

The Expectations of Adulthood: Developing Soft Skills through Active Learning Classrooms

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The technologically enhanced classroom assists students in developing their interpersonal, or soft skills, and helps them strengthen needed competencies as they move into their careers. This may be particularly helpful for contemporary students, who have grown up interacting with others electronically, via text message, Instagram, and the like. Once on campus, students must adapt to increasing expectations of adulthood: along with becoming more responsible and independent critical thinkers, they must also be able to speak effectively with others face-to-face and to negotiate relationships in groups, skills that they often noticeably lack.

Introduction

The Active Learning Classroom (ALC) provides faculty with pedagogical tools to support active learning and employ flipped classroom techniques. Such strategies may be particularly helpful for students, who are steeped in electronic devices for years before they arrive on campus, used to interacting with others via text message, Instagram, and the like. Once on campus, students must adapt to increasing expectations of adulthood: along with becoming more responsible and independent critical thinkers, they must also be able to speak effectively with others face-to-face and to negotiate relationships in groups, skills they often lack. We argue that one of the most significant features of the technology-enhanced classroom is that it assists students in developing their interpersonal, or what are more commonly known as “soft,” skills, and in so doing, helps them improve competencies they will need as they move into their careers.¹

Our study takes place at a four-year comprehensive public institution in a rural setting in the US Midwest, with about 11,000 students, approximately 35% of whom are first-generation students. Our institution does not have the larger financial budgets of a Research University, or of a Small Liberal Arts College, as we are the old “Normal School” for our state, and the tradition of hiring tenure track professors who are “teacher-scholars” is strong.

Our ALC is unusual in a number of important ways. Some of the first ALCs, like the SCALE-UP project at North



Image 1. SAC CAT classroom

Carolina State University and the TEAL project at MIT, were created to infuse active learning into large enrollment natural science courses, and much of the research on these rooms is focused on scientific and technical courses, using quantitative data collection strategies (Brooks, Walker, & Baepler, 2014). In contrast, the first ALC at our university originated in the social sciences. During a building renovation in 2014-2015, the Sociology, Anthropology, and Criminology (SAC) department proposed the addition of a small 24-seat ALC, which consists of four tables, each with three laptops and six seats. Each table connects to a flat screen television, which can also connect to the instructor’s computer and SMARTboard. We named the classroom for “Collaborative, Active Learning, & Transformational” experiences (hereafter SAC CAT). All disciplines have access

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¹ Although we agree that the designation of “soft” skills for interpersonal skills suggests that they are not as important as “hard” or technical skills, we use it here because “soft” skills continues to be common parlance for less easily demonstrable skills such as effective

communication, teamwork, etc. In this paper, we use soft skills, interpersonal skills and people skills interchangeably.

to the room, and faculty in anthropology, criminology, English literature, physical education teaching, youth and human services, political science, religion, sociology, and Spanish have utilized the room, but to date, no natural science courses have been taught there. Because the SAC CAT is both smaller than many other ALCs, and serves a greater variety of courses and students, our research offers new insight into how ALCs positively impact student learning.



Image 2. SAC CAT classroom engaged learning

To demonstrate the educational advantages of our ALC, and to assist in justifying the room's existence (and expense) to multiple stakeholder audiences, we completed a pilot study during the first year, examining classroom users' perspectives, including students, faculty, and staff. Although we hypothesized that enhanced technological skills would be a significant outcome of student use of the SAC CAT, it is clear from our data that most students did not find this to be the case, even though they did appreciate the technology in the room. Rather, our findings suggest that the primary benefits for our students in the SAC CAT are found in the ways that ALCs encourage student-to-student interaction. Our pilot study informed our current focus on soft skill development in an ALC environment.

The data for this study were gathered from beginning and end of semester questionnaires, fall 2015 through spring 2017, collected from the students taking courses in our ALC. We focus specifically on the educational benefits of student-to-student interactions in the small, technology-enhanced classroom, with a particular emphasis on soft skill development. According to the National Association of Colleges and Employers (NACE) Center for Career Development and Talent Acquisition Job Outlook 2018 survey, much of what employers seek in college graduates involve skills like the ability to work in a team, communicate effectively orally and in writing, solve problems, take initiative, and demonstrate flexibility and adaptability

(NACE, 2018). We discovered that student attitudes towards the classroom, especially about the classroom technology and room set-up, reveal their attitudes towards teamwork and the kinds learning that will take place in the classroom. We also found that students perceive that the peer connections developed in the SAC CAT, which require effective communication, to be meaningful and important. They develop a deeper appreciation for group work, both with regards to the collaborative social interactions it requires and its positive effect on learning. Our data give strong evidence that ALCs assist undergraduate students in developing the soft skills they need to succeed.

Literature Review

The literature review is centered on three important areas. First, we consider how the space created in ALCs encourage the development of a positive classroom environment through the use of learner-centered pedagogy, which has been shown to be beneficial to student learning because it fosters multiple forms of student interaction. Second, we discuss the importance of soft skill development, and how the kinds of interactions that take place in ALCs offer important opportunities for developing those skills. Finally, we examine student engagement and ALCs.

Active Learning Classrooms: Space and Pedagogy

One of the most important features of ALCs is that they are "built pedagogy," or spaces that support learner-centered teaching practices, like group and collaborative work, project-based learning, and discussion (Monahan, 2002; Weimer, 2002). Studies on classroom spaces have shown that while traditional classrooms with rows and desks are seen as encouraging lecture, classrooms with tables where students face one another, and where the instructor is no longer "sage on the stage" but rather, "guide on the side," have repeatedly been found to encourage dialogue, interaction, and collaboration (Brooks, 2012; Parsons, 2017; Rands & Gansemer-Topf, 2017). In addition, the technology rich environment of the ALC can help facilitate the ease of information-sharing (Brooks, 2011, 2012; McArthur, 2015; Olsen & Guffey, 2016; Parsons, 2017; Rands & Gansemer-Topf, 2017; Stoltzfus & Libarkin, 2016; Walker, Brooks, & Baepler, 2011).

Research on learner-centered pedagogy, which is the kind of pedagogical practice encouraged by ALCs, generally shows a strong positive effect on both student learning (Brackenbury, 2012; Freeman, et al., 2014; Gebre, Saroyan, & Aulls, 2015; Rands & Gansemer-Topf, 2017; Weimer, 2002; Wohlfarth et al., 2008) and student engagement (Baepler & Walker, 2014; Cotner et al., 2013; Park & Choi, 2014). ALCs combine classroom space designed for collaboration and interaction with pedagogies focused on maximizing learning

to create class sessions that are not only more “energizing” but which can support students with a wide variety of learning needs (King, et al., 2015, p. 531). Studies on ALCs at Iowa State University, North Carolina State University, the University of Iowa, and the University of Minnesota show that these types of classrooms are beneficial for both faculty and students (Beichner, 2008; Brooks, 2011; Educause, 2012; Florman, 2014; Rands & Gansemer-Topf, 2017; Van Horne et al., 2012; Van Horne et al., 2014). In such research, students reported feeling more engaged and enthusiastic about learning in these classrooms, while faculty who were able to adapt, and in some cases, rethink their teaching strategies for the ALC, also found them to be advantageous for student learning, as well as for presenting course content more effectively (Brooks, 2012; Educause, 2012; Ge, et al., 2013; Ramsay, Gur & Pursel, 2017). Moreover, ALCs generally demonstrate that students perform better when compared to taking classes in traditional classrooms (Nogaj, 2013; Salehizadeha & Behin-Aeing, 2014; Wilson & Sipe, 2014). Thus, learner-centered teaching in ALCs reaps numerous benefits, including building critical-thinking skills and redistributing the power dynamic in the classroom away from faculty to students, who can then become more responsible for their own learning (Baepler, et al., 2016; Weimer, 2002).

Soft Skill Development in ALCs

The “built pedagogy” of the ALC supports learner-centered teaching characterized by face-to-face interactions that encourage dialogue and collaboration. Studies on courses taught in ALCs emphasize the positive influence of student interactions for learning course content (Brooks, 2011, 2014; Cotner, et.al, 2013; Rands & Gansemer-Topf, 2017). Because of the kinds of interactions that can take place in these rooms, ALCs offer ample opportunities for students to enhance their soft skills, especially skills that involve effective collaboration and making meaningful connections with others. Researchers recognize the importance of augmenting students’ soft skills in educational contexts (Baker., Parks-Savage, & Rehfuss. 2009; Heckman & Kautz, 2012; Hora, 2016; Tate, 2017), though much of the literature specifically on soft skill development is found in disciplines like agriculture, business, engineering, and technology where “hard” skills are stressed (Hagmann & Almekinders, 2003; Harris & Rogers, 2008; MacDermott & Ortiz, 2017; Nealy, 2005;; Schulz, 2008; Snape, 2017; Zhang, 2012;;).

Important information on soft skill development in many disciplines can be found in studies on the benefits of working in groups. This research supports the idea that, when classroom activities require small group problem-solving or the application of course concepts, ALCs can support the development of soft skills. Cohen and Lotan (2014) show

that group work can enhance social learning by helping to build learning communities that increase trust between group members and encourage harmonious and friendly interactions. In addition, well-functioning groups can assist students in preparing for adulthood by encouraging active decision-making, organized task completion, and group member accountability (Cohen & Lotan, 2014; Parsons, 2016).

Student Engagement in ALCs

There are numerous definitions of student engagement, most of which combine ideas about motivation--enthusiasm for learning--and active learning--students making sense out of what they are learning by applying knowledge and making connections in ways that show that they can “do’ the tasks of the discipline” (Edgerton, 1997 as cited in Barkley, 2010, p. 6). And, because “humans need to be part of a social community,” students will engage more in classroom-based learning if they feel they are “included, honored, important, contributing members of a learning community” (Barkley, 2010, p. 27). ALCs, when used effectively, regularly engage active learning strategies, so they also encourage student engagement.

One of the most robust studies of student engagement and its relation to learning in ALCs is found in Baepler et al. (2016), who note the distinctive social context of the ALC classroom, and have conducted preliminary research on various student-to-student and faculty-to-student interactions in the ALC to determine whether the social context in the ALC is stronger than in the traditional classroom, and whether it is associated with greater learning outcomes. They examined what they defined as “student-to-student general relations,” which measured aspects of students’ people skills: how comfortable they were with one another, how well they knew each other, and whether they learned from one another. What the researchers found puzzling was a “strong negative relationship between student-student general relations and student learning outcomes,” which goes against numerous studies that show that student interaction enhances learning (Baepler et al., 2016, p. 44). To explain this negative relationship, the researchers speculated that students could be misleading their peers because they do not understand the course material well, they might be unwilling to criticize their peers, and therefore encourage one another to be overconfident (Baepler et al., 2016, p.45).

While Baepler, et.al (2016) found little connection between peer interactions and learning outcomes, and questions about the social context of the ALC remain, we suggest that student engagement in the ALC has benefits beyond learning course content that can be assessed by student reports of “flow” (Csikszentmihalyi, 1990). Flow is

immersion in a task that leads one to lose all track of time, associated with focused motivation, persistence in learning, and higher performance. When one is immersed in an experience, one is energized and one's emotions and actions are aligned with the task at hand; flow illustrates the idea of student engagement as what happens when motivation and active learning align.

ALCs support student success because they encourage more interaction amongst students, and among other benefits, create conditions in which students can enhance their interpersonal skills, particularly those of communication and teamwork. In sum, the literature on ALCs focuses on space and pedagogy, and student engagement, while our research highlights how the spatial design of ALCs creates conditions not only for student engagement, but for the kind of student-to-student interactions that enhance interpersonal skills that students need to succeed in their professional and personal lives.

Research Methods

We conducted research on the SAC CAT classroom for two academic years: 2015-2016, and 2016-2017. After securing IRB permission at our institution to conduct this research, we employed a research team of faculty and graduate students to administer surveys in individual classes taught in the SAC CAT classroom (Please see Appendix A and Appendix B for examples of the beginning and end of the semester questionnaires used, respectively). All faculty teaching in the classroom during this time period (2015-2016, and 2016-2017) agreed to have student data collected in their classes, understanding that the study was about the classroom, and not the individual faculty members -- any comments referring to a specific faculty member were removed to protect confidentiality. After the faculty member chose a date within the regular semester for data collection, a member of the research team entered the classroom to describe the study, pass out the questionnaire, and give students time during the class period to fill out the questionnaire. It should be noted that the faculty member was not present during any data collection, and that after the research team member left the classroom, the faculty member resumed the class period as usual with their students.

The survey was a short closed- and open-ended questionnaire that focused on students' experiences of group work in classes, the specific space of the classroom, their peer-to-peer relationships in the room, and their experiences with technology. [Our definition of the technology in the room is broad: we conceptualized the round tables as a form of technology (Parsons, 2017), and included the whiteboard mounted on the wall, the removable whiteboards at each of the four tables, as well as the more complicated electronic

technology, like the laptops, flat screen televisions, and the SMARTBoard.] Overall, the questions centered on if, and in what ways, the technology-enhanced classroom helped the students learn more effectively. For example, we asked a question like, "Does this/did this classroom provide you opportunities to make connections with other students that will continue after class is over?" as a way to address interpersonal skills, or soft skills. We asked students to agree/disagree with questions like, "Group activities in this class helped me to learn" and, "Sitting at round tables was helpful for group activities." We offered students some open-ended questions, like, "What do you/did you like about this classroom?" where students who felt strongly about group work could express themselves (in both positive and/or negative ways).

After each data collection period, a graduate student on the research team entered the data manually from the paper questionnaires into a spreadsheet, tracking carefully individual student responses from the beginning of the semester to the end of the semester. Those students filling out questionnaires during only one of the data collection times within a semester were discarded as unusable data and were deleted from the database and the study. Once all the data was entered manually, the authors printed out the spreadsheets to look at both quantitative and qualitative data to note both patterns as well as outliers in the collected responses. We collected and coded both qualitative and quantitative data entirely by hand from student users in the classroom at the beginning and end of each semester.

Table 1. Data collected over four semesters

Semester	# of classes	# of students
Fall 2015	11	116
Spring 2016	6	69
Fall 2016	8	124
Spring 2017	8	125
Totals:	33	434

First, we tabulated the quantitative data (e.g., the closed-ended questions) to see patterns across an individual student within a semester timeframe. For example, in trying to discern the comfort level in the classroom, we looked to see if a student who was very uncomfortable in the classroom felt the same way at the end of the semester. In addition to looking at quantitative data at the individual student level, we were also able to see patterns within class groupings within a semester, at the semester level overall, and then larger patterns across the four semesters of data collection.

In reviewing the qualitative, or narrative data (e.g., open ended questions), we relied upon the research process, and the data, to direct us to important themes and trends rather

than impose deductively what we thought might be happening in the classroom, much in line with grounded theory tradition (Glaser & Strauss, 1967). To do this, we first printed out all of the open-ended comments, and employed open coding strategies by hand (Strauss & Corbin, 1987), seeing what the data were telling us at multiple levels.

We organized both the quantitative and qualitative data into thematic groups, looking for ways in which the two data types were in sync with one another, and when they were not compatible, or telling contradicting stories. We focus here specifically those aspects of our findings that show how the room set-up, technology, and learner-centered pedagogies focused on group work, fostered student engagement and enhanced students' ability to make connections with their peers that helped them learn. Soft skills, such as communication, collaboration, and the ability to work effectively in a group were significant aspects of students' experience of the SAC CAT.

Findings

Physical Space and Technology

With a mix of closed- and open-ended questions, we were able to learn about the students' perceptions of the room set-up, and the technology present. A classroom with more technology is comforting to some, and alienating to others, understandably. In trying to access these student impressions of classroom technology, we asked students about their level of comfort with the technology in the room at the start and end of the semester.

As you can see in the data, there was very little movement from the beginning of the semester to the end of the semester, across four semesters in terms of students' opinions toward the technology in the SAC CAT classroom. Specifically, 413 students (95%) were Very/Somewhat Comfortable at the beginning of the semester, and 400 students (93%) were Very/Somewhat Comfortable at the end of the semester. We were somewhat surprised at this data because of the great similarities between the beginning and end of the semester results, and were able, in looking to the qualitative data that we collected, discover that much of the dissatisfaction with the classroom occurred mostly in one semester where there were some unexpected and disruptive glitches in the technology in the building.

We also realized that we had an assumption about our students as digital natives, flawlessly comfortable with new technology.² Some students were comfortable in the classroom, while others were not--this did not change much as the semester progressed. In addition, students might be comfortable with technology, but not in the ways that we think they might be. For example, if students are comfortable with technology in the beginning, our data tell us that the same students will likely be similarly comfortable with technology at the end of the semester. If students are not technologically savvy in the classroom, they will not become so simply from taking a class in an ALC, and faculty without adequate support in technology-enhanced classrooms are less likely to experiment with technology. Like anything else, technology familiarity takes time and planning.

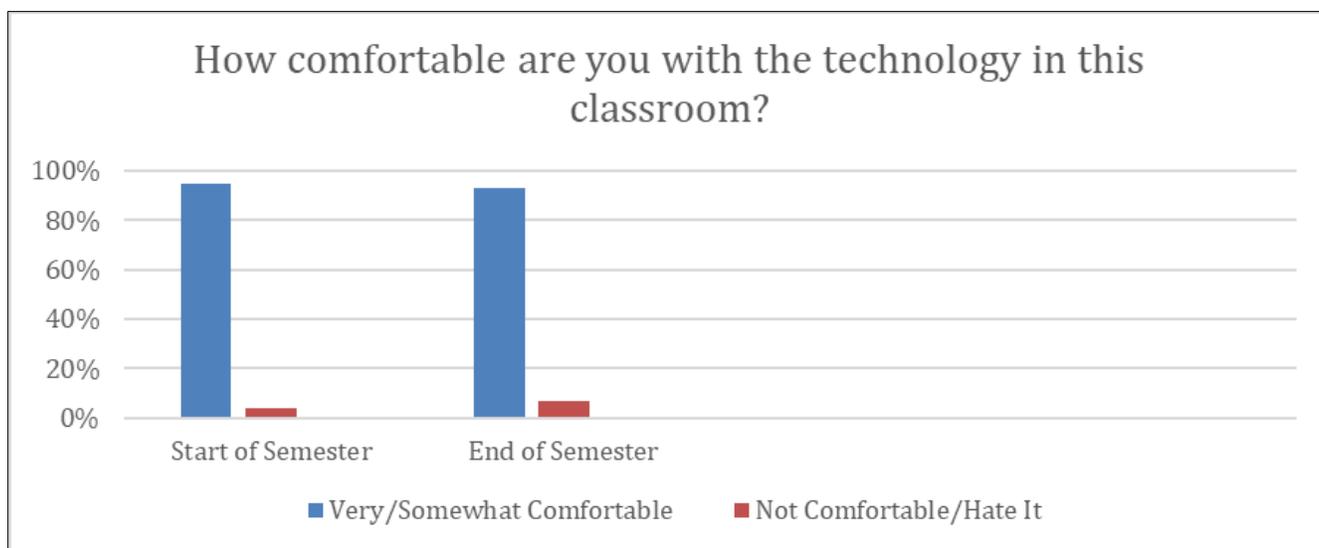


Chart 1. How comfortable are you with the technology in this classroom?

² Please keep in mind that a variety of courses are taught in this space in the Humanities and Social Sciences, where an expectation of technology might seem unusual. For example, a student wondered why

they were in a high technology class for a humanities class, connecting technology with only certain majors on campus rather than teaching techniques across the disciplines.

Generally, however, students seemed somewhat interested in the classroom, although some were unsure at first, about what they were getting into by taking a class in the SAC CAT classroom. This uncertainty usually expressed itself through comments focused on the rectangular shape of the classroom (recall, this was a building renovation with no control of how rooms were shaped), anxiety about the technology, and/or expectation of group work. For example, negative student comments ranged from polite observations about the room, "It's shaped awkwardly" or "It was a bit intimidating because of how different it was" to more pointed concerns, "It was different with the tables. I was kind of freaked out by the less personal space I had" and even more direct, "Awful if the teacher does not know how to use technology." A few students disliked the room simply because "...it would require a lot of group work that I didn't want to do" or because of "Fear that we will have to use technology I'm not familiar with." Even if students expressed some apprehension about the room, some also appreciated the set-up, especially because of its ease for facilitating collaborative work: "The set-up in round tables is weird for me, but makes group work easier." Other students were excited about the room, its technology, and its possibilities for group work: "The technology would be very useful in a learning environment" or "I like it, I enjoy technology." Some were specific about what they saw as the benefits of the room: "I enjoy the set-up of round tables. They are great for discussion" or "very good for discussion-based classes and group activities." One student wrote, "I like that we can utilize new technology in a creative way to expand both our discussions and our learning." Though many students found the room beneficial for learning, especially for discussion and group work, those who disliked the room were often apprehensive about using technology or expressed their loathing for collaborative group work.

It was also clear from their comments that students entering the SAC CAT had an expectation that the technology will be used (and used appropriately and often) in the room. Students' open-ended comments revealed whether their professors lectured most of the time in this room, or had trouble getting the technology to work consistently (or at all). Students reported that they were frustrated by technical glitches or viewed the classroom as an expensive waste of resources (state universities like ours are dependent upon state taxes, with budgets, tuition, and student debt playing a large part of the higher education conversation--see Ciabattari et al., 2018). Training professors

to use the technology often and comfortably in front of an audience, as well as providing on-site and real time technology support on campus are two strategies to address these concerns.

What we learned about student perceptions of the classroom set-up and technology is that the attitudes they bring with them to the classroom inevitably affect their expectations of what will happen in the room, and whether they think they will learn in it. Students expect that a technology-enhanced classroom will "work" and are frustrated when it does not. Our data show that sometimes students' attitudes toward the ALC change, but more often, they do not. This means that, in addition to training and technological support, faculty need to be attentive to, and explicitly address, student attitudes towards the room and its technology.

Student Engagement and Soft Skill Development

Students in the study generally perceived student-to-student interactions in the SAC CAT classroom to be beneficial. They found the classroom to encourage engagement, often more than in their traditional classrooms. They also highlighted how the classroom itself, with its round tables, computers, and white boards, enhanced their peer-to-peer interactions, making learning "easier." Students reported that the ease of collaboration, information-sharing, and discussion contributed to their overall learning, as well as their ability to communicate with one another and to work in teams successfully.

Our data clearly shows that many students were effectively engaged while in the SAC CAT. In order to assess student engagement, we used two questions to gauge their perceptions of time. The concepts of "time flying" and of immersion in a task that leads one to lose all track of time are associated with work in flow psychology pioneered by Mihaly Csikszentmihalyi (1990), which is associated with concentration, enthusiasm, and enthusiasm for learning. If students experience flow in the ALC, it suggests that they are genuinely engaged in their learning.

We asked two questions about time on both the beginning and end of semester surveys. First, we asked, "In my classes, I find myself checking the time to see how much time remains before class will be over" at the start and end of the semester. We followed up with a similar, but differently worded question, "In my classes I was surprised to find the class ending because the time seemed to have flown."

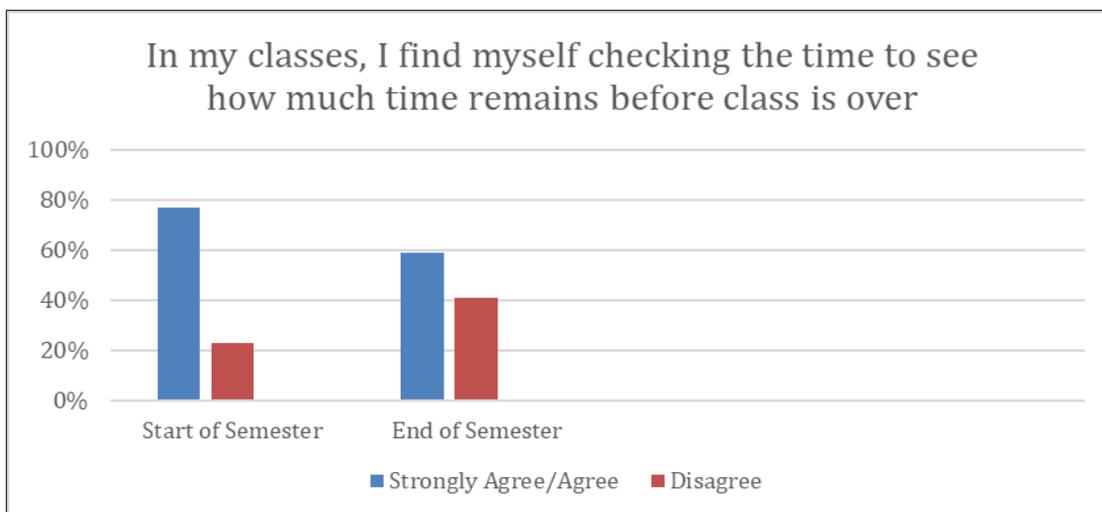


Chart 2. In my classes, I find myself checking the time to see how much time remains before class is over.

With the first question, more students agreed with the statement at the beginning of the semester (336 or 77%) than at the end (259, or 59%), which suggests that they found themselves to be more engaged than they thought.

With the second question, 201 or 46% agreed/strongly agreed that they experienced “time flying” at the beginning of the semester, but by the end of the semester, there was an increase of 15% (265, 61%). The answers to both of these questions suggest that students perceive that that they become more engaged by the end of the semester.

Given that they perceive that they are more engaged by the end of the semester, why is this the case? We asked students a qualitative follow-up question:

“In comparison to your other classes, does time seem to go more quickly in this class? If not, why not? If so, why?” Relatively few students responded negatively to this

question. Students who did not feel that time passed quickly in class gave firm reasons: “No, because I’m a senior and want to graduate so every class is too long” or “No, it feels slower, because I hate group work” or “No, when the technology works it goes faster but when it does not, the class drags.” Some of these negative responses align with the comments related to technology in the room or with a dislike of group work, suggesting that there is little to be done to engage these students, as they have simply decided not to be engaged.

Most responses to this question were positive. Students linked time flying by with the active learning strategies that were happening in the room, sometimes directly: “Yes [time flies] because there is more discussion and group work”, or “Yes, we can do research as we discuss, and this makes the classwork feel less like work”, or [time moves “a little more

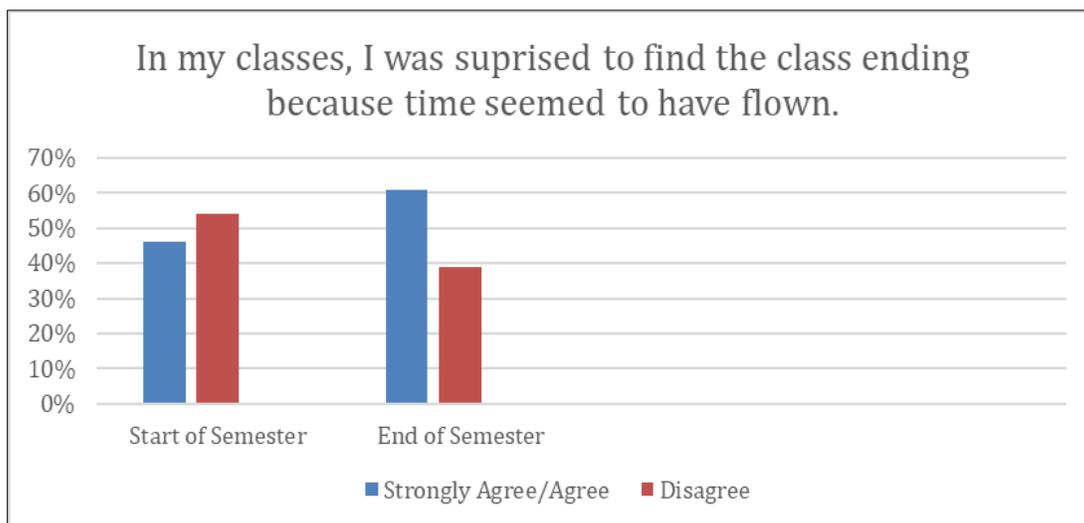


Chart 3. In my classes, I was surprised to find the class ending because time seemed to have flown.

quickly because of the extensive group work and instructions." Some students provided no reason why time passed more quickly, just that it did: "Yes it does. I don't know why, it just does. I never look at the time, and then the class is just over." These comments suggest that students are experiencing "flow" in the SAC CAT, which makes their learning more engaging and, frankly, fun.

Related to students' engagement and flow is the idea of a room that made learning "easy." "Easiness" was an idea that came up repeatedly when we asked students what they liked best about having taken a class in SAC CAT. Students commented that the round tables "make it easy to have group discussion" or that discussions felt "more natural" and that "not only the same few people talk." Others commented that the SAC CAT made it "very easy to learn," and that the room was "inviting." This "easiness" also facilitated relationship-building: "I like that I can actually talk to my classmates" and "it was cozy, warm, and inviting for participants."

Many of the student answers to the question, "What did you like most about the classroom?" confirmed that relationship-building was a crucial feature of their experience. For example, one student said, "I like it, it helps you meet new people." Or, "I love getting to know group members really well." Another suggested that the importance of relationship-building was that "I was able to make friends with those at my table and contact them outside of class when I have a question about class." One student said that they appreciated, "the fact that we worked in groups, [the room] helps you make friends and it's easier to learn by getting other points of view." One student even said that what they liked most about the room after having taken a class in it was that "...getting close with my group

made me excited to come to class." Numerous comments about the ease of getting to know others in class confirm the importance of the SAC CAT for providing opportunities for students to enhance their soft skills of relationship-building and making connections with others.

The importance of relationship-building and making connections with others is especially clear because some students revealed an expectation of closeness in the room that was noticeable when it was not met, like this student's observation: "I probably wouldn't even be able to recognize students at the other end of the room--absolutely zero interaction with them." Another student said that what they liked least about the room was that "I didn't get to know everyone in the classroom." We found this type of comment particularly interesting, and speculate that, because of the combination of technology and a small space, students have the expectation of getting to know other students taking the class with them.

We also wanted to know whether the relationships students built in the SAC CAT were meaningful, because this would suggest that the connections students made were more than transactional or limited to the particular class they were taking. To find out, we asked them at the beginning of the semester if they usually made connections with peers in their classes: only 35 students out of 434 (8%) answered "Always" at the beginning of the semester, as depicted in Chart 4.

To address this slightly differently, we asked at the end of the semester if this classroom offered opportunities to make connections with peers that would continue after the class ended: 134 out of 434 students (30%) responded "Always," which is a notable increase of 22 percentage points from the beginning to the end of the semester. This increase suggests

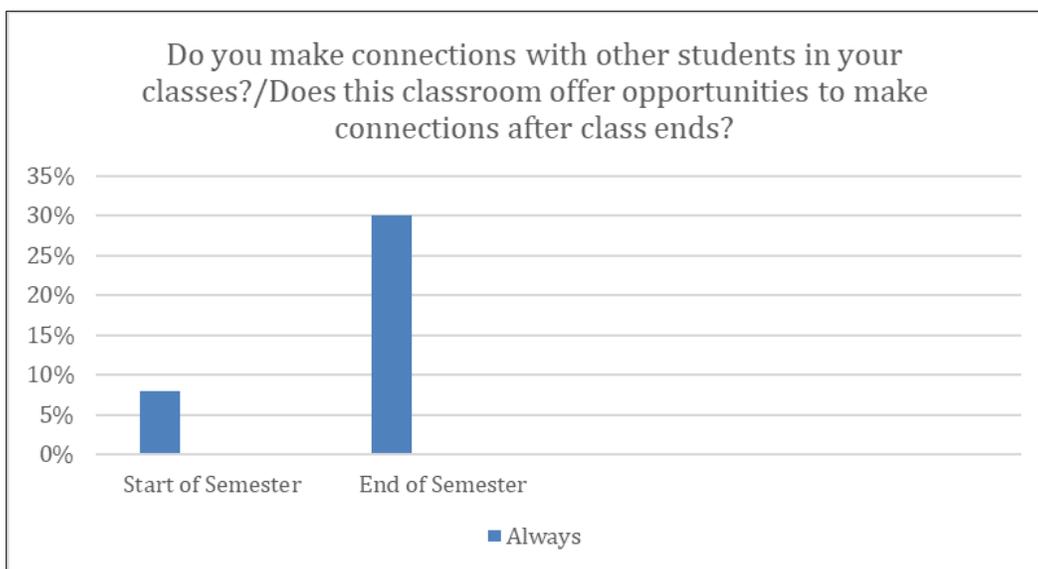


Chart 4. Do you make connections with other students in your classes?

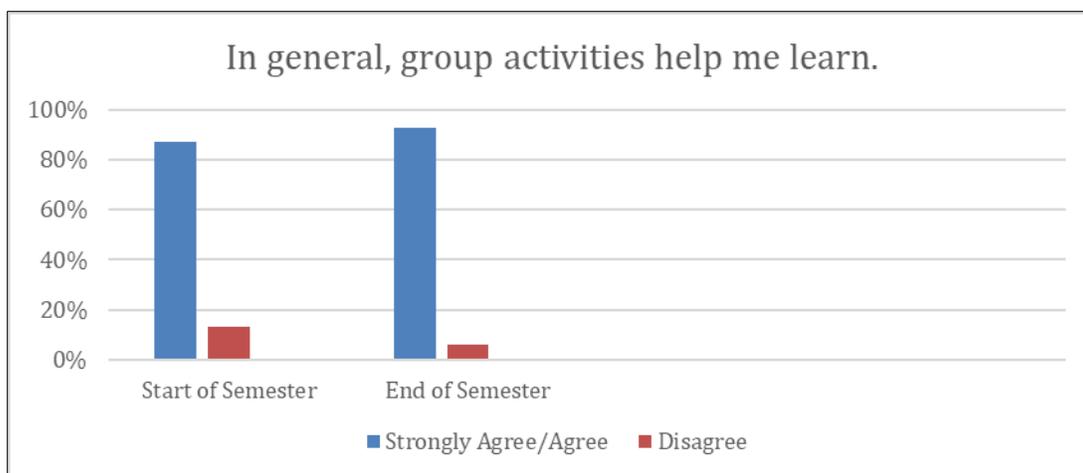


Chart 5. In general, group activities help me learn.

that the kinds of interactions students had in this particular setting led to more significant relationships than they experience in other, more traditional classroom settings. In their comments at the end of the semester, many students said that what they liked most was getting “to know the people at my table well,” or “...make connections with the other students at my table.” One student commented, “I got to talk to my group members and I still stay in touch...” One student said, “Working with groups really helped me, because I was able to hear and use others’ experiences with the topics to understand the material better.” Both the quantitative and qualitative data suggest that the SAC CAT encourages relationship-building in ways that traditional classrooms ordinarily do not.

Students also perceive a connection between developing relationships and learning, especially in the context of group work. We asked students whether or not they agreed with the statement, “In general, group activities in class help me learn.”

Of the 434 students surveyed, 379 (87%) agreed or strongly agreed before their experience in the ALC classroom. After their experience in SAC CAT, 404 (93%) agreed or strongly agreed, which is a 6% increase. Most students in our sample expressed more positive opinions about group work as the semester progressed, with only a few not supporting the sentiment that group work is helpful to the learning process. This is especially obvious in comments from students who began the semester with very negative impressions of the room, but ended with positive impressions. For example, at the beginning of the semester, one student said, “Ew, group sitting!” and by the end of the semester remarked, “There was nothing I did not like.” Another student’s first impression of the room was “It was strange” and by the end of the semester, they commented, “It can be helpful at times because it allows us to easily work in a group.” Another responded to the question about their first impression with

“meh” but by the end of the semester commented “Wouldn’t mind having other classes in it.”

Many students also made positive comments about how getting to know their peers helped them learn: “Working with groups really helped me, because I was able to hear and use others’ experiences with the topics to understand the material better.” Another said, “I like the set up, working in groups allows us to feel comfortable to express our opinions and we know each others’ strengths and weaknesses.” One student even commented that the room “has a positive ‘feel’ and helps people work together.”

Regardless of how students felt about the room at the beginning of the semester, by the end of the semester, many of them commented on their positive learning experience in the classroom. Students made comments like “I love the collaboration and the ease of working in groups. I think it would be beneficial to have many more classes like this” or “I believe I learned a lot more than if I was in a normal classroom setting.” Another admitted, “At first I hated it, but it definitely helped me understand the material better.” One student said that they would recommend the classroom to other students “because it is a comfortable room that has developed my critical learning skills. I also talk to a lot of people about what I’m learning in class, more so than any others I’m taking. I enjoy the technology and how it is used everyday.” Another said, “...overall, I liked the technology were able to use for class-it helped maintain attention and participation.” One student enthusiastically stated, “It helped me learn in ways other classes can’t. I am a very hands-on person, so it was great being able to actually do things. This has been one of my favorite classes, and I have learned the most out of it. I’m very glad I took this class.” Another clearly recognized that the room “helps your communication skills, attendance, and gives you a different learning environment.”

All of our findings about relationship-building and group work underscore the importance of interpersonal communication in ALCs. Because creating meaningful relationships and learning experiences is a feature of ALCs, it is important that faculty who teach in such rooms provide opportunities for students to learn more about group dynamics and how they can become better group participants. This means that, in addition to specific course content, faculty should consider incorporating team-building activities into their classrooms so that students are explicitly encouraged to reflect on their role in creating effective group learning.

Conclusion

We hypothesized that enhanced technological skills would be an outcome of ALC student use, but this was not the case. While many students appreciated how the technology facilitated classroom activities, most did not perceive technological skill-building to be a significant aspect of their learning in the SAC CAT. Rather, our data show that ALCs encourage student-to-student interaction in ways neither they nor we could have imagined. By having students face one another at round tables, work together on group projects, and engage in active learning with the use of technology, the SAC CAT provides a space for students to learn the benefits of, and improve, their soft skills. Our data reveal that students found that the room encouraged their engagement because their course work required a lot of small group teamwork, discussion, and collaboration. Moreover, students also emphasized the importance of making connections with their peers and building meaningful relationships with them.

This study is unique in a few important ways. First, we have a different origin study of the classroom, starting in the social and behavioral sciences rather than the hard sciences. Second and third, our small, retro-fitted classroom lends itself to qualitative research methodologies, and a focus on end-users of the classroom. We encourage future research on technology-enhanced classrooms to be mindful of how faculty from various disciplines can use the classroom technology effectively, and we recommend that all faculty have real time technology support. And, because the technologically-enhanced classroom fosters more human interaction and communication, we urge those who teach in such classrooms to engage with their students in discussions and activities that emphasize the ways that their classroom interactions can help them develop the soft skills that are essential to their future personal and professional success.

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Appendix A – Beginning of Semester Student Survey

Name: _____

Course: _____

What is your year in school? (e.g., first year, third year, etc.) _____

What is your gender? (woman, man, transgender) _____

What is your major? (If haven't declared yet, write "Deciding") _____

Have you taken a class in the SAC CAT Classroom already? _____ YES _____ NO

If yes, which class was it? _____

If yes, when did you take it? _____

Directions: For each question, please select one answer by circling the answer that is the most appropriate.

In general, group activities in class help me to learn.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Sitting at round tables is helpful for group activities.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

What is your level of comfort with the technology in this room?

- Very Comfortable
- Somewhat Comfortable
- Not Comfortable
- Hate it

In your classes, do you usually make connections with other students that continues after class is over?

- Always
- Sometimes
- Rarely
- Never

In my classes, I find myself checking the time to see how much time remains before class will be over.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

THE EXPECTATIONS OF ADULTING

In my classes, I am surprised when the class ends because the time seems to have flown.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

I find myself discussing outside of class with friends the classes that I take at UNI.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

I am given opportunities to develop my critical thinking skills in my UNI courses.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

Please provide an example of how critical thinking skills are developed in your UNI courses.

Why did you decide to take this class?

- a. It is a requirement.
- b. It is an elective.
- c. Other _____
- d. Unsure

What are your first impressions of this classroom?

What do you like most about this room so far?

What do you like least about this room so far?

In comparison to your other classes, does time seem to go more quickly in this class? If not, why not? If so, why?

Thank you for your time.

Appendix B - End of Semester Student Survey

Name: _____

Course: _____

Directions: Please select one answer for each question by circling the answer that is the most appropriate.

Group activities in this class helped me to learn.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

Sitting at round tables was helpful for group activities.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

Now that you've taken a class in this room, what is your level of comfort with the technology in it?

- e. Very Comfortable
- f. Somewhat Comfortable
- g. Not Comfortable
- h. Hate it

Did this classroom provide you opportunities to make connections with other students that will continue after class is over?

- e. Always
- f. Sometimes
- g. Rarely
- h. Never

In my classes, I find myself checking the time to see how much time remained before class will be over.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

In my classes, I was surprised to find the class ending because the time seemed to have flown.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

I find myself discussing outside of class with friends the classes that I take at UNI.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

THE EXPECTATIONS OF ADULTING

I am given opportunities to develop my critical thinking skills in my UNI courses.

- a. Strongly Agree
- b. Agree
- c. Disagree
- d. Strongly Disagree

Please provide an example of how this particular classroom has helped you do this:

What are your impressions of this classroom after having taken a class in it?

What did you like about this classroom?

What did you not like about this classroom?

In comparison to your other classes, does time seem to go more quickly in this class? If not, why not? If so, why?

After having taken a class in the SAC CAT classroom, would you take another class in this type of classroom (or one that is similar to it)? Why/not?

Thank you for your time.