Cline Library Learning Studio Assessment Fall 2014 Final Report

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Suzanne L. Pieper
Assessment Coordinator, *Office of Curriculum, Learning Design, and Academic Assessment*
Laura Rose Taylor
Assistant Dean, *Cline Library*
Toshio Asai
Doctoral Student, *Educational Psychology-Counseling Psychology*
Zhong Chen
Research Analyst, *Office of Curriculum, Learning Design, and Academic Assessment*

Executive Summary

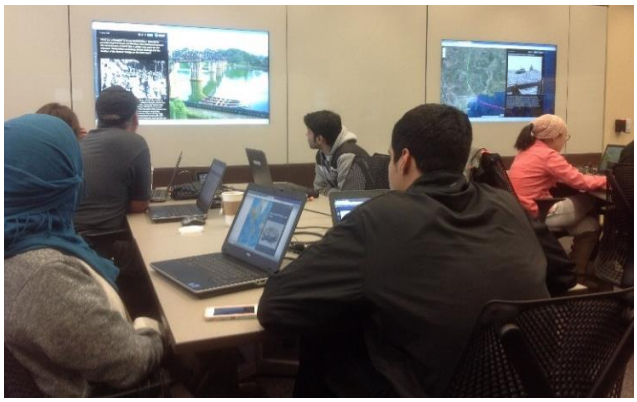
Classes Taught in the Cline Library Learning Studio – Fall 2014	
BizBlock (MKT 333I, MGT 300I, and MGT 350IW)	Mary Bowers, Chris Scherpereel, Kevin Trainor
CINE 101 – Introduction to Cinema and Visual Culture (Section 1)	Astrid Klocke
CINE 101 (Sections 2, 3, 5)	Brent Dunham
CINE 101 (Section 4)	Rebecca Gordon
GSP 130 – Mapping the World	Mark Manone
HON 391 – Bruised Never Broken: Terrorism and the Lived Experience	John Doherty

The Cline Library Learning Studio (Room 249) is a highly configurable, advanced technology classroom space in an environment that is designed to be seamless and intuitive to use. The Learning Studio welcomed its first classes in fall 2014.

This report presents the results of an assessment project conducted in fall 2014 in order to assess the program goals of the Learning Studio and inform improvements related to learning experiences in the room. A variety of measures were used to assess program goals across eight classes in the Learning Studio: the Critical Incident Questionnaire; Faculty Pre-Term, Mid-Term, and Post-Term Interviews; Classroom Observations; End-of-Term Student and Faculty Surveys; and a Room Reset Survey. Additonally, a small study was conducted using student performance data from a signature assignment in multiple iterations of a course taught by the same instructor.

Key Findings

- The classroom encouraged high levels of student and faculty engagement and enrichment.
- Student learning improved in the new classroom compared to a traditional classroom space, although the improvement might be attributed to a blended course design rather than the classroom itself.
- Students and faculty agreed that the room is a highly flexible space that promotes collaboration and active learning and teaching. However, opportunities for student engagement with technology and their peers could be improved by aligning pedagogy to the teaching/learning potential of the Learning Studio. Additionally, technology issues and the room configuration sometimes proved challenging for faculty and students.
- The most commonly used element of the room was the instructor's ability to display content onto large or all screens, while the most prominent issue was glitches with the audiovisual technology. Faculty were very satisfied with the technology support provided by Cline Library.



TOSHIO ASAI

Introduction

This report presents findings from a variety of measures — the Critical Incident Questionnaire, Classroom Observations, End-of-Term Student and Faculty Surveys, Faculty Post-Term Interviews, and the Room Reset Survey — used to assess the program goals and outcomes across eight classes in the Cline Library Learning Studio. It also includes findings from a small study that compared student performance data on a signature assignment in multiple iterations of a course taught by the same instructor.

The findings, collected during the fall 2014 term, are organized into two broad areas outlined in the Cline Library Learning Studio Assessment Plan: the teaching and learning, and the room and the technology. Together these areas encompass the program goals and outcomes for the Cline Library Learning Studio.

Part 1: Teaching and Learning

A. The Critical Incident Questionnaire

The Critical Incident Questionnaire (CIQ) (Brookfield, 1995) was administered initially between weeks 4 and 6 of the fall 2014 term. The assessment was administered online to students. Student responses represented four classes: BizBlock (a course that combines MKT 333I, MGT 300I, and MGT 350IW), CINE 101-1, GSP 130 and HON 391. These four classes represented 15.5 hours per week (61% of the total scheduled classroom time of 25.5 hours per week) and the teaching of six instructors.

The CIQ was administered online again between weeks 12 and 16 of the fall 2014 term. Student responses represented six classes: BizBlock, CINE 101-1, CINE 101-2, CINE 101-3, CINE 101-4, and CINE 101-5. These six classes represented 14.25 hours per week (56% of the total scheduled classroom time of 25.5 hours per week) and the teaching of 6 different instructors.

The CIQ encourages students to reflect on their own learning in a class and provides instructors with information regarding how students are experiencing their teaching. The purpose of the CIQ is "not to ask students what they liked or didn't like about the class, but to prompt them to focus on specific, concrete happenings" (Brookfield, p. 1).

The CIQ is comprised of five questions:

- At what moment in class this week did you feel most engaged with what was happening?
- At what moment in class this week did you feel most distanced from what was happening?
- What action that anyone (teacher or student) took in class this week did you find most affirming or helpful?
- What action that anyone (teacher or student) took in class this week did you find puzzling or confusing?
- What about class this week surprised you the most?

Student responses to the first two questions of the CIQ are summarized below. Other questions on the CIQ were used for formative feedback to instructors to assist them with continuously improving their classes. The results of the second administration of the CIQ are compared to results from the first administration with the focus on change in students' responses over time.

At what moment in class this week did you feel most engaged with what was happening?

Most Engaged Moment: Group Activities

A total of 186 students responded to this question in the second administration of the CIQ, compared to 113 students in the first administration. Similar to the first administration, students' most frequent response (93 second-administration responses compared to 79 first-administration responses) to this question was that group activities engaged them the most in their classes.

In the second administration, students were most focused on their final group projects and presentations. Working as a group on these assignments, meeting with the instructor who provided feedback, presenting the results of their group work to the class, and listening to the presentations of other groups were engaging activities. Other responses to this question varied, but a number of students responded that they were most engaged when they were involved in either online or face-to-face class discussions.

Some students were most engaged when they met face-to-face with other students and their instructor, while other students preferred online activities. A few students mentioned that being able to use the available technology in the room engaged them.

STUDENT VOICES

"I was most engaged when writing my personal reflection on my contribution to the group project."

"*My group met with the instructor to discuss our group project, and I was very engaged with her advice on what to change about our project."*

"*I felt most engaged when we were watching each other present our projects and presenting ourselves. It was a fun way to see the people in the class understanding the material."*

At what moment in class this week did you feel most distanced from what was happening?

Most Distanced Moment: No Class Meeting and/or Working Online

A total of 181 students responded to this question in the second administration of the CIQ, compared to 113 students in the first administration.

In contrast to the first administration when the most frequent response to this question (26 responses) was that students were most distanced during lectures, in the second administration students were most distanced (85 responses) when the class did not meet and/or they were working online.

Many of these students mentioned that they felt most distanced because they were not able to connect with their group members. Other students felt distanced from the instructor or unsure about class assignments that were due. Thirty-one students responded that they did not feel distanced from what was happening at all.

Additional responses to this question varied, but some students indicated that they were most distanced in class, during group work, and while completing individual assignments.

STUDENT VOICES

"I feel most distanced when there is a lot of online work and I don't communicate with my class members about the assignment."

"When we are not in class. It's hard to understand content and material when you don't have a teacher there to ask questions."

"I did not feel distanced at all. The assignments and due dates are very straightforward, and it is easy to know what to do and when to do it."

B. Classroom Observations

Classroom observations were conducted in one class per instructor: BizBlock (Bowers, Scherpereel, Trainor), CINE 101-1 (Klocke), CINE 101-2 (Dunham), CINE 101-4 (Gordon), GSP 130 (Manone), and HON 391 (Doherty). Each class was visited once between weeks 4 and 6 and once between weeks 12 and 14 of the fall 2014 term. All observations were conducted for the entire length of the class period.

Comments and a ranking (low = 1, moderate = 2, and high = 3) were recorded for various interactions in the classroom: student engagement in instruction, student engagement with peers, student engagement with technology, instructor engagement in instruction, instructor engagement with students, and instructor engagement with technology. Observation results for the highest- and the lowest-ranking interactions are summarized below. The results of the second round of observations are compared to results from the first administration with the focus on change in classroom interactions over time.

Highest-Ranking Interaction: Instructor Engagement with Students (3 out of 3)

As we previously found during the first round of classroom observations, the highest-scoring interaction was instructor engagement with students. The overall average was 3. All of the instructors seemed to prioritize and invest in the student-instructor relationship during their class period. Indeed, most of the instructors maintained good eye contact with their students, walked around the classroom to facilitate questions from students, and visited work stations to better facilitate student learning. Although instructor engagement with students was high for both the first and second round of observations, it appeared that the level of instructor engagement with students increased throughout the term as the instructors became more familiar with the physical layout of the Learning Studio and its instructional and technological capabilities. Overall, instructors seemed to be invested in student success and student-centered learning.

Lowest-Ranking Interaction: Student Engagement with Technology & Student Engagement with Peers (2.5 out of 3)

Similar to the first round of classroom observations, the lowest-scoring interaction was student engagement with technology. The overall average was higher for the second round of observations at 2.5, compared to 1.67 in the first round.

Though students seemed to be given more opportunities to utilize technology later in the term, not every student had access to technology. Rather, student access to technology appeared to vary depending on some circumstantial factors, such as physical proximity to technological devices, the motivation level and assertiveness of the individual student, and the availability of technological devices at each work station.

Student engagement with peers also scored 2.5. It appeared that due to the limited adaptation of instructor pedagogy to the Learning Studio, the peer-to-peer interactional opportunities were still not fully exploited in some classes.

C. Student and Faculty End-of-Term Surveys

End-of-term student and faculty surveys were administered via the SelectSurvey online survey tool. Both were adapted from a 2009 survey of student perceptions of classroom space developed by the Research and Evaluation Team at the Center for Educational Innovation at University of Minnesota (J. D. Walker, personal communication, July 17, 2014).

Student End-of-Term Survey

The 12-item Student Survey assesses four psychometrically tested constructs: engagement, enrichment, flexibility, and classroom/course fit. It also includes three constructed response items. (View the complete Student End-of-Term survey in Appendix A.)

The student survey was administered the week of November 24. Forty-seven students participated in the survey – approximately a 10% response rate. Students in the following classes participated in the survey: BizBlock, CINE 101-1, GSP 130 and HON 391. Data from 44 students was analyzed; three students who did not give their consent to be surveyed were omitted from the data set. All 44 students responded to all items, with the exception of three items that received 43 responses.

The **highest-rated items** in terms of percent of students who strongly agreed or agreed were:

The classroom in which I am taking this course…

- Is an appropriate space to hold this particular course. (97.73 %; Classroom/Course Fit)
- Enhances in-class activities with features (movable furniture, large-screen displays, etc.) of the room. (97.73%; Classroom/Course Fit)
- Nurtures a variety of ways to learn. (95.46%; Flexibility)

The **lowest-rated items** in terms of percent of students who strongly agreed or agreed were:

The classroom in which I am taking this course…

- Helps me to develop connections with my instructor. (77.28%; Engagement)
- Makes me want to attend class regularly. (81.39%; Enrichment)
- Helps me to develop connections with my classmates. (83.72%; Engagement)

While these are the lowest-rated items, they are still fairly highly rated at over 75% “strongly agree” or “agree”.

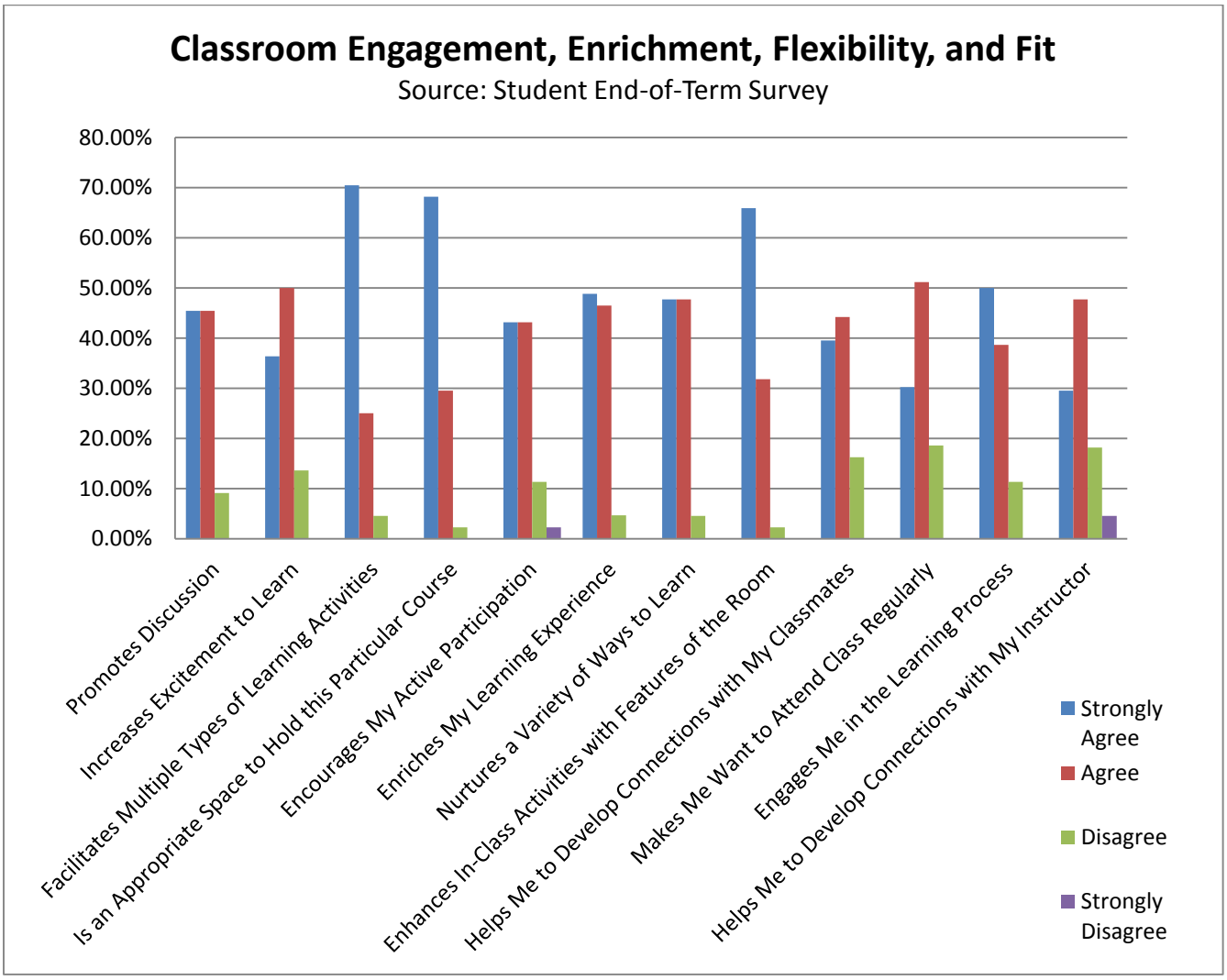
In terms of constructed response questions, the 44 student respondents most frequently cited the following:

Positively

- Screens – 21 positive comments.
- Enhanced ability to do group work – 13 positive comments.
- Microphones – 5 positive comments.

Negatively

- Technology – 10 negative comments.
- Room setup – 7 negative comments.
- Sound – 4 negative comments.



Faculty End-of-Term Survey

The faculty survey mirrored the student survey with one exception; one item on the student survey ("The classroom in which I am taking this course helps me to develop connections with my instructor") was not included on the faculty survey. (View the complete Faculty End-of-Term Survey in Appendix B.)

The faculty survey was administered the week of November 24. Six instructors participated in the survey, for a 75% response rate. Instructors teaching the following classes participated in the survey: BizBlock (Bowers, Scherpereel, Trainor); CINE 101–1 (Klocke); CINE 101-2 and CINE 101-3 (Dunham); and HON 391 (Doherty).

All six instructors responded to all items, with the exception of one item that received 5 responses.

The **highest-rated** items in terms of percent of faculty who strongly agreed or agreed were:

The classroom in which I am teaching this course...

- Facilitates multiple types of teaching/learning opportunities. (100%; Flexibility)
- Encourages my interaction with students. (100%; Engagement)
- Enhances in-class activities with features (movable furniture, large-screen displays, etc.) of the room. (100%; Classroom/Course Fit)
- Engages me in the teaching/learning process. (100%; Engagement)

The **lowest-rated** items in terms of faculty who strongly agreed or agreed were:

The classroom in which I am teaching this course…

- Promotes discussion. (83.33%; Engagement)
- Is an appropriate space to hold this particular course. (83.33%; Classroom/Course Fit)
- Helps me to develop connections with my students. (83.33%; Engagement)
- Makes me look forward to teaching my class. (83.33%; Enrichment)

While these are the lowest-rated items, they are actually quite highly rated at over 80% "strongly agree" or "agree."

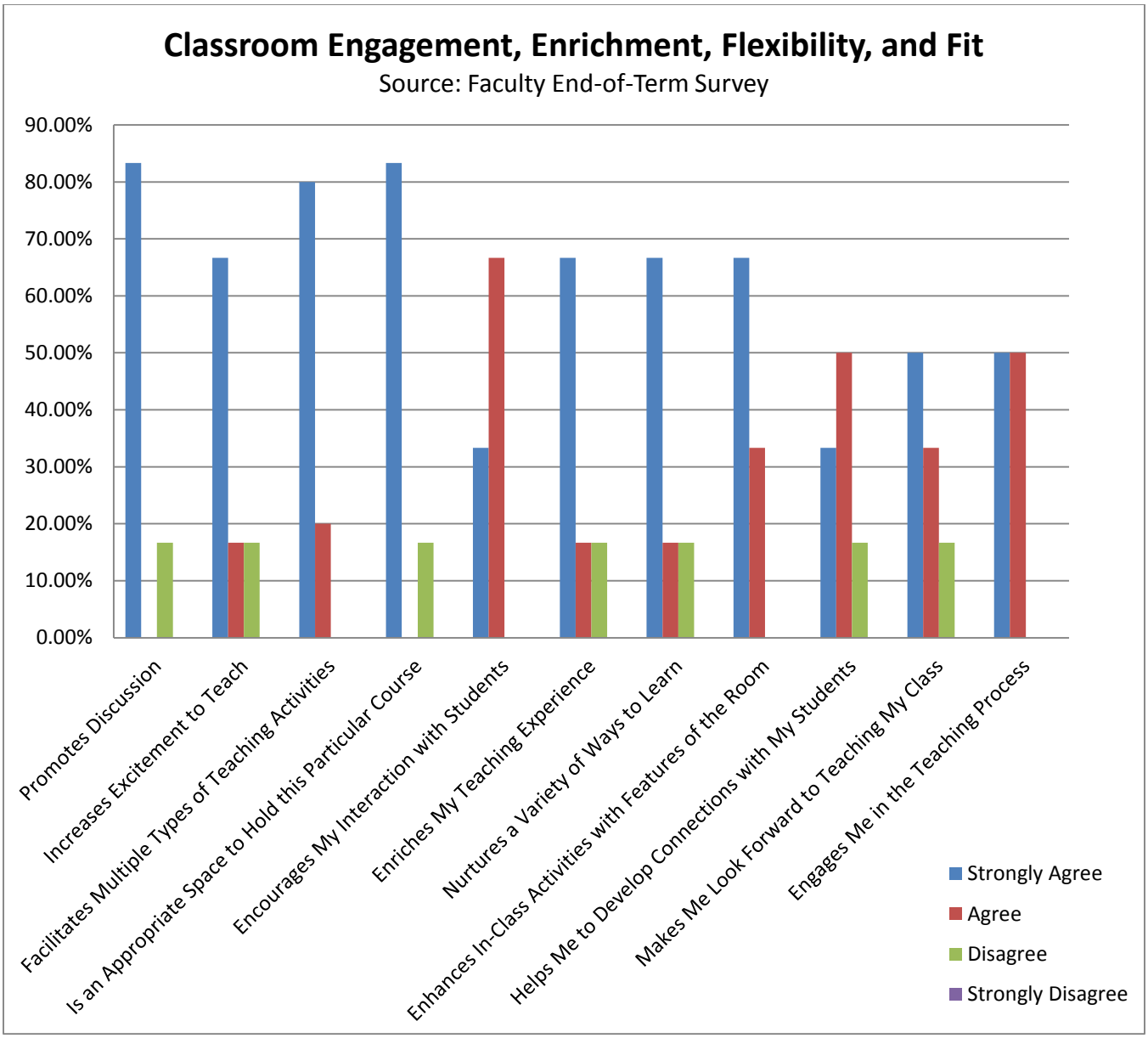
In terms of constructed response questions, the six faculty respondents most frequently cited the following:

Positively

- Screens – 2 positive comments.
- Writeable glass – 2 positive comments.
- Group work – 1 positive comment.

Negatively

- Lack of whiteboard – 5 negative comments.
- Technology – 4 negative comments.
- Room setup – 3 negative comments.


Classroom Engagement, Enrichment, Flexibility, and Fit
Source: Faculty End-of-Term Survey
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Promotes Discussion
Increases Excitement to Teach
Facilitates Multiple Types of Teaching Activities
Is an Appropriate Space to Hold this Particular Course
Encourages My Interaction with Students
Enriches My Teaching Experience
Nurtures a Variety of Ways to Learn
Enhances In-Class Activities with Features of the Room
Helps Me to Develop Connections with My Students
Makes Me Look Forward to Teaching My Class
Engages Me in the Teaching Process
Strongly Agree
Agree
Disagree
Strongly Disagree

D. Faculty Post-Term Interviews

Four faculty participated in post-term interviews. Astrid Klocke (CINE 101-1), Brent Dunham (CINE 101-2, CINE 101-3, and CINE 101-5) and Rebecca Gordon (CINE 101-4) were individually interviewed in the weeks immediately after the fall 2014 term. In addition, Mark Manone (GSP 130) responded to the interview questions via e-mail after the term's end.

Faculty were asked the following questions:

- How have you changed as an instructor as a result of your experience in the learning studio?
- What one teaching/learning highlight from the term will you remember?
- Would you teach in the room again? Why or why not?
- What would be the best advice you could provide to future instructors to help them to succeed in the learning studio classroom?

Responses from the four faculty participants are summarized below.

How have you changed as an instructor as a result of your experience in the learning studio?

Faculty most frequently reported that they became more interactive with their students in the Learning Studio. More specifically, they expressed that the student-faculty relationship became more meaningfully engaging and productive because of the unique functionality of the classroom and the technological equipment that better facilitates a more participatory learning environment.

Interestingly, one reported that his identity as an instructor changed due to his teaching experience in the Learning Studio. He shared: "*I now feel more of a facilitator rather than a lecturer because they [my students] are more responsible in their own learning*." Overall, faculty reported a gradual change in the manner they interacted with their students in the classroom.

What one teaching/learning highlight from the term will you remember?

The faculty expressed that even though their students appeared somewhat "clumsy" during the first three or four weeks of the term, the students gradually became used to – and even preferred – the participatory style of learning.

All of the faculty reported that their students became accustomed to the student-centered learning environment in the Learning Studio five or six weeks into the term. Many also reported that the level of student motivation appeared to be higher in the Learning Studio than in a traditional classroom.

Would you teach in the room again? Why or why not?

All but one of the instructors expressed a strong desire to teach again in the Learning Studio. These faculty expressed that even though some technological issues are unavoidable and could be quite distracting during the class period, they are also aware of the advantages of teaching in the Learning Studio.

The instructor who was not interested in teaching in the Learning Studio again found the "unpredictability" of technological breakdown too challenging during the class period. In contrast, another expressed that because she is aware of her students' strong preference for the student-centered technology-enhanced learning in the Learning Studio, she is willing to accept the risk of an occasional technological breakdown.

Many of the faculty reported that technological issues are usually solved in a timely fashion due to the immediate technical support available at the Cline Library.

What would be the best advice you could provide to future instructors to help them to succeed in the learning studio classroom?

Faculty most frequently reported that teaching/pedagogical approaches need to be carefully adopted to best exploit the technological resources available in the Learning Studio.

Many expressed that because of the unique physical layout of the classroom, as well as of all the various technological devices in it, teaching methods should be carefully re-evaluated and adjusted to maximize its potential use.

One expressed that teaching/pedagogical approaches (e.g., traditional lecture vs. student-centered learning) are not the only things that should be reviewed. An instructor should also review the course learning objectives and goals (e.g., memorization vs. critical thinking skills development) and student grading system (e.g., individual work vs. group projects) to carefully reflect the technological and educational potentials offered by the Learning Studio.

FACULTY VOICES

"I am more confident that a course design for collaborative student work actually works. The space was the missing element before when I tried it in lecture halls." – ASTRID KLOCKE

"I have learned that with the proper resources and pedagogy, students are willing to take more initiative and autonomy in their own learning. The classroom has been a perfect setting to facilitate student-centered learning." – BRENT DUNHAM

"I feel as though all of my projects have become more 'hybridized' to include more group, discussion, writing and technical analysis. I have also confirmed my feeling that 'studio' time, using class time to work on projects, to get instructor and peer feedback is essential." – MARK MANONE

E. Classroom-Based Teaching and Learning Activities

Faculty teaching in the Learning Studio were encouraged to pursue their own classroom-based research projects in teaching and learning. They also received information regarding NAU's Institutional Research Board (IRB) requirements, how to apply for IRB approval for their projects, and the names of contact persons for assistance.

An IRB application for assessment across classes in the Learning Studio was submitted and approved. The IRB application was shared with instructors in case they wished to pursue individual classroom-based research projects.

Faculty were particularly encouraged to investigate if student learning in the Learning Studio has improved compared to past iterations of their course. Unfortunately, most of the instructors were not able to pursue this research question either because they had not taught the Learning Studio course previously or they were using a mastery learning approach in their classes which did not lend itself to looking for variations in students' performance across classes.

CINE 101 Signature Assignment Study

A small study was conducted using student performance data from the signature assignment – an analysis essay – in five iterations of Astrid Klocke's CINE 101 course.

Research Questions

The following research questions were addressed:

"Are there significant differences in students' total scores on the signature assignment analysis essay among the five different iterations (Traditional, Blended Fall 2012, Blended Spring 2013, Blended Fall 2014, and Blended + Learning Studio) of the course? If so, between which iterations of the course are there significant differences?"

Statistical Analysis

The term was regarded as one factor that had 5 levels (i.e. 5 terms in total). In this case, although the instruction method was the same for three terms in fall 2012, spring 2013, and fall 2013, the main question is focused on the mean difference among 5 terms, which was determined by one-way analysis of variance.

Results

- There existed a statistical difference in mean total scores among 5 terms based on one-way analysis of variance (F=8.48; d. f. =4; p <0.0001).

- Fall 2012 ("Blended" in instruction mode) had the highest total scores on average (9.64), followed by spring 2013 ("Blended", 9.51), fall 2014 ("Blended + Learning Studio", 9.36), fall 2013 ("Blended", 9.29), and fall 2011 ("Traditional", 8.85, the lowest).

- Statistically, there were no differences among fall 2012, spring 2013, and fall 2014, and among spring 2013, fall 2013, and fall 2014. However, all of these terms had statistically higher total scores than fall 2011. In addition, fall 2012 had a statistically higher total score than fall 2013, indicating the statistical variation among the same instruction mode ("Blended").

- Further, if based on the instruction modes, there was no statistical difference in mean total scores between the "Blended" (9.49 ± 0.05, mean ± SE) and "Blended + Learning Studio" (9.36 ± 0.09); however, both had statistically higher total scores than the "Traditional" instruction mode (8.85 ± 0.12).

No.	Term	Instruction Mode	N	Mean Total Scores	Standard Error	Lower 95%	Upper 95%
1	Fall 2011	Traditional	34	8.85 C	0.12	8.62	9.09
2	Fall 2012	Blended	78	9.64 A	0.08	9.49	9.79
3	Spring 2013	Blended	50	9.51 AB	0.10	9.32	9.70
4	Fall 2013	Blended	62	9.29 B	0.09	9.12	9.46
5	Fall 2014	Blended +Learning Studio	57	9.36 AB	0.09	9.18	9.54

The statistics for students' total scores on the signature assignment among five terms taught by the same instructor but with different instruction modes. The letter after the mean total score indicates the statistical difference at the level of α= 0.05.

Part 2: The Room and the Technology

A. Room Reset Survey

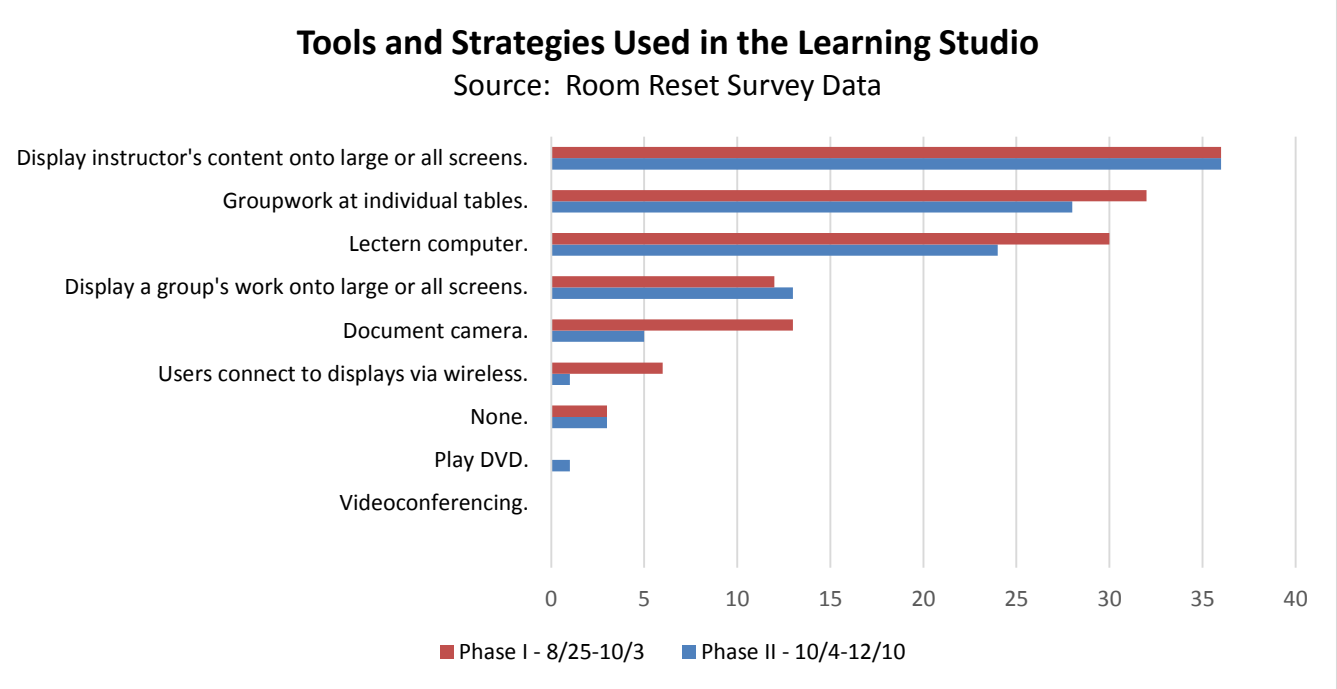
A "Room Reset Survey" allows Library Technology Services (LTS) staff and student employees to collect data after a class session. Between August 25 and December 10, 95 Room Reset Surveys were completed; this sample represents 41% of the 232 total class sessions for this time period.

The survey asked LTS staff and student employees to indicate which Tools and Strategies (9 items) and Room Features (8 items) the instructor used in a class session. It also allowed respondents to report any technical problems in an open-ended text box.

Tools and Strategies

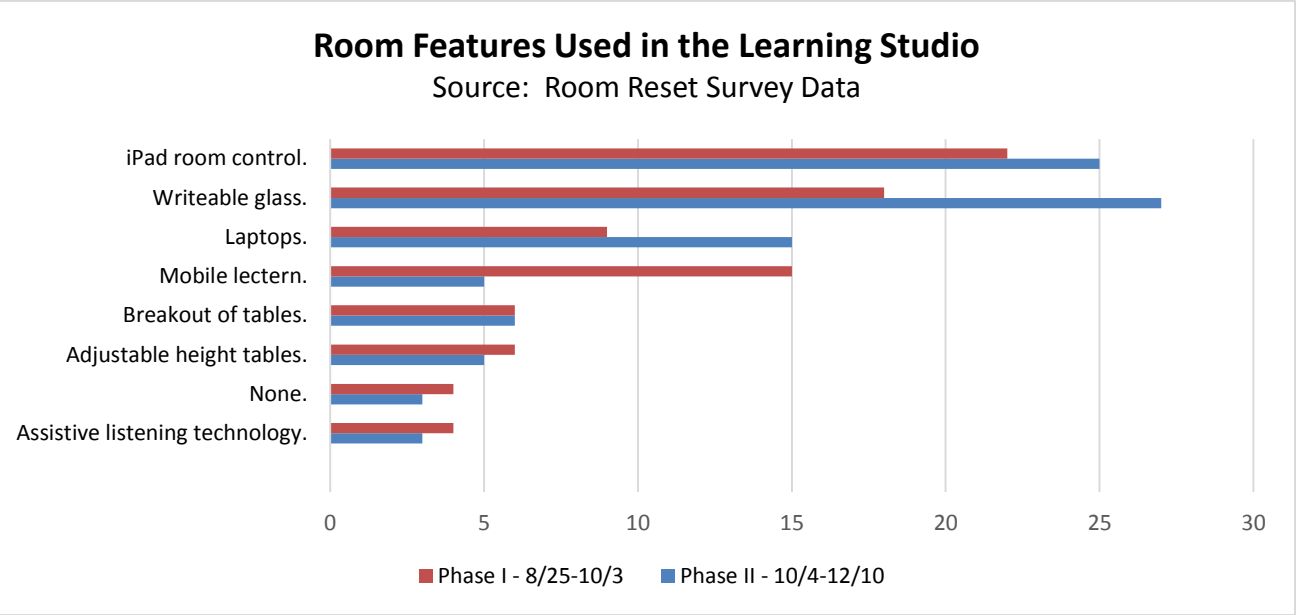
In the Tools and Strategies area, the most commonly used element was an instructor's ability to display content onto the large or all screens. Group work at individual tables and the lectern computer continued to show strong usage. The use of screens to display a group's work increased during Phase II (October 4 – December 10, the second part of the term). Videoconferencing was not yet available.

A new online tool that will provide more accurate counts of the use of different functions on the room interface and a more informed look at the use of technology was deployed for the beginning of the spring 2015 term.



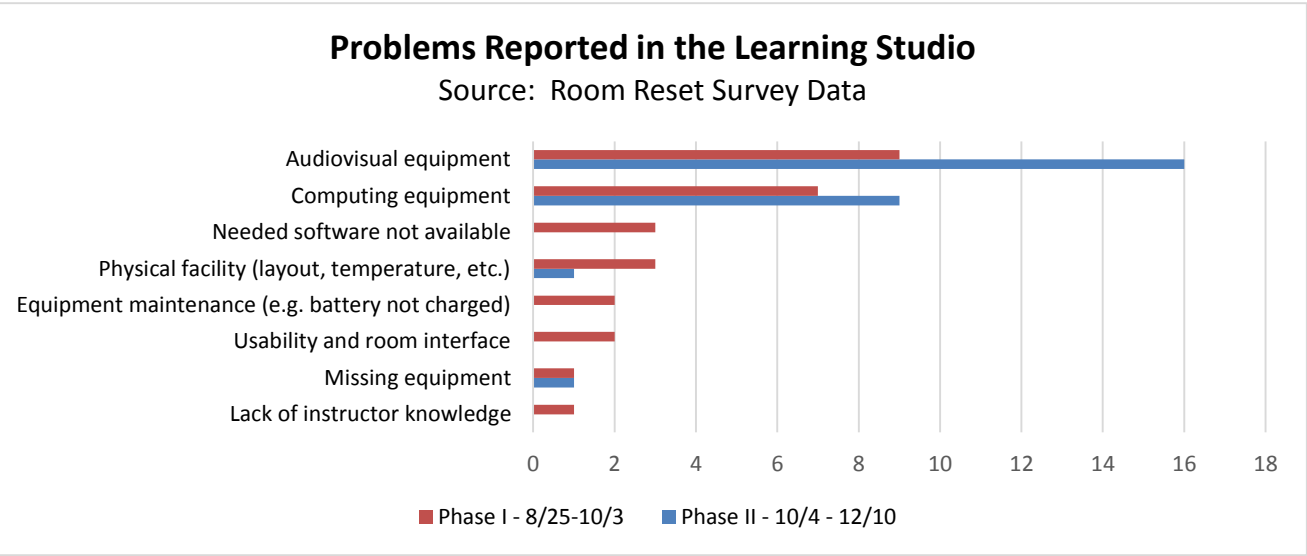
Room Features

In the Room Features area, the most commonly used elements were the iPad room control and the writeable glass; both increased in usage during Phase II. The classroom's laptops were also used frequently and showed increased usage in Phase II.



B. Technical Issues

Library Technology Services tracks technical issues through the Room Reset Survey, a help desk ticket system, and frequent conversations with faculty teaching in the room. In addition to the problems reported on the Room Reset Survey, three LTS help desk tickets related to the classroom were opened during Phase II. All were related to glitches in the audiovisual technology in the room and were fixed.



C. Technology Barriers and Unmet Needs

As faculty teach in the Learning Studio, they continue to share additional needs with LTS staff. In November library staff involved with the classroom held an informal discussion with several faculty who teach in the room. Examples of the wide variety of suggestions shared by faculty include:

- Ability to display instructor content and table content simultaneously at a table.
- Ability for instructor to select a specific input when selecting a table instead of students at that table selecting the input.
- Ability to mute all tables with one touch.
- Explore ways to reduce noise level during student group work.
- Shift lectern location to better include Table 1.
- Place document cameras at each table.
- Provide more cameras for videoconferencing to allow more students to interact with speaker.

Library staff will continue to work with faculty to explore and prioritize these and other needs and suggestions.

TOSHIO ASAI

Concluding Thoughts

What did we learn during the Learning Studio's first term in relation to its program goals?

Goal 1: Improve student learning and development through a highly configurable, advanced technology classroom space.

Limited direct evidence as well as indirect evidence of student learning indicate this goal was somewhat met.

An analysis of several iterations of Astrid Klocke's CINE 101 course indicates that fall 2014 students in the Learning Studio performed statistically significantly better on the signature assignment than did fall 2011 students in a traditional type of classroom space. The fall 2014 course was taught in a blended format, whereas the fall 2011 course was taught in a traditional format.

Interestingly, there were no statistical differences between the performance of students in the fall 2014 blended Learning Studio class compared to those in other blended classes taught by the instructor in traditional types of classrooms in fall 2012, spring 2013, and fall 2013. Students in all of the classes taught in the blended format performed statistically significantly better than did students in the traditional format. Within the blended format, the fall 2012 class scored statistically significantly higher than the fall 2013 class.

Did the blended format, rather than the type of classroom, improve student performance? Why did students in one blended class score higher than students in another? Further study, including examination of the demographics of the students enrolled in these classes (e.g., grade level, gender, ethnicity), is needed to better understand the results of this analysis.

A related note is that while students in blended courses may have performed better overall, on the second administration of the CIQ students reported that they felt most distanced from what was happening in the class when they were not physically in the room with their classmates and instructor.

On the end-of-term survey, the majority of students responded that the classroom:

- Engaged them by promoting discussion
- Encouraged active participation
- Helped them develop connections with their classmates
- Engaged them in the learning process
- Helped them develop connections with their instructor

The majority of faculty responded that the classroom engaged them by promoting discussion, encouraging their interaction with students, helping them to develop connections with students, and engaging them in the teaching/learning process.

On the end-of-term survey, the majority of students indicated that the classroom enriched their learning experience, increased their excitement to learn, and made them want to attend class regularly. The majority of faculty similarly responded that the classroom enriched their teaching experience, increased their excitement to teach, and made them look forward to teaching their classes.

Goal 2: Create a next-generation learning space for students and faculty to interact with technology in a seamless environment that stimulates group participation.

Goal 4: Incorporate universal design furnishings and concepts into a collaborative learning space.

Goals 2 and 4 interrelate and are therefore discussed together. The goals were mostly met.

On the first administration of the CIQ, students responded that they were most engaged by group activities. On the second administration of the CIQ, students reported that working as a group on their final projects, meeting with the instructor who provided feedback, presenting the results of their group work to the class, and listening to the presentations of other groups were engaging activities.

In the open-ended questions of the end-of-term survey, students commented that the room's flexibility and the technology available to students and instructors enhanced their ability to work in groups. Classroom observations, however, showed that student engagement with technology and peers could be improved. Though students seemed to be provided with more opportunities to use technology, not every student had access to technology. Access to technology appeared to depend on factors such as physical proximity to technological devices. Opportunities for peer-to-peer interaction were uneven, depending on the teaching methods and pedagogy of the instructor.

In post-term interviews faculty were asked what advice they would give to future instructors in the room. Many instructors responded that because of the unique physical layout of the room as well as the various technological devices available, teaching methods should be carefully re-evaluated and adjusted to maximize the potential use of the Learning Studio.

Goal 3: Increase faculty options for designing, using, and evaluating a learning environment in a highly flexible space.

This goal was mostly met. On end-of-term surveys, students and faculty overwhelmingly agreed that the classroom is a highly flexible space. Students indicated that the classroom nurtures a variety of ways to learn, while faculty responded that the classroom facilitates multiple types of teaching/learning opportunities.

In post-term interviews, faculty reported that they became more interactive with their students—and students became more comfortable with a participatory style of learning—because of the unique functionality of the room.

Classroom observations showed instructors were highly engaged with students in the room and that engagement increased over the term as instructors became more familiar with the physical layout of the room and its technological capabilities.

On end-of-term surveys, students and faculty reported that screens, writeable glass, microphones, and movable tables enhanced active teaching and learning in the room. At the same time, technology glitches and the room configuration sometimes proved challenging for faculty and students.

Goal 5: Enable students and instructors to build content together across platforms and spaces internally and remotely.

This goal was mostly met. All instructors assigned projects and presentations that required students to build and share content in small groups and across the class.

On the first administration of the CIQ, students described activities such as designing group presentations on the fly using computers and presentation tools, searching for information on a team topic using computers, and just "playing" as a group with various software programs on the computer and connecting to the large screen display. On the second administration of the CIQ, students described working as a group on final projects and presentations and presenting the results of their group work to the class.

On end-of-term surveys, students and faculty agreed that the classroom was an appropriate "fit" for the course, enhancing these in-class activities with features of the room like movable furniture and large screen displays. Faculty did report some problems with audiovisual technology, and these problems were fixed.

Goal 6: Provide a learning environment with technology support provided by library staff.

This goal was mostly met. In post-term interviews, most faculty recognized that technological issues are unavoidable but believed that the advantages of teaching in the Learning Studio outweighed the disadvantages. Faculty cited the excellent technical support at Cline Library and reported that issues with the technology were usually resolved in a timely fashion. Cline Library staff also met during the term with instructors teaching in the room to discuss technological barriers and unmet needs; they continue to work with faculty to explore and prioritize improvements.

TOSHIO ASAI

Recommendations

1. Develop information for potential faculty partners

    - Learning curve the faculty member can expect

    - Library expectations, including faculty member willingness:

        - To work with library staff on technology issues (i.e., not abandon pedagogical ideas/approaches that may require additional time, testing, etc.)
            - Exploiting the technology - not allowing technology to dictate to us

        - To work with eLearning Center (ELC) on effective pedagogy

        - To complete simple assessment activities
            - Deliver student surveys and share data
            - Complete faculty final survey

        - To complete Scholarship of Teaching and Learning (SOTL) research and/or recommend possible research topics for future research
            - Support available through Office of Curriculum, Learning Design and Academic Assessment
            - Classroom-based research may require prior IRB approval

2. Expand processes for room scheduling.

    - Develop a transparent process for prioritizing Learning Studio scheduling

        - Develop and publicly post criteria such as:
            - Clear pedagogy that will maximize the resource
            - Relevant pedagogy already adopted (ex: BizBlock)
            - Process or product has impact for campus community
                - Digital poster sessions, presentations open to campus community, etc.
            - Inclusion of assessment activities

        - Develop and publicly post timeline of when and how instructors request consideration
            - Align with the campus-wide classroom scheduling cycle
            - Include time for decision-making by library staff, who will alert instructors of final decisions
            - Include information about how decisions are made

        - Develop policies that address the potential need for exceptions

3. Foster collaboration between instructors

    - Find a way for Learning Studio instructors to communicate and collaborate
        - Examples include an informal handwritten log located in the room, a blog or Twitter feed, or a learning community

    - Training and support for new instructors

        - Increase pre-planning and training
        - When class is scheduled, library alerts ELC who can contact instructor
        - Increase buddying between instructors
            - Recruit instructors who have used the Learning Studio successfully to serve as mentors
            - Consider having a mentor teach the class that meets directly before a new instructor's class period, allowing the mentor to help the instructor during the time between classes and/or at start of the instructor's class period

4. Meet with support partners to share what we've all learned and discuss future collaboration
    - ELC
        - Continue to use room as possible for delivery of ELC training opportunities.
    - Faculty Development
        - Continue to use room as possible for delivery of Faculty Development opportunities

FACULTY VOICES

"Plan ahead. Plan an alternative task in case something doesn't work. Try out new ideas that involve technology." – ASTRID KLOCKE

"Pedagogy needs to be adapted to maximize the usage of the classroom. Group work and student-centered learning are best suited for the classroom." – BRENT DUNHAM

"You will need to test all the technological devices well in advance of the class. You will also need to better prepare for the 'Plan B' in case technology does not work." – REBECCA GORDON

"Be open to experiment with the technology resources in the room. Don't feel as if you need to use them all. Listen to your students. They have good ideas." – MARK MANONE

Reference

Brookfield, S. (1995) "Understanding Classroom Dynamics: The Critical Incident Questionnaire" from *Becoming a Critically Reflective Teacher*. San Francisco, CA: Jossey-Bass. Retrieved from http://www.stephenbrookfield.com/Dr._Stephen_D._Brookfield/Critical_Incident_Questionnaire_files/Using_CI.doc.

Appendix A. Student End-of-Term Survey

The 12-item Student End-of-Term Survey assesses four psychometrically tested constructs: engagement, enrichment, flexibility, and classroom/course fit. It also includes three constructed response items.

Engagement. *The classroom in which I am taking this course…*

- Promotes discussion.
- Encourages my active participation.
- Helps me to develop connections with my classmates.
- Engages me in the learning process.
- Helps me to develop connections with my instructor.

Enrichment. *The classroom in which I am taking this course…*

- Increases my excitement to learn.
- Enriches my learning experience.
- Makes me want to attend class regularly.

Flexibility. *The classroom in which I am taking this course…*

- Facilitates multiple types of learning opportunities.
- Nurtures a variety of ways to learn.

Classroom/Course Fit. *The classroom in which I am taking this course…*

- Is an appropriate space to hold this particular course.
- Enhances in-class activities with features (movable furniture, large-screen displays, etc.) of the room.

Constructed Response Items.

- Please describe one situation in which this room worked well for you. Provide as many details as possible.
- Please describe one situation in which this room did not work for you. Provide as many details as possible.
- What are your overall thoughts about the classroom in which you are taking this course?

Appendix B. Faculty End-of-Term Survey

The 11-item Faculty End-of-Term Survey assesses four psychometrically tested constructs: engagement, enrichment, flexibility, and classroom/course fit. It also includes three constructed response items.

Engagement. *The classroom in which I am teaching this course*…

- Promotes discussion.
- Encourages my interaction with students.
- Helps me to develop connections with my students.
- Engages me in the teaching/learning process.

Enrichment. *The classroom in which I am teaching this course*…

- Increases my excitement to teach.
- Enriches my teaching experience.
- Makes me look forward to teaching my class.

Flexibility. *The classroom in which I am teaching this course*…

- Facilitates multiple types of teaching/learning opportunities.
- Nurtures a variety of ways for students to learn.

Classroom/Course Fit. *The classroom in which I am teaching this course*…

- Is an appropriate space to hold this particular course.
- Enhances in-class activities with features (movable furniture, large-screen displays, etc.) of the room.

Constructed response items.

- Please describe one situation in which this room worked well for you. Provide as many details as possible.
- Please describe one situation in which this room did not work for you. Provide as many details as possible.
- What are your overall thoughts about the classroom in which you are teaching this course?