way some time.

Least compatible alternative/option = Poorly-matched to any of your instructional goals; you can't imagine this configuration adding value to your students' learning experience, and it may actually inhibit learning; you would not consider ever actually setting the room up this way.

STEP 2

For each configuration you can imagine leveraging in your course, briefly explain the context where it could prove useful. How would the space configuration add value?

For each configuration you cannot imagine leveraging in your course, what factor(s) would prevent you from doing so (consider curricular, pedagogical, logistic, practical, etc.)?

Figure 3. **Instructions for ranking Re-Captured configurations**

What they tell us. We found that faculty-generated configurations revealed wide variability in layouts of our Bluebox space. As expected, the space was arranged to suit the practical/logistical and pedagogical needs of the courses and instructors represented. (Visit this link to view example configurations.) Across the faculty, there were reports of creative and engaging configurations. The configurations shown in Table 2 above give insight into the kinds of specific and meaningful changes faculty reported being able to make as a result of teaching in the Bluebox.

There are at least three important observations to highlight in Table 3. First, the Bluebox classroom was designed as a technology-enhanced active learning classroom. As such, there is an expectation for student interaction and collaboration. Although, each of the configurations implies some measure of interaction, the "groups" category is perhaps the most ALC-like. That is, we expect students learning in a space like the Bluebox to be doing so in collaboration and cooperation with peers in groups. Of the 11 instructor profiles, nine rank small groups as either 1 or 2. The two that ranked small groups a 3 out of 5 are a public speaking instructor and an Information Sciences and Technology (IST) instructor whose 400-level course is largely led by student presenters. Second, Instructors 1-5 comprised one semester's faculty cohort. Each member of that cohort presented a profile of ranks that was different from the others. This clearly demonstrates that a one-size-fits-all configuration is inadequate; flexibility is essential. Third, when the second cohort is added to the matrix, there begins to be some overlap in rank profiles, and new insights emerge. For example, Instructors 7 and 8 have identical rank profiles, but the courses are very different. One was a 400-level IST game design course with 43 enrolled students, while the other was a 12-student seminar course in Biochemistry and Molecular Biology.

During the Re-Capture exercises, the faculty themselves began to assign names to effective configurations. For example, a circular formation comprised only of chairs was referred to by one instructor as a "Campfire." When a small table was dropped into the center of a similar circle of chairs, it

created a focal point for something to be displayed or demonstrated and was branded the "operating room" configuration. Still another instructor reported on the benefits of starting class sessions with an "Island" configuration, where all students convened at a large conference table before breaking into small groups. Such faculty-generated conceptualizations, not only signify a sense of ownership, but can be leveraged with future cohorts of instructors to give ideas of what is possible in the space.

***Table 3*. Instructor Ranks of Configuration Compatibility with Instructional and Pedagogical Goals**

Instructor	Rank by type				
	Debate / panel	Small groups	Presentation / demonstration	Group circle	Reception
1	2	1	3	4	5
2	4	1	3	5	2
3	2	1	3	5	4
4	1	3	2	4	5
5	1	2	3	5	4
6	3	1	5	4	2
7	1	2	5	3	4
8	1	2	5	3	4
9	4	1	3	2	5
10	2	3	1	5	4
11	3	1	5	4	2

To summarize, a number of compelling insights emerged specifically from the Re-Capture approach:

- There are categories of configurations that work for different pedagogical purposes; for example, small groups, debates and panel discussions, student/guest presentations, informal mingling and presenting.
- No single configuration is optimal for every instructor in every teaching context. A classroom space is leveraged in different ways, by different instructors from different disciplines, and depending on instructional purpose.
- The cohort approach is a de facto Faculty Learning Community, if only for a semester at a time. Although we did not design research questions specifically around faculty engagement, the research team noticed clear benefits to convening faculty for conversations around teaching and learning in the Bluebox.

These findings support that flexibility is essential for allowing faculty to create the best space configurations for the instructional and pedagogical goals they seek to achieve. Moreover, instructors can only imagine what they can imagine. When there are opportunities to hear about what other faculty are doing in the space, these possibilities expand.

Their strengths and limitations. Re-Capture "drawings" can be downloaded, saved, and repurposed. They can be archived and used as visual data sources that, when combined with the instructors' text elaborations, are uniquely informative representations of what is happening in the classroom space and why. When they are presented and discussed in group settings, faculty are invited to share what they are learning with their teaching colleagues. This process acknowledges that experimentation is acceptable and, in fact, encouraged; that faculty have teaching expertise to share; and that there is a community of non-disciplinary peers to whom they can relate and from whom they can learn. Finally, Re-Captures are fun to create. As instructors interact with the Google Drawings interface, they can be reflective in a low-risk and playful environment. From a research perspective, this translates into participation and responses.

There are limitations. The room perimeter and furniture representations must be created by someone with media expertise. Once the drawing space is designed, faculty only capture what they are doing, not what configurations they still wish they could create. For example, for the second semester that we used Re-Captures, the Bluebox was scheduled during nearly every available instructional window and with only 15 minutes between class sessions. This rendered large-scale reconfigurations of the space very difficult or unfeasible. Given we prompted faculty to report configurations they used, we know there are still other possibilities that simply could not be created in the space given time constraints. A different prompt, however, could invite such alternatives. For example, "If time was not a constraining factor, create what would be the ideal configuration for most of your class sessions."

Conclusions and Implications

Institutions of higher education are increasingly recognizing that traditional learning spaces are inadequate to support a growing range of innovative active pedagogies. A recent ELI report (ELI, Key Issues in Teaching and Learning) identified learning space designs as one of the top tech priorities for 2017. Tapping the occupants of ALCs is essential if we are going to highlight new and effective active pedagogical strategies to employ in these spaces.

In the parlance of reflective practice, Flashbacks and Re-Captures are examples of what Schön (1983) would call reflection-on-action. When prompted by a Flashback, faculty look back on what action they took in their classroom and articulate, for example, the difference an approach made, how an affordance of the space was advantageously leveraged, or whether they perceive that students benefitted from an instructional method afforded by the space. Similarly, Re-Captures require reflection on the intentional action of manipulating the classroom space in a particular way and considering the difference it made. Importantly, these approaches also represent an additional purpose for reflective practice: reflection-*for*-action (Thompson & Thompson, 2008). Reflection-for-action builds upon reflection-on-action in a way that is forward thinking and which informs future practice. Literature on reflective practice supports both individual reflection and organizational, or group, reflection (e.g., Fook, 2015). Convening faculty members to discuss their Re-Captured configurations, for example, creates an opportunity for instructors to learn from the reflections of their colleagues and to consider whether others' instructional decisions and behaviors might inform their own. This represents a cyclical pattern provided by approaches such as Flashbacks and Re-Captures and the manner in which they are administered. Instructors come to ALCs with varying degrees of knowledge about their content and about available pedagogical options for helping students to learn that content. Through individual and group reflection, pedagogical options expand and may be incorporated into future practice which is reflected upon, researched, and shared.

Our experimental learning space was the Bluebox, a technology-rich active learning space housed in a Biochemistry and Molecular Biology lab situated in the central part of campus. The classroom space was designed to be discipline-agnostic, available to anyone wanting to teach there. One research goal was to better understand the experiences of those who occupy the Bluebox. We did not set out, specifically, to collect pedagogical approaches. Instead, we prompted faculty to reflect on their experiences; we did not prompt them to report on pedagogy. The two are, however, inextricable. When faculty reflected on their teaching experience, they inevitably reported on pedagogy.

Future Directions

Flashbacks and Re-Captures create opportunities for future research in areas of both research and faculty development. As noted, learning spaces research is not new nor is the reliance on faculty development focused on active learning strategies. Where we see bright possibilities is in the role of Flashbacks and Re-Captures to support data triangulation, providing opportunities for validation of classroom observations, visual imagery to support survey responses, and faculty perspectives to correlate with student data. They also reveal creative pedagogies that can be shared with faculty by faculty.

Flashbacks and Re-Captures are, fundamentally, open-ended questions. As such, they reveal both anticipated as well as unexpected findings. Some themes suggest opportunities for future exploration. For example, Flashback responses indicated benefit from two instructors working as a teaching team. Instructors for three different Bluebox courses were co-teachers. Their Flashbacks revealed how teaching in an ALC can look when there are twice the hands and eyes to facilitate instruction. Further exploration into such approaches as well as faculty development to support them is an interesting direction for future attention.

More generally, we see clear opportunities for deeper exploration into the perceived benefits of the faculty cohort approach. Teaching in a common classroom represents a shared experience. Ours is a large campus environment, and faculty will likely only know the people with whom they are sharing an ALC if we bring them together as a cohort. Thus, cohort-based faculty development is an area of important future research.

Finally, we are currently employing Flashbacks and Re-Captures to more deeply explore the ways instructors use the affordances of ALCs to target students' cognitive and affective engagement. This includes expanding the use of Flashbacks with students to gain a deeper understanding of their weekly experiences of engagement. Clearly, the power of Flashbacks and Re-Captures lies in their flexibility. Regardless of the space, the discipline, or any number of other variables, both data collection methods can be manipulated to suit a wide range of unique purposes and research questions.

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