The Journal of Effective Teaching

JET

an online journal devoted to teaching excellence

Volume 17/Issue 2/September 2017
The Journal of Effective Teaching
an online journal devoted to teaching excellence

Volume 17/Issue 2/September 2017
Online at http://www.uncw.edu/cte/et/
EDITORIAL BOARD

Editor-in-Chief
Dr. Russell Herman, University of North Carolina Wilmington

Editorial Board
John Fischetti, Education  Diana Ashe, English
Russell Herman, Mathematics and Physics  Kevin McClure, Education

Associate Editor
Diana Ashe, UNC Wilmington Center for Teaching Excellence, English

Consultants
Librarian – Peter Fitzler

Reviewers
Glenn A. Bowen, Barry University, FL
Alison Burke, Southern Oregon University, OR
Marsha Carr, UNC Wilmington, NC
Dorian B. Crosby, Spelman College, GA
Lisa Dierker, Wesleyan University, CT
Christina Downey, Indiana University Kokomo, IN
Pamela Evers, UNC Wilmington, NC
John Fischetti, Southern Louisanna University, LA
Chandra Foote, Niagara University, NY
Sarah Ginsberg, Eastern Michigan University, MI
Jana Hackathorn, Murray State University, KY
Jace Hargis, Higher College of Technology, UAE
Scott Imig, UNC Wilmington, NC
Susan Kraus, Fort Lewis College, CO
Nancy Ruth Leibold, Southwest Minn. State U, MN
Amanda Little, Wisconsin-Stout, WI
Twila Lukowiak, Bradley University, IL
Nancy McCormick, Middle Tennessee State, TN
Samuel B. Pond, III, N C State University, NC
Hans Schmidt, Penn State Univ., Brandywine, PA
Jennifer T. Tasgold, Meredith College, NC
Kevin M. Thomas, Bellarmine University, KY
Kenneth Wolf, University of Colorado Denver, CO
Ellen Yeh, Columbia College, IL

Submissions
The Journal of Effective Teaching is published online at http://www.uncw.edu/cte/et/. All submissions should be directed electronically to Dr. Russell Herman, Editor-in-Chief, at jet@uncw.edu. The address for other correspondence is

The Journal of Effective Teaching
C/o Center for Teaching Excellence
University of North Carolina Wilmington
601 S. College Road
Wilmington, NC  28403 USA
FAX 910-962-3427

(ISSN 1935-7869 for limited print issues and ISSN 1935-7850 for the online issues)
CONTENTS

Letter from the Editor-in-Chief: Digital Distractions
Russell L. Herman ................................................................. 1-4

Scholarship of Teaching

Evaluating an Adaptive Equity-Oriented Pedagogy:
A Study of its Impacts in Higher Education
Andrew Estrada Phuong, Judy Nguyen, and Dena Marie.......................... 5-45

Effective Teaching

The eSGID Process: How to Improve Teaching and Learning in
Online Graduate Courses
Kelly O’Neal-Hixson, Jennie Long, and Marjorie Bock .......................... 44-57

The Power of Movement: Body-engaging Activities for Teaching Economics
Leanne Roncolato and Cairynne Koh ................................................. 58-71

The Feasibility of Flipping: An Exploratory Analysis of the Flipped Classroom in
a Developing Country
Alana D. D. Griffith ................................................................. 72-89

Agile Manifesto for Teaching and Learning
Timothy C. Krehbiel, Peter A. Salzarulo, Michelle L. Cosmah, John Forren,
Gerald Gannod, Douglas Havelka, Andrea R. Hulshult, and Jeffrey Merhout ..... 90-111

CALL FOR PAPERS

The Journal of Effective Teaching is accepting submissions for review for the Spring 2018 issue.
Manuscripts will be due October 31, 2017. The expected publication date will be February 28th.
Articles will be accepted in any of the Content Areas supported by the journal.
INFORMATION FOR AUTHORS

The Journal of Effective Teaching is an electronic journal devoted to the exchange of ideas and information about undergraduate and graduate teaching. Articles are solicited for publications which address excellence in teaching at colleges and universities. We invite contributors to share their insights in pedagogy, innovations in teaching and learning, and classroom experiences in the form of a scholarly communication which will be reviewed by experts in teaching scholarship. Articles should appeal to a broad campus readership. Articles which draw upon specific-discipline based research or teaching practices should elaborate on how the teaching practice, research or findings relates across the disciplines. We are particularly interested in topics addressed in the particular Content Areas described at this site, including empirical research on pedagogy, innovations in teaching and learning, and classroom experiences.

The Journal of Effective Teaching will be published online twice a year at the web site http://www.uncw.edu/cte/ET/. All manuscripts for publication should be submitted electronically to the Editor-in-Chief, Dr. Russell Herman, at jet@uncw.edu. Articles will be reviewed by two to three referees.

Manuscripts for publication should:

- Follow APA guidelines (5th Edition).
- Include an abstract and 3-5 keywords.
- Typeset in English using MS Word format and 12 pt Times New Roman
- Articles/essays on effective teaching should be 2000-5000.
- Research articles should be 3000-8000 words.
- Tables and figures should be placed appropriately in the text.

All articles published in The Journal of Effective Teaching will be copyrighted under the Creative Commons "Attribution-Non Commercial-No Derivs" license. The Journal of Effective Teaching will require that the author sign a copyright agreement prior to publication.

<table>
<thead>
<tr>
<th>Deadlines for Upcoming Issues</th>
<th>Spring 2018</th>
<th>Fall 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submissions Due</td>
<td>October 31, 2017</td>
<td>May 31, 2018</td>
</tr>
<tr>
<td>Notification of Acceptance</td>
<td>December 31, 2017</td>
<td>July 31, 2018</td>
</tr>
<tr>
<td>Final Manuscripts Due</td>
<td>January 31, 2018</td>
<td>August 31, 2018</td>
</tr>
</tbody>
</table>
Letter from the Editor-in-Chief:
Digital Distractions

Russell L. Herman¹
The University of North Carolina Wilmington, Wilmington, NC

On a trip for coffee, to get out of the office, I noticed that many of the students sitting in the student union were either sitting with laptops or on their smartphones. The only person not digitally connected was an older person sitting in a chair watching the passing students. As I went back to my office I saw that bikers and skateboarders were carrying their laptops or talking on their phones as they passed by me. Students are not the only ones digitally connected. Many faculty are plugged in as well, whether they are navigating the campus or are in meetings. We are clearly in a digital age and mobile devices can be distracting.

Many of our students are digital natives, a term referring to those raised in a digital world and introduced in Prensky (2001). This typically refers to those who had grown up since the mid to late 1990’s, when the Internet became accessible to a wide population. This includes both the Millennials and Generation Z populations.

It has been common to put people into different generations. Meyer (2016) lists one such grouping as shown in Table 1. Based on this table, most of our current students are Millennials, but Generation Z college students are about to enter our colleges and universities. We expect that they will be even more connected to their digital devices as they have most likely been fully plugged into social media and never very far from their devices even while in the classroom. At the same time, Millennials are returning as professors (Gardner, 2016).

Table 1. Common Generation Classification (Meyer, 2016).

<table>
<thead>
<tr>
<th>Generation</th>
<th>Birth Years</th>
<th>Ages as of 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation Z</td>
<td>2000s to today</td>
<td>0–16</td>
</tr>
<tr>
<td>Millennials</td>
<td>1980—2000s</td>
<td>16–36</td>
</tr>
<tr>
<td>Generation X</td>
<td>1960s—1980s</td>
<td>36–56</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>1946—1964</td>
<td>52–70</td>
</tr>
<tr>
<td>Silent Generation</td>
<td>1928—1945</td>
<td>71–88</td>
</tr>
<tr>
<td>Greatest Generation</td>
<td>Before 1928</td>
<td>87+</td>
</tr>
</tbody>
</table>

¹ Author’s email: hermanr@uncw.edu
Recently, Chen, Seilhamer, Bennett, and Bauer (2015) described two surveys on student use of mobile technology at the University of Central Florida. In 2014 they found that 86% owned smartphones and 47% owned tablets (iPads or notebooks). Fifty percent of the students used their devices to do schoolwork, though many used them to take pictures. Only 30% of instructors incorporated the technology in their assignments and 55% banned or discouraged their use.

When it comes to the classroom behavior, it is easy for students to be distracted by their digital devices. McCoy (2013, 2016) had reported in two recent studies the extent of this distraction. As reported by Reed (2016), McCoy found in a national survey of 675 students in 26 states that “students check their phones and other digital devices 11 times a day on average while in class.” They spend a fifth of their time accessing their devices for activities not related to school work. These activities include texting, emailing, surfing the Internet, and accessing social media. In the 2013 study (McCoy, 2013) of 777 students at six universities in five states 30 percent of the students reported using devices more than ten times for non-class related activities, while in the 2015 study (McCoy, 2016) the figure was closer to 34 percent. The number of students reporting not using their devices was eight percent in 2013. That number dropped to three percent in the more recent study.

Why do students get so distracted? Mainly, they do so to “fight boredom” and then to stay digitally connected. A 2013 study by Experian Marketing Services showed that 18- to 24-year-olds send and receive an average of 3,853 text messages per month, thus supporting the need to feel connected and not miss an important text.

What is the effect of these digital distractions? It is often reported that millennials can multi-task better (Meyer, 2016). About thirty percent maintained that they can use devices without distracting from their learning and over eleven percent could not stop using the devices. But, in the 2015 study (McCoy, 2016), students note that there is a cost. 89 percent do not pay attention and 81 percent miss instruction. In spite of this, 90 percent do not think digital devices should be banned although a small majority thinks that there could be a policy limiting non-classroom use (Schaffhauser, 2016) and a majority thinks that instructors should deal with offending students. Chen et al. (2015) found similar findings with 47% of the students and 67% of instructors perceiving mobile technologies as a distraction in the classroom.

So, how does an instructor deal with digital distraction? A common method is to ban digital devices, or only restrict such activities to class-related activities. This can be specified in the syllabus and enforced by calling out students. However, this might not be the most appropriate way to deal with student distraction. Lang (2017) writes that having encountered digital distraction from observing one of his better students, he found some answers as to why people get distracted in the recent book, The Distracted Mind: Ancient Brains in a High-Tech World (MIT, 2016) by neuroscientist Adam Gazzaley and psychologist Larry D. Rosen. In it they examine how one is distracted from preset goals. The ability to stay on task is governed by neural processes and the elements that tend to distract. Lang (2017) discusses how the lessons of this book can be translated into setting
goals in the classroom to help overcome distractions. On the other hand, the numerous comments to Lang’s post reveal some ways that faculty deal with digital distractions. These range from active learning activities to reduce boredom to strict bans on digital devices.

Womack and McNamara (2017) provide a literature review focused on in-class cell-phone behavior. They note that students benefit from being able to manage their coursework, organize assignments, and can find information quickly. However, they point to studies of multitasking (mostly texting and using Facebook) and its effects on exam performance or while completing assignments negatively affect academic performance. They also found from the literature that over half of cell phone usage was texting and the rest in mainly for checking social media.

Students rarely leave the class to communicate with friends and loved ones (Womack & McNamara, 2017). This has become a habit and is further motivated by boredom and the need to immediately deal with emergencies or work issues. Their review has found that students can become anxious when they cannot access their mobile devices (Womack & McNamara, 2017). This most like translates beyond student behaviors as the population as a whole has become digitally connected.

Womack and McNamara (2017) then discuss the literature concerning student and faculty perceptions on cell phone use. Students do not think such use hinders their performance. Their neighbors in the classroom also were not so much bothered by the texting, but studies found that phone sounds, like ringing, had some impact on students and faculty. Some strategies were listed to reduce cell phone use, including cell phone policies, class size, group activities, or incentives to putting away or silencing devices during class time.

The issues Womack and McNamara (2017) reported can just as well apply to any electronic devices. Fried (2008) discussed the impact of laptops on student learning, including some of the same issues of using laptops in the classroom and multitasking. In this study students were found to use their laptops for things other than notetaking. It was found that there was a negative correlation between measures of learning and laptop use. As with any technology (desktops in computer classrooms, laptops, smartphones, tablets), there has always been the suggestion that “students, faculty, and administrators need to find ways to promote appropriate use of” electronic devices in the classroom minimizing the negative impact on learning.

Students have always found ways to fight boredom or engaging in distraction. We may recall before the digital era that students passed notes in class. Some students sat in the back of the room and read newspapers or other books. Before the cell phone there were transistor radios (introduced October 1954, Alter, 2014) and the Walkman (1979). In 1973 Martin Cooper, an engineer at Motorola, made the first mobile phone call. So much has changed since then and we should expect the future to hold no less of a challenge to capturing students’ and some faculty members’ attention by distracting them from their devices.
References


Evaluating an Adaptive Equity-Oriented Pedagogy: A Study of its Impacts in Higher Education

Andrew Estrada Phuong\textsuperscript{a}, Judy Nguyen\textsuperscript{b}, and Dena Marie\textsuperscript{a}
\textsuperscript{a}University of California, at Berkeley, Berkeley, CA 94720
\textsuperscript{b}Stanford University, Stanford, CA 94305

Abstract

This study examines whether and how an adaptive equity-oriented pedagogy can address diverse college students' needs and preferred modes of learning. Using a mixed-methods approach, we evaluated this pedagogical intervention that synthesizes democratic, assessment-driven, strengths-based, multimodal, and game-based instructional strategies. This study compared two course sections with identical topics and assessments using different pedagogical approaches. In the control condition (n=59), instructors did not adjust their lectures, dialogues, and activities based on data of their students’ learning needs. Meanwhile, the course with the adaptive, equity-oriented pedagogy (i.e., the treatment group, \( n=54 \)) had the same instructors who adjusted their teaching practices each week based on data related to their students’ learning needs.

Researchers evaluated this pedagogy’s impact on student learning by analyzing anonymous course-feedback forms, surveys, interviews, observation notes, final project assessments, and weekly pre- and post-assessments. After instructors in the treatment condition adjusted instruction based on weekly post-assessments and anonymous student-feedback forms, the researchers observed increased levels of student engagement, participation, collaboration, sense of community, and performance on post-assessments. Researchers found statistically significant differences on final assessment scores in favor of the equity-oriented pedagogy (\( p<.0001 \)). These findings suggest that the equity-oriented pedagogy helped reduce barriers to equity and access since students surpassed rigorous course objectives, regardless of background (e.g., gender, immigration status, sexual orientation, race/ethnicity, household income, disability). Despite the rigorous nature of the class, students reported positive psychosocial outcomes (e.g., motivation, self-efficacy), and noted how specific teaching practices were continuously modified to enhance their learning experiences. Based on the data, students expressed a growth mindset and reported reduced stereotype threat.

Keywords: Equity, assessment, pedagogy, academic achievement.

\textit{Everybody is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid.} – Albert Einstein

\textsuperscript{1} Corresponding author's email: andrew.e.phuong@gmail.com

\textit{The Journal of Effective Teaching, Vol. 17, No.2, 2017, 5-44}
©2017 All rights reserved.
Einstein’s statement underscores the absurdity of a key tenet of the modern education system: that a one-size-fits-all model is an accurate and appropriate way to evaluate student performance. Today, Einstein’s insight has become increasingly relevant. In many cases, the current education system and its instructors have implemented curricula and assessments that serve some groups of learners, placing other students who learn differently at a disadvantage (Tomlinson et al., 2003). Consequently, traditional learning environments can be less conducive to optimal student learning because the mode of instruction may not fully accommodate the wide range of learning needs (Tomlinson et al., 2003).

Additionally, assessments and policies that do not meet diverse students’ needs, preferred modes of learning, or primary discourse can pose challenges to students’ success in school and college (Tomlinson et al., 2003; McCallum, 2013). Bettinger, Boatman, and Long (2013) add how “difficulties in the classroom can be discouraging and can complicate the academic, social, and financial adjustments to college. Ultimately, academic struggles may lead to lower self-esteem [and] greater frustration” (p. 94). These factors may lower students’ potential to excel and increase their chances of dropping out of college (Bettinger et al., 2013). Consequently, these circumstances can limit students’ employment opportunities and affect their socioeconomic status – all of which can sort and rank them in society (Bettinger et al., 2013; Azevedo & Workman, 2012). Hence, conducting research on creating an equitable and accessible space for student learning in college is critical; many students depend on curriculum and instruction to pursue professional aspirations and reach higher levels of education (Azevedo & Workman, 2012).

In response to these pressing issues, this study examines a human rights and community organizing course, which employs an equity-oriented pedagogy that hybridizes specific components of democratic, multimodal, assessment-driven, strengths-based, and game-based instructional strategies. We examine whether and how this equity-oriented pedagogy serves diverse students’ needs and preferred modes of learning, in order to increase equity and accessibility in the classroom. Our study assesses whether this equity-oriented model provides more equitable opportunities and outcomes for academic achievement, where all students are provided conditions for learning that would enable them to 1) earn a 94% or higher in the course, and 2) meet or surpass the collaboratively defined learning objectives. We used 94% as a threshold because that metric equals an A-level grade, and therefore provides evidence that students mastered course material.

We define rigor in two ways through the collaboratively defined learning objectives. First, students applied course concepts through a community-organizing project that required them to address a novel problem and generate a solution that was later implemented in the community. Second, students demonstrated this knowledge by refining their projects and reflecting on their experience while employing multiple cognitive processes (e.g., defining, applying, comparing, contrasting, synthesizing, evaluating, and formulating concepts) (Davis, 2009; Anderson, Krathwohl, & Bloom, 2001). In addition to course expectations, this project experience added a focus to this class that advanced the development of these cognitive processes and asked students to expand the ways they demonstrated knowledge gained.
We compared two courses with the same subject material and measures using different pedagogical approaches. Like many college courses, one course’s instructors (i.e., the comparison or control group) did not adjust their lectures, dialogues, and activities based on data of their students’ learning needs. Meanwhile, the course with the adaptive, equity-oriented pedagogy (i.e., the treatment group) had the same instructors who adjusted their teaching practices based on data of their students’ learning needs. With this comparison in mind, we examined the following research questions:

1. How do final assessment scores vary between the treatment and control groups?
   a. How, if at all, do these final assessment scores vary by student demographic characteristics (e.g., gender, disability, immigration status, etc.)?
2. How does the trend over time in gain scores (i.e., the difference between weekly post- and pre-tests on subject material) vary between the treatment and control groups?
3. How do the pedagogical impacts on stereotype threat vary between the treatment and control groups?
4. How do the pedagogical impacts on psychosocial outcomes (e.g., motivation, sense of self-efficacy, sense of community, etc.) vary between the treatment and control groups?
5. How can the adaptive, equity-oriented pedagogy be improved to better address students’ learning on a weekly basis?
6. What were the students’ perceptions and impressions of the courses and their learning experiences?
7. What recommendations would be useful for equity-oriented curriculum in the future?

The control group integrated active learning and mirrored higher education classrooms that do not continuously adjust teaching based on student data. These active learning strategies include evidence-based practices such as inquiry-based and case-based teaching used in many higher education settings. Because the numbers of historically underrepresented groups and first-generation students in higher education courses are increasing (Stevens & Kirst, 2015), this research is important and timely for practice. Therefore, we believe it is important to study practices that seek to improve equity and inclusion in the classroom for all students, especially for historically underrepresented students.

**Literature Review**

**Educational Equity and the Factory Model**

In the early 1900s, the factory-model system instituted grade levels where teachers focused on one set of students of the same academic proficiency; the theory posited that teachers could teach the same subjects, in the same way and at the same pace to all students (Delaney, 2000; Perea-Jimenez, 2008). The factory model was designed to prepare people to work on an assembly line; the dull and routine activities in schools mirrored factory work (Delaney, 2000). This model legitimated standardized curricula and high-
stakes testing movements, which institutionalized teacher-centered pedagogies that “ignore[d] the needs of all students” (Perea-Jimenez, 2008). Cooley (1999) argues that the factory model has become pervasive in universities, especially with the ways faculty teach and assess college students using one-size-fits-all pedagogical models (p. 72). Selwyn (2007) adds that the factory model’s depersonalized nature shifts instruction away from a learner-centered orientation and can hinder learning opportunities in higher education. Moreover, Rudy Hirschheim (2005) states that a “more standardized, minimalist product targeted for a mass market” will “further ‘box in’ and ‘dumb down’ education, resulting in a system that does not support the endeavours of superior scholars and thinkers” (p. 101).

In response to the factory model’s ramifications, multiple scholars have recognized the need to improve educational equity. For instance, Bourdieu (1973), Lareau (2003), and Delpit (1995) demonstrate how educational institutions and instructors often privilege the dominant, middle- and upper-class cultural capital in classrooms. These authors assert how a lack of access to the dominant cultural capital and a lack of clear expectations contribute to the challenges that low-income students and students of color face in learning.

Similarly, Gee (1996) states that students who are minorities and of low socioeconomic status often come from a primary discourse (i.e., the discourse that people learn in their household and local community), which does not match the dominant discourse (i.e., any discourse which leads to social goods and socioeconomic mobility) taught in schools and colleges. In these educational settings, students are expected to learn not only the course material but also how to think, feel, and behave in a new context. Furthermore, inequities can arise in the educational system since academic achievement is often difficult when a dominant discourse assumes a hegemonic cultural capital for academic success. This places many students from historically underrepresented backgrounds at a disadvantage, barring them from equitable access to academic achievement (Gee, 1996). To complicate Gee’s notion of discourse in a sociological context, Allan Luke (1995) suggests that educators should not overvalue the dominant discourse, but understand students’ various discourses, background knowledge, skills, and behaviors. To achieve this goal, Moll, Amanti, Neff, and Gonzalez (1992) propose that instructors can draw upon their students’ funds of knowledge—i.e., students’ background, skills, and aspirations—to maximize engagement, learning, and a sense of belonging within the classroom.

Critical and Democratic Pedagogy

To address these problems with educational equity, we must consider how Freire and Shor critique and reimagine teaching practices to accommodate students’ multifaceted needs and experiences. Freire (1970) and Shor (1992) criticize the factory model’s banking method, where the teacher treats students as empty vessels and fills them with knowledge. They offer the problem-posing model as an alternative to the banking method to increase equity and access in the classroom. This model asks students to become critically aware of their society and then, through dialogue and praxis, transform their society. Problem-posing involves three methods of instruction: posing a problem to the students in a dialogue; reflecting on their understanding of the problem; and incorporating literary
development exercises centered on cooperative learning (Shor, 1992). In this model, students are the subject – not the object – of the classroom. These authors would envision accessibility in that instructors should not be the gatekeeper of knowledge, but rather students should co-create knowledge and expand their critical consciousness with the instructor. Therefore, students would use dialogue to reverse or blur classroom hierarchies, allowing for a more equitable exchange of knowledge. What Freire calls critical consciousness or “conscientization” – where one gains a heightened awareness of their reality and how societal structures are reproduced – can then occur recursively when students act on this knowledge, reflect, redirect their thinking, modify their behaviors, and repeat this cycle. These skills facilitate democratic participation, since they empower students to teach each other and engage in their communities politically.  

**Creating an Optimal Learning Environment**

Expanding the definitions of equity and accessibility, Knight and Pearl (2000) state that teachers should establish an optimal learning environment tailored to student needs, interests, engagement, and satisfaction within the classroom. These authors argue that Freire’s (1970) and Shor’s (1992) ideas do not necessarily provide equity and accessibility to all students. For example, a dialogical atmosphere in the classroom may not be optimal for all students since it tends to privilege those who are vocally active or who more easily retain information through auditory means. Therefore, Knight and Pearl (2000) suggest that the overemphasis on dialogical learning is not sufficient for overcoming oppression and promoting equity and access. Thus, dialogue and problem-posing can undermine equity when students do not possess the knowledge necessary to democratically participate in the classroom and in their communities.

Knight and Pearl (2000) would add that educational equity increases when students have a voice regarding classroom pedagogies. By having a voice, students can co-create with the instructors an optimal learning environment that addresses their needs, interests, funds of knowledge, and areas for improvement based on assessment (Knight and Pearl, 2000). Knight and Pearl (2000) would define this approach as democratic pedagogy since students have an active role in co-constructing their learning environment. These authors argue that this form of democratic education would increase inclusion since students can express what helps them learn best. Moreover, Knight and Pearl (2000) assert that democratic education needs to value multiple ways of learning and demonstrating knowledge, in order to avoid a model of education that privileges specific groups of learners.  

**Assessment-Driven and Strengths-Based Pedagogy**

McCallum (2013) discusses how an assessment-driven instructional pedagogical model can help establish a more democratic and student-centered classroom that Knight and Pearl (2000) would espouse. In this model, teachers would use ongoing classroom data (e.g., student-assessment data, course-feedback forms/evaluations, surveys, interviews, observation notes) to adjust instruction in order to better serve students’ needs and preferred modes of learning. McCallum (2013) contends that such a process would be demo-
cratic and student-centered when instructors use classroom data and dialogue with students to co-construct an optimal learning environment.

Moreover, identifying a student’s preferred modes of learning is important. A student’s “preferred modes of learning” refers to the modes of learning (e.g., listening to a lecture, engaging in collaborative activities, learning through visuals, discussing information, etc.) and classroom conditions that have helped the student learn best in previous educational settings (McCallum, 2013; Tomlinson, 2003; Tomlinson et al., 2003). Therefore, ongoing assessments are needed to identify which modes of learning best engage their students in learning. This process of adjusting instruction is known as differentiated instruction (i.e., tailoring instruction to meet students’ learning needs) (McCallum, 2013; Tomlinson, 2003; Tomlinson et al., 2003).

Freishtat (2016) builds upon this process by introducing a strengths-based pedagogy, where instructors draw on their strengths to optimize student learning. To achieve this goal, instructors would analyze assessment data and student feedback to identify and leverage their pedagogical strengths – teaching practices that engage students’ funds of knowledge and improve their academic success.

**Multimodality**

Similarly, the New London Group (1996) and Stein (2004) would define equity and access as accommodating students’ needs and preferred modes of learning. The New London Group (1996) and Stein (2004) define multimodality as an approach that appeals to both multiple modes of learning – visual, auditory, and kinesthetic – and multiple modes of communication – the visual, gestural, and the performative. Examples of multimodal instruction include a mix of simulations, drama, spoken word performances, dance, art, videos, music, and the use of technology. This pedagogy can facilitate students’ comprehension of course material since they have many opportunities to learn, reinforce, and demonstrate their knowledge through multiple modes.

**Game-Based Pedagogy**

Introducing another way to increase equity, Nguyen and Phuong (2016) offer a game-based pedagogy that integrates game-like mechanics into the classroom. In Nguyen and Phuong’s (2016) game-based model, students can redo tasks and assignments to improve their results, similar to reattempting a level in a video game. This process would provide more equitable opportunities and outcomes for academic achievement, since all students have multiple chances to learn and demonstrate their knowledge of course material.

O'Rourke, Haimovitz, Ballweber, Dweck, and Popović (2014) and Dockterman (2013) found that game-based learning can improve students’ growth mindsets, where students can focus more on improvement and the learning process rather than the grade or outcome (Dweck, 2006). According to Dweck (2006), growth mindset is the notion that students can learn and improve their skills through effort and a strong work ethic (Dweck, 2006). Game-based learning can support a growth mindset since it offers opportunities
for students to attempt a task, assignment, assessment, and problem more than once. This process can help students learn and grow from mistakes or risks taken during their first attempt. A student’s re-attempt for a higher score on an assessment may suggest that they have a sense of hope and/or confidence that they will excel on future attempts (i.e., a core component of expressing a growth mindset).

Furthermore, the process of developing a growth mindset among students is an effective method to reduce stereotype threat (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007). Steele and Aronson (1995) define stereotype threat as being at risk of confirming a negative stereotype about one’s social group. In their study, Steele and Aronson (1995) demonstrated how African American students performed worse when their racial identity was made more salient before testing (Steele & Aronson, 1995).

Reducing stereotype threat can increase equity and access in the classroom; often times, many minority and marginalized students activate negative schemas of their identity, which can undermine their academic performance (Cohen & Steele, 2002; Cohen, Steele, & Ross, 1999; Davis, 2009; Steele, 1997). Hence, promoting a growth mindset combats stereotype threat by motivating students to perceive intelligence as a muscle that grows with effort, which is not determined by their background and identities (Aronson et al., 2002; Blackwell et al., 2007). By advancing a growth mindset, game-based learning can enhance positive psychosocial outcomes (e.g., motivation, sense of self-efficacy, and resilience), which can impact students’ performance (Dockterman, 2013; O’Rourke et al., 2014).

**Synthesizing Definitions of Equity**

We would like to expand upon how the authors mentioned above have envisioned equity and accessibility. We define equity as creating an optimal learning environment that offers students opportunities to demonstrate their knowledge and improve their skills in various ways. This definition encompasses pedagogies that broaden students’ critical consciousness by drawing upon their funds of knowledge and cultural capital to maximize their academic success. We consider Lareau’s (2003) and Delpit’s (1995) assertions that accessibility is linked to how clear the expectations are to excel in the class. Our definition of accessibility incorporates theories from the literature review by measuring how the modes of instruction help students process the main points of the class, apply course material to new contexts, construct original ideas and arguments, and understand their social role vis-à-vis their reality. We define equity of opportunity as instructional practices that challenge and enable students to excel while accounting for students’ backgrounds and obstacles. Equity of outcome is realized when all students’ – underserved and privileged – needs are addressed, enabling them to 1) earn a 94% or higher in the course, and 2) successfully fulfill or exceed the courses’ collaboratively defined learning objectives.
Methods

Background on the Human Rights and Community-Organizing Course

In this community-organizing course, students learn how to use theories from a wide range of disciplines (e.g., Political Science, Business, Sociology, Psychology, Peace Studies) to analyze social justice issues and solutions. Students learn the current debates surrounding human rights law, human trafficking, immigration policies, LGBTQ+ rights, education policy, income inequality, and conflict resolution among others. Instructors ask students to employ different viewpoints and theories to analyze the root causes, institutions, and policies that perpetuate current problems. Students collaborate to build upon the strengths and limitations of proposed solutions to reimagine public policy and improve the prospects for social change.

Instructors also ask students to participate in community-organizing groups outside of class. Students had the choice of selecting one of the four weekly community-organizing groups: grassroots community activism, publications, event organizing, and video production. Students apply course concepts and reflections from hands-on work in their groups to implement and refine a semester-long community-organizing project.

Participants

For the treatment, our study’s participants were 54 undergraduate students in a human rights and community-organizing course. Similarly, the control group was the same course taught at a different time with 59 students. All the students in both the treatment and control groups agreed to participate in the study. The same instructors taught both of the courses.

Students signed consent forms and were assured confidentiality of the results, as per the Institutional Review Board protocol. The students’ ethnic and economic demographics were diverse; their household incomes ranged from $12,000-$450,000. Students’ ages ranged from 18-43 years. By applying Fisher’s exact test, we found that students’ background characteristics in the equity-oriented classes (treatment) and non-adaptive classes (control) are comparable across the demographic variables shown in Table 1 below. We found no statistically significant differences across students’ background characteristics. These samples of students are not representative of the population for other higher education institutions. We oversampled for historically underrepresented groups of students because we wanted to study whether and how the equity-oriented pedagogy could address the learning needs of these groups.

Description of Control Condition

For the control group, the same group of instructors agreed to participate. These instructors did not adjust instruction based on student learning data \((n = 59)\). Aside from this factor, instructors did their best to teach in the same way as in the treatment group. However, instructors did not use student data and feedback, but their best intuition to inform
Table 1. Background characteristics of treatment and control groups.

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Treatment ($n = 54$)</th>
<th>Control ($n = 59$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>33 (61%)</td>
<td>35 (59%)</td>
</tr>
<tr>
<td>Male</td>
<td>18 (33%)</td>
<td>18 (31%)</td>
</tr>
<tr>
<td>Non-Conforming</td>
<td>3 (6%)</td>
<td>6 (10%)</td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>49 (91%)</td>
<td>53 (90%)</td>
</tr>
<tr>
<td>Lesbian/Gay</td>
<td>3 (1%)</td>
<td>3 (1%)</td>
</tr>
<tr>
<td>Bisexual</td>
<td>2 (.04%)</td>
<td>3 (1%)</td>
</tr>
<tr>
<td>Disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16 (30%)</td>
<td>19 (32%)</td>
</tr>
<tr>
<td>No</td>
<td>38 (70%)</td>
<td>43 (73%)</td>
</tr>
<tr>
<td>Immigration Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant</td>
<td>20 (37%)</td>
<td>21 (36%)</td>
</tr>
<tr>
<td>2nd gen. immigrant</td>
<td>12 (22%)</td>
<td>13 (22%)</td>
</tr>
<tr>
<td>Native/non-immigrant</td>
<td>22 (41%)</td>
<td>25 (42%)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latinx or Spanish</td>
<td>9 (17%)</td>
<td>13 (22%)</td>
</tr>
<tr>
<td>White or European</td>
<td>13 (24%)</td>
<td>15 (25%)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1 (2%)</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Southeast Asian</td>
<td>5 (9%)</td>
<td>5 (8%)</td>
</tr>
<tr>
<td>East Asian</td>
<td>11 (20%)</td>
<td>12 (20%)</td>
</tr>
<tr>
<td>South Asian</td>
<td>11 (20%)</td>
<td>10 (17%)</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>1 (2%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Multiracial</td>
<td>3 (6%)</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Household Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0-$59,999</td>
<td>8 (15%)</td>
<td>14 (24%)</td>
</tr>
<tr>
<td>$60,000-$99,999</td>
<td>14 (26%)</td>
<td>16 (27%)</td>
</tr>
<tr>
<td>$100,000-$139,999</td>
<td>15 (28%)</td>
<td>12 (20%)</td>
</tr>
<tr>
<td>$140,000+</td>
<td>17 (31%)</td>
<td>17 (29%)</td>
</tr>
</tbody>
</table>

Note. Data was self-reported by students at the beginning of the semester. Students’ background characteristics were comparable; using Fisher’s exact test, we found no statistically significant differences across students’ background characteristics.
instruction. The treatment course was taught before the control class to mitigate the possibility that the instructors would have a well-rehearsed lesson when teaching the treatment course.

The key difference is that the instructors in the treatment used the student data and feedback to adjust instruction, whereas the same group of instructors in the control did not use data and feedback to improve instruction.

**Description of Treatment: An Adaptive Equity-Oriented Pedagogy**

The 54 students in the treatment experienced an adaptive equity-oriented pedagogy. Instructors used an equity-oriented pedagogy by hybridizing specific components of democratic, assessment-driven, strengths-based, multimodal, and game-based pedagogies. For this equity-oriented pedagogical model, instructors integrated a democratic pedagogy where students had the power to express how they learn best and exercised agency in co-constructing their educational environment and assessment models (Freire, 1970; Knight & Pearl, 2000). To encourage student voice, instructors asked students to reflect on their experiences as learners in order to democratically establish classroom guidelines and norms. With the goal of transforming the classroom into an inclusive community, instructors employed community-building activities where students empathized with each other’s experiences, validated their peers, and had opportunities to understand each other’s learning needs (Freire, 1970; Knight & Pearl, 2000). In addition, students had a voice in designing and self-evaluating their community-organizing project. This approach provided students with opportunities to select ways that enabled them to uniquely demonstrate their knowledge and skills.

To adjust instruction and better address students’ learning needs each week, the instructors also incorporated an assessment-driven pedagogy to collect ungraded formative student-assessment data (i.e., weekly pre-tests and post-tests), survey data on student interests, and weekly anonymous course-feedback forms (McCallum, 2013). The pre-tests were administered at the beginning of each class meeting to assess how much students knew about a topic. The post-tests were administered at the end of each class meeting to gauge how much students learned. The surveys of student interests in the course material were administered at the beginning of class. Lastly, the anonymous course-feedback forms were provided at the end of each class meeting. The ongoing assessment data, surveys and anonymous course-feedback forms helped instructors identify and address students’ learning needs (i.e., their strengths, interests, and areas for growth).

Each week, instructors used this data on students’ learning needs to adjust the following teaching practices:

- modeling skills and strategies that students need to excel on the final
- including time for students to practice these skills and strategies in class
- providing low-stakes feedback to students and addressing misconceptions in class
- helping students incorporate feedback in future assignments or tasks that align with the rigor of the final.
Throughout this process, instructors applied Freishtat's (2016) strengths-based pedagogy, where they drew on their strengths as instructors to optimize student learning. First, instructors identified and analyzed their teaching practices that helped students learn based on anonymous weekly course feedback forms and weekly pre- and post-tests. Then, the instructors focused on leveraging their pedagogical strengths – teaching practices that engaged students’ funds of knowledge and improved their academic achievement. The instructors adjusted instruction and met students’ needs through multimodal instruction, which includes a synthesis of PowerPoint lectures, simulations, role-playing, dialogues, technology, music production, and art (The New London Group, 1996; Stein, 2004). This multimodal approach incorporated a universal design for learning framework since it offered students multiple means of engagement, representation, and action and expression (Hehir & Shifter, 2015; Meyer, Rose, & Gordon, 2014; Glass, Meyer, & Rose, 2013).

To increase opportunities for academic success, the instructors implemented game-based pedagogy by allowing students to redo graded assignments and assessments (Nguyen & Phuong, 2016). Students earned points for finishing specific tasks, similar to players of a video game (Dockterman, 2013; O'Rourke et al., 2014). For example, students gained points for attending class, taking notes, asking and answering questions, demonstrating their understanding of course concepts, and sharing their experiences or insights on course material. Instructors also sought to increase students’ sense of community through game-based learning as students worked together as teams to score points, support each other, and achieve common goals. Instructors taught as a team and they designated an instructor who was not teaching that day to tally up points during class. Moreover, students had to collaboratively reach a certain number of points to pass each lesson (or level); if they reached a higher threshold of points, they did not need to complete an online assignment because they had already applied course material in original ways.

To reduce stereotype threat and foster a greater sense of inclusion, the instructors used this game-based pedagogy to validate and affirm students’ academic skills, experiences, identities, and contributions to the classroom (Hurtado, Alvarez, Guillermo-Wann, Cuel lar, & Arellano, 2012; Cohen, Garcia, Apfel, & Master, 2006). By framing the course as a game, this pedagogy encourages students to self-affirm their potential, validate their peers, and support each other as they progress through the learning odyssey together. By applying these strategies to increase equity, the instructors strove to provide an engaging, non-punitive, and safe space that challenged students to practice new and multiple ways of demonstrating knowledge.

**Methodology: Design-Based Development Action Research**

For our methodology, we carried out a form of design-based development teacher action research – a methodology whereby teachers collaborate to continuously design, develop, evaluate, and modify curricula through classroom research (Plomp, 2010; Pine, 2009). We applied this methodology because we work with instructors and students who hold diverse perspectives on effective teaching practices – e.g., lecture, dialogue, simulations, digital learning, and active learning. We discussed these interpretations with instructors and students, which reduced the bias of interpreting data since we incorporated instructor
and student perspectives in the findings and discussions, thereby not skewing the results in favor of a single viewpoint. Through this process, we triangulated the data to study the research question from at least three viewpoints (instructors, students, and researchers) and thematically coded datasets (e.g., weekly pre- and post-assessments, detailed notes on classroom observations, surveys, final project assessments, interviews, and weekly anonymous course-feedback forms/evaluations).

In the control group, the instructors and researchers integrated the same measures, but did not adjust instruction. Researchers observed every single class session. This was done to determine if the 1) treatment course applied equity-oriented pedagogy and 2) if the control course did not adjust instruction based on data. This process was applied to ensure fidelity of implementation and to reduce threats to validity.

**Procedure and Measures**

In order to examine how the control and treatment impacted diverse students’ achievement and psychosocial variables over time, we gathered data from both qualitative and quantitative data sources from both samples. Table 2 presents our variables of interest and the related data from students and teachers.

**Table 2. Matrix of Variables and Data Sources.**

<table>
<thead>
<tr>
<th>Type of Information</th>
<th>Data from Students</th>
<th>Data from Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic and Background Information</td>
<td>-Student background questionnaire</td>
<td>-Instructor background questionnaire</td>
</tr>
</tbody>
</table>
| Academic Achievement                        | -Weekly gain scores (weekly post-test administered at the end of each class - weekly pre-test administered at the beginning of each class)  
  -Final project assessment scores  
  -Weekly course feedback forms/evaluations at the end of each class meeting with written responses |                                            |
| Psychosocial Variables (e.g., motivation, sense of self-efficacy, sense of community) | -Individual structured interviews  
  -Likert scale surveys with written responses  
  -Observation notes of classroom instruction from researchers | -Interviews and ratings about each student  
  -Observation notes from instructors |
| Stereotype Threat                           | -Individual interviews of students  
  -Likert scale surveys with written responses | -Interviews and ratings about students  
  -Observation notes |
Background surveys. Researchers administered surveys to ask students for background data about themselves, their family, community, and education. The goal was to identify the resources and obstacles that students bring to the classroom, which may impact their academic achievement. Some of these responses are provided in Table 1.

Course feedback and surveys. Online or in-class surveys were used to gauge student perspectives that may not have been explicit from mere observations and assessments. The weekly anonymous course-feedback forms included numeric and short answers so that we could assess how the control and treatments’ pedagogies impacted students’ learning experiences. The survey questions were anonymous and did not affect grades so students could provide honest responses. An example of one question was, “On a scale of 1-7, how useful was the lecture in helping you master today’s learning objectives? Please explain why you selected this number.” The surveys were limited to six questions so students could write substantive and reflective responses. In addition, surveys also helped us identify students’ needs and preferred modes of learning. Instructors and researchers used this data to develop instructional plans and course goals to which students contributed or modified. These methods helped us measure whether or not the pedagogies addressed student needs and increased equity and access in the courses.

Pre- and post-tests. On the pre-test, instructors asked 10 questions focused on the content of the intended lesson. The same questions were asked at the end of class on the post-test. For the treatment, the assessment data from these tests provided instructors with student scores so instructors could adjust instruction based on students’ level of understanding. The adjustments occurred in the treatment, but not in the control condition.

While applying the design-based methodology, we took notes on changes in student engagement. We administered weekly pre-tests and post-tests – formulated in conjunction with Dr. Richard McCallum (2013), Elizabeth Keithley, and Paige Keeley’s (2008) Science formative assessment text – during every class meeting to measure if students fulfilled the need to know more about the topic than they did before the class. The pre-tests asked students to demonstrate their background knowledge on the class topic. When completing short answer responses on their pre-tests, students could map their ideas with detailed descriptions, write sentences, or bullet-point key concepts at the start of class. The post-tests measured students’ newly learned knowledge. These post-tests also helped us determine whether instruction was accessible in that students could understand, define, apply, and relate each class’ main points to their background knowledge, opinions, other course concepts, and their final project. Each week’s pre- and post-test assessment ques-
tions were the same for all participants. We used a repeated measures approach and calculated students’ weekly gain scores with the following equation: Week X Gain Score = Week X Posttest - Week X Pretest Scores.

Students applied this knowledge to engage in and critically analyze a final community-organizing project. The goal of this semester-long project was to allow students to connect their existing cultural capital and funds of knowledge to the new classroom material, thereby maximizing engagement while developing and expanding their academic skills and critical consciousness.

The instructors did not grade any assessments. All assessments were randomized and were blinded by student name and group (i.e., treatment and control). Therefore, researchers did not know whose assessments they were grading and to which group (i.e., treatment and control) these assessments belonged. In addition, these graders would not be able to look at an assessment and know whether it was a pre-assessment or a post-assessment. For both conditions, graders also used the same rubric, which were based on the course’s learning objectives. We applied these procedures to reduce threats to validity and mitigate any personal biases that may impact student assessment.

Researchers and students rated how much they thought instructors changed their practices in both the treatment and control conditions. Researchers and students had similar averages about change and adaptation of teaching in the control and treatment conditions.

Data Analysis

Qualitative data analysis. We used Saldana’s (2009) and Bogdan and Biklen’s (1998) methods of coding, categorizing, and identifying patterns in the data. We engaged in an inductive coding process where we identified themes and assigned a thematic code to each theme. We then created larger, overarching thematic codes based on patterns, which became the focus of our findings (Causton-Theoharis, Theoharis, Orsati, & Cosier, 2011). To improve inter-rater reliability, we inserted these codes into a code book where we established common definitions of engagement and achievement with examples to guide our analysis. For example, we defined engagement as attending class, taking notes, asking and answering questions, demonstrating understanding of course concepts, and sharing their experiences or insights on course material. Our coding schemes helped determine if there was a frequency of certain phenomena or changes in student engagement and achievement.

We also recorded the interviews and coded for indicators of a strong growth mindset. We coded the responses to examine if students respond with language representing a fixed or growth mindset (Dweck, 2006).

These coding schemes helped us determine if there was a frequency of certain phenomena or changes in student behavior. From this data, we sought to elicit the ways in which the equity-oriented pedagogy addressed or did not serve student needs, and how its success or failure affected equity and access in the classroom. The following results section
functions as a meta-criticism as it assesses the effectiveness of the instructors’ self-assessing strategies.

**Quantitative data analysis.** In the beginning, we compared background characteristics of the students in the treatment and control groups. The groups were very similar; we found no statistically significant differences at the 0.05 alpha level using Fisher’s exact test. We analyzed the gain scores and final assessment data by comparing the trends between the treatment and control groups. We did this for each weekly class session as well as for the final assessment scores.

We employed non-parametric measures (e.g., the two-sample Wilcoxon rank-sum test and Spearman’s correlation) for these analyses after determining that the distribution of final assessment scores was not approximately normal. We used the two-sample Wilcoxon rank-sum test (i.e., the Mann-Whitney test) to check for statistical significance at the 0.05 alpha level. We also applied Spearman’s correlation to estimate correlations between the final scores and the treatment group. This analysis of the quantitative data allowed us to compare the students’ final assessment scores in the adaptive equity-oriented classroom (i.e., the treatment condition) and the non-adaptive classroom (i.e., the control condition).

**Results**

**Comparing Final Assessment Scores and Gain Scores**

We compared final scores between the treatment and control conditions. We found statistically significant differences on the final assessment scores in favor of students who were in the classroom that implemented the adaptive equity-oriented pedagogy (i.e., treatment) \((p<.0001)\). There is a strong correlation between the final score and the group to which students were assigned \((r=0.78, p<.0001)\). Table 3 presents the correlation coefficients of final assessment scores with the treatment, by gender, disability, and immigration status. The average final score for the treatment was around 97 points \((SD=1.98)\) and the average final score for the control was approximately 82 points \((SD=8.28)\). 100% of the students in the treatment scored above 90 points, whereas 22% of the students in the control scored above 90 points.

When comparing weekly gain scores, we noticed a consistent pattern where the treatment group outperformed the control group. Figure 1 below illustrates that the average gain score differences are large. Both groups showed gains from the pre- to post-test. In the beginning, students in the treatment had an average gain score that started in the low 40s and eventually increased to the low 60s. By contrast, the students in the control group had an average gain score of about 30 points every week with a noticeable increase to 43 points in the final week. Similar findings also held when controlling for multiple intersectional identities (e.g., gender, immigration status, and disability). Please see Appendix A for line graphs that display these findings.
Table 3. Correlation coefficients of final assessment scores with the treatment condition, by gender, disability, and immigration status.

<table>
<thead>
<tr>
<th>Demographic Subgroup</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students</td>
<td>.78</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.75</td>
</tr>
<tr>
<td>Male</td>
<td>.84</td>
</tr>
<tr>
<td>Non-Conforming</td>
<td>.74</td>
</tr>
<tr>
<td>Disability</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>.86</td>
</tr>
<tr>
<td>No</td>
<td>.73</td>
</tr>
<tr>
<td>Immigration Status</td>
<td></td>
</tr>
<tr>
<td>Immigrant</td>
<td>.79</td>
</tr>
<tr>
<td>2nd gen. immigrant</td>
<td>.87</td>
</tr>
<tr>
<td>Native/ non-immigrant</td>
<td>.73</td>
</tr>
</tbody>
</table>

Note. \(p < .0001\) for all coefficients except for gender non-conforming where \(p < .05\).

Figure 1. Students’ average gain scores by group and by week of the course.
In Figure 2 below, we provide a scatter plot of the final assessment scores that were collected from the treatment and control groups. Although the differences in average gain scores varied between each of the groups for certain demographic variables, it appears that students in the treatment group were more successful at applying course concepts on the final assessment.

![Figure 2. Students’ final assessment scores.](image)

**Pre-test and Feedback Ratings**

In the control condition, the same instructors did not adjust their instruction based on student data. Researchers took observation notes of the teaching practices in each condition to ensure that instructors in the control group did not adjust instruction like they did in the treatment group. According to researchers’ observations notes, the control condition employed exemplary teaching practices such as active learning, problem-posing, case-based teaching, and inquiry-based learning. Researchers also surveyed and interviewed students about how much the instructors changed their teaching. The students in the control group noted and researchers agreed that the instructors’ teaching in the control group remained consistent from the beginning to the end of the course. Moreover, the students in the treatment agreed with the researchers that the same instructors in the treatment condition adjusted their instruction substantially based on student learning data.

For eight of the ten weeks, there were no statistically significant differences on the weekly pre-test scores. The only exception was in the first two weeks, when the students in the control group had scores that were higher than the treatment \((p<.05)\). In these first two weeks, the researchers observed higher levels of student participation in the control classroom than in the treatment classroom. At the beginning of the class, researchers interviewed students in the control condition and the students stated their background knowledge facilitated their participation in class.
Moreover, the control group’s course-feedback form ratings were averaging around a 5.6 out of 7 at the beginning of the semester. In comparison to other introductory courses within the same field, the variability within course feedback was comparable with regards to the variety of opinions: There were students who stated that the teaching practices addressed their learning needs, some students were indifferent, and other students felt that the teaching practices did not address their needs. For instance, many students remarked how there were few foundational concepts that they were unsure of. Another student felt that parts of the class moved much too quickly and the peer-to-peer learning did not help with learning, since sometimes peers were confused on course concepts. By contrast, a different student mentioned that “the course moved at a good pace for me. I was always engaged because there was little lecture and a lot of dialogue.” At the end of the semester, the anonymous course-feedback rating was about a 5.8 out of 7 in the control condition.

Equity and Access

In the treatment condition, the data collected prior to the implementation of student feedback reveals ways in which initial classroom instruction was inequitable and inaccessible. For the first three weeks of class, the instructors characterized the students as reserved and unengaged. A total of 6 out of 54 students spoke during the first two class meetings. At this time, class ratings – from a scale of 1 to 7 on the usefulness of lectures, discussions, and activities for learning about the day’s topic – were around 5.56 as an average and 6 as a mode and median. Students agreed the instructors were well-organized, but the class was not meeting their preferences. Two-thirds of students stated that having the problem-posing portion of democratic education at the beginning of the class was inequitable, because it privileged the verbally confident students and those who already had a significant amount of background knowledge on the subject. In effect, the democratic component of the equity-oriented pedagogy did not fully accommodate students who needed extra foundational knowledge to participate in dialogues and activities.

In addition, the multimodal pedagogy was inequitable because two students stated that they did not own computers due to their socioeconomic status, and thus had difficulty participating in multimodal forms of communication online. The online course site platform was also inaccessible, since a few student accounts experienced glitches, or their word-processing program was incompatible with the platform, which prevented them from submitting assignments on time. Students also faced difficulties participating in simulations or multimodal activities if they did not possess background knowledge on the topic. Although students appreciated multimodality, many said they could not perform as well as others, because they did not have as much training in drawing, acting, etc. In these ways, the unadjusted pedagogical approaches were inequitable because they prevented various students from fully demonstrating their knowledge and skills.

Student Response to Adjusted Curriculum

However, we noticed considerable changes in behavior after instructors adjusted their curriculum and instructional strategies to meet students’ needs and preferences. Instructors made these adjustments by using surveys, assessments, dialogue, and interviews to
identify students’ needs and preferred modes of learning. Students stated that their needs include forming original ideas, taking risks, having exposure to clear and engaging instructional strategies, acquiring more knowledge about various perspectives on each class topic, being able to use course content in their final projects, seeing connections between the class and the real world, building community, and being able to demonstrate their knowledge in various ways.

According to the student-focused survey, on average, students preferred that class consist of approximately 71% lecture. They thought that lecture was equitable because they could more readily connect background knowledge with new knowledge. Approximately 94% of students agreed that lecture better equipped them to democratically discuss information and engage in activities. However, based on weekly pre- and post-assessments, students still understood the main points without lecture at the beginning of class. We investigated why these preferences for lecture exist. Some students reported that they preferred lecture since they were not confident in their ideas, placing more trust in the expertise of the lecturer. By contrast, some students stated that they wanted lecture for more efficient reasons. One student wrote: “Lecture is efficient. It tells me what I need to know so that I can do well and get good grades. That’s what I need to do to succeed and compete in school and the real world.”

The same number of students who preferred lecture at the beginning of class also preferred multimodality and problem-posing dialogues after lecture. They mentioned that these instructional practices helped them co-create knowledge and reinforce lecture materials. Students stated that incorporating various teaching techniques during lecture helped them process information better. Moreover, all students indicated that out of all modalities, visual learning was one of their dominant or preferred modes of learning. One student confirmed the success of the treatment’s multimodal lecture approach. This student said that the course’s lectures “integrate videos and diagrams that help me visualize information, which connect to and are reinforced by engaging explanations and hands-on activities. Everything was there for a purpose, and it all helped me understand and challenge many complex perspectives and institutions of power.”

These needs and preferences influenced course goals and instruction. For example, instructors in the treatment group provided lectures at the beginning of class for foundational knowledge, followed by dialogues and multimodal activities. After observing adjustments in the curriculum, researchers noticed that the course-feedback ratings increased to an average of 6.93 and 7 as a mode and median for the usefulness of teaching techniques. Consequently, the overall average course-feedback rating/evaluation was 7/7. One student stated: “The comfort of the class size and the structure of the class with opening lectures and following discussion questions allowed me to engage in topics and ask questions more openly than I have been able to in many other classes.”

**Game-Based Component of Equity-Oriented Pedagogy**

As a reminder, the instructors implemented game-based pedagogy by allowing students to redo graded assignments and assessments (Nguyen & Phuong, 2016). In game-based
pedagogy, students earned points for finishing specific tasks, similar to players of a videogame (Dockterman, 2013; O'Rourke et al., 2014; Yee, 2013). For example, students gained points for both individual and collective efforts in class. Students individually earned points for attending class, taking notes, asking and answering questions, demonstrating their understanding of course concepts, and sharing their experiences or insights on course material. Instructors also sought to increase students’ sense of community through game-based learning as students collectively scored points. In teams, students supported each other and achieved common goals by answering each other’s’ questions, validating their peers’ classroom contributions, and fulfilling their role(s) in group activities. Moreover, students collaboratively reached a certain number of points to pass each lesson (or level); when they reached a higher threshold of points, they did not need to complete an online assignment because they had already applied course material in original ways. These practices mirror incentives and forms of collaboration found in many video games. As in video games, students would be applying the learning strategies mentioned above to strengthen their skills, in order to achieve an outcome in an engaging, but non-competitive way.

According to interviews, students stated that by redoing assignments in the game-based component of the pedagogy, they focused more on the learning process and strengthening their academic skills, rather than the outcome or grade, which are characteristics of the growth mindset – i.e., the belief that one’s intelligence and skills can grow (Dweck, 2006). As one student remarked: “I did not feel dumb or like I was not a human rights person in this class. I just felt like if I tried and worked more in class and on our projects that I would learn more and grow as a social justice scholar. I was never stressed about my class ranking and that’s awesome.” From interviews, observations, and survey responses, we also noticed that students were motivated to overcome adversity, tackle tough concepts, and take creative risks in a safe space. One student said, “Some of the material was tough … At first I was thinking what is critical cosmopolitanism and how will I ever know, but it was okay because [in the] class [we] helped each other without judging. So I asked questions and kept at it since the gamified classroom created a space where I could apply concepts creatively and do original things until I learned tough concepts.” Although we would need to conduct further research to confirm whether this is the case, it appears that characteristics of a growth mindset and positive psychosocial variables (e.g., resilience) are represented in these students’ feedback.

In addition, after instructors implemented this game-based system, every student spoke aloud during class, discussed course content amongst classmates, increased note-taking, made more original thematic connections, and improved their performance on weekly post assessments. In fact, one student said: “It was cool that we could say what we actually felt on paper or out loud in the class. I felt that my other skills like listening, talking to other people, drawing, making community, and just thinking were valued unlike in my other classes, where only people who talk a lot look smart.” Another student asserted: “I felt safe to take risks, speak my thoughts, and ask no-brainer questions. This helped me learn and understand things better.” These students’ comments suggest that the game-based element offered students different ways to demonstrate competence and provided opportunities to take risks with learning in a non-punitive space.
Students’ comments also suggest how the treatment fostered student engagement because the classroom became a strong community. Within the game-based model, instructors divided the classroom into civilizations that earned points as a group. Based on classroom observation notes, we observed that the game-based model heightened student collaboration because students relied on and supported one another more than at the start of the semester. According to interviews and questionnaires, students indicated that they recognized the value of collective effort over that of the individual.

**Stereotype Threat**

Researchers also surveyed students about stereotype threat in both the control and treatment conditions. The average stereotype threat score was based on four survey questions asked of the students at the beginning and again at the end of the course. We adapted a procedure and four survey questions that had a high reliability estimate in previous studies (Marx & Goff, 2005; Xavier, Fritzsche, Sanz, & Smith, 2014). The questions asked students if they worried that their ability to perform well in the course is affected by their backgrounds and identities. The questions were on a scale of 1 to 7, with 1 indicating strongly disagree and 7 referring to strongly agree. In this case, lower scores indicate less stereotype threat. The initial average stereotype threat score for both the control and treatment were comparable at the beginning of the course (control mean = approximately 5.2; treatment mean = around 5.5). At the end of the course, students in the treatment condition reported less stereotype threat than students in the control condition (control mean = approximately 4.1; treatment mean = around 2.2). The survey responses at the end of the course suggest that students in the treatment indicated that they had fewer worries about whether their ability is affected by their backgrounds and identities.

**Treatment Condition.** Based on surveys and interviews at the end of the semester, approximately 76% of students in the treatment reported reduced stereotype threat since they realized that their academic success and contributions were not predetermined by perceptions of their backgrounds or identities. Rather, these students recognized that their success was heavily influenced by 1) their effort and engagement with course material and 2) the support and validation from their peers and instructor. These responses about effort align with the research on how a growth mindset can reduce stereotype threat (Arison et al., 2002; Blackwell et al., 2007).

**Control Condition.** While the treatment group showed positive results for reducing stereotype threat, the control group showed mixed results with respect to stereotype threat at the end of the semester. For instance, regarding stereotype threat, about 32% of students in the control group said that the problem-posing and inquiry-based strategies helped them ask questions to peers and instructors to answer what they did not know. These students stated that the process of working with their peers through the game-based pedagogy helped them realize that perceptions of their backgrounds and identities did not predetermine their success. Rather, these students stated that their effort and engagement with course content impacted their success. The same students also stated that opportunities to collaborate with their peers helped them work hard to grasp difficult concepts like the norm life cycle and critical cosmopolitanism. Based on these responses, it seems that...
characteristics of a growth mindset and positive psychosocial outcomes (e.g., resilience) are present since they are working hard to overcome the adversity of learning challenging concepts. Nonetheless, we would need to conduct further research to confirm whether this is the case.

However, approximately 41% of students in the control condition at the end of the semester stated that they did not want to ask questions because they were afraid of looking dumb or reinforcing a negative perception associated with their background or identity. This group of students stated that it was difficult for them to participate in the class when they had so many questions and did not have a strong understanding of the course concepts. Additionally, according to surveys and interviews, these students did not report large reductions in stereotype threat. For example, one student stated, “I realize that being an immigrant is what made it so hard for me to excel in this course. Like many immigrants, it’s hard for me to understand tough concepts in English.” In this case, this student discusses how her perceptions of immigrant identity threaten her academic performance in the class. Moreover, in end of the semester interviews, around 27% of the students in the control condition mentioned that they did not have negative perceptions of how their identities impacted their performance.

**Final Student Assessment**

At the end of the semester, students in both conditions were interviewed about how the teaching practices and peer-to-peer learning activities impacted their performance on the final assessment. Student responses were examined in light of their performance on the final assessment.

Results suggest that there were different student interview responses based on how well students performed on the final. Some students in the control condition reported not doing well on the final because they had many questions and did not have a strong grasp of the course concepts. In fact, some students reported a sense of confusion as they progressed to the final. For instance, one student stated, “It feels like we’re sharing mutual ignorance sometimes. I’m confused and my peers are confused. We’re all just rephrasing what other students already said earlier in the class. This was not helpful for helping me do well on the final.” On the other hand, other students in the control who excelled on the final stated that the course’s engaging nature, peer-to-peer learning opportunities, and the instructors’ willingness to answer questions helped them master course content.

Based on interview data, students in the treatment stated that they performed well on the final because the instructors provided feedback on weekly post-tests and regularly reviewed course concepts that students did not understand. One student said,

I helped the teaching team improve my learning and my peers’ learning. The teaching team took feedback very well. I felt safe to provide anonymous feedback because there were no repercussions or feelings that the instructors would treat me negatively. I actually felt that I had a voice and that the teaching team actually made changes and collaborated with us – the students – on how to best make these changes through inclusive teaching.
never met any instructors in other classes who actually made changes based on weekly feedback and ungraded tests. Because of this, I trust the teaching team.

In addition, students remarked that the weekly anonymous course-feedback forms provided them with opportunities to ask questions anonymously and provide specific feedback that could help the instructors enhance student achievement. When commenting on this process, a student remarked, “This all helped me do really well on the final since I received weekly feedback with specific comments and strategies on how I could better meet learning objectives.”

Students in the treatment stated that they appreciated the anonymous course feedback forms because they could highlight the practices that made them feel included and/or excluded from the classroom. Moreover, students stated that they were motivated to fill out anonymous course feedback forms because the instructors adjusted instruction and dialogued with students on why they implemented specific changes. Students then offered feedback to the instructors through dialogue and subsequent anonymous course-feedback forms. A student built upon these ideas and stated,

I also provided weekly feedback to the teaching team in order to improve my learning and my peers’ learning. The teaching team actually found ways to incorporate what the class said when they reviewed material that we did not understand ... I felt engaged and that I belonged in the course because I had a voice. I also challenged myself to participate in new ways so that I could learn the tougher concepts and skills needed for my final project.

Based on our definition of rigor in the beginning of this paper, the treatment group demonstrated a higher level of rigor in mastering, applying, and synthesizing course concepts on the final assessment. For example, researchers who analyzed the final projects found that students in the control group did not define many of the course’s key concepts correctly. In addition, many students in the control condition did not correctly apply and synthesize course concepts correctly, since these students’ answers had many misconceptions about these concepts. On the other hand, students in the treatment group surpassed the course objectives for the final.

**Self-Efficacy**

Based on surveys and interviews, students in the treatment condition indicated a high sense of self-efficacy and confidence with excelling on the final assessment. For instance, in an interview, one student said,

I know they want me and my classmates to succeed, master challenging material, and actually do something impactful with what we learn ... The peer validation, feeling of community, and opportunities to receive and incorporate ongoing feedback helped me develop confidence. My confidence and the clear expectations for success made me feel that I could properly apply the complex theories and research from this course.
On the other hand, students in the control condition had mixed responses on surveys and interviews regarding their sense of self-efficacy and confidence with demonstrating mastery of course material.

The questionnaires given at the beginning and at the end of the course also asked students about their sense of self-efficacy. The question asked students about their beliefs in succeeding in the course. The question was on a scale of 1 to 7, with 1 referring to strongly disagree and 7 referring to strongly agree. We see higher scores indicating higher perceptions of self-efficacy. The average self-efficacy score for both the control and treatment were comparable at the beginning of the course (control mean = approximately 3.5; treatment mean = around 3.1). At the end of the course, the average self-efficacy score for the treatment was higher than the control’s post self-efficacy score (control mean = approximately 4.9; treatment mean = around 6.8). The survey responses at the end of the semester suggest that students in the treatment indicated higher levels of self-efficacy than students in the control condition.

**Discussion**

**Student Motivation and Academic Achievement in the Treatment Group**

Knight and Pearl (2000) claim that students learn more easily in an optimal learning environment that accommodates their needs, preferences, interests, and enhances their satisfaction. In this study, students in the treatment agreed that the democratic pedagogy of working alongside the instructors to co-create this environment facilitated their active participation. Through the equity-oriented pedagogical model, instructors encouraged student motivation to develop original, multifaceted analyses of how normativity is socially constructed. Based on these analyses, students connected their interests and aspirations to the curriculum through a final community-organizing project. As one student commented: “I worked hard on my final project because it was something I designed, cared about, had a personal attachment to, wanted to achieve, related to my career goals, and it affects others.”

According to the data regarding final community-organizing projects and grades, students in the treatment challenged themselves and worked hard in this course to earn above a 94%, even though this high level of performance did not affect their grade point average. Many instructors of this course originally assumed that some students would slack off since they only needed to earn a minimum of 70% to pass the class. Based on course feedback/evaluations, interviews, and survey responses, all students in the treatment reported that they were passionate about their community-organizing project and felt more engaged when the instructors adjusted the curriculum to address their learning needs. In these ways, the democratic component of the equity-oriented pedagogy provided a space for students to engage in work that addressed their passions. At the end of the course, all instructors believed that this process helped motivate students to surpass the learning objectives regardless of the class being Pass/No Pass.
Moreover, the optimal learning environment helped instructors establish more equitable opportunities and outcomes, even within the context of our definition of rigor. As previously mentioned, we define rigor based on students’ ability to meet the collaboratively defined learning objectives and develop their cognitive processes (e.g., defining, applying, synthesizing, evaluating, and formulating concepts) (Davis, 2009; Anderson et. al, 2001). The equity-oriented pedagogy is more dynamic and inclusive compared to the factory model, which focuses on memorization and regurgitation of facts (Perea-Jimenez, 2008). Instructors provided equitable opportunities since students could demonstrate their knowledge and skills through various assessments. We measured rigor using a collectively constructed rubric. Despite being a Pass/ No Pass course, in order for students to earn a 94%, they had to at minimum surpass the goals on the rubric. Since the academic department of the course does not force instructors to sort and rank students, instructors had the agency to evaluate students in ways that promoted collaboration over competition. Thus, instructors evaluated student work using a rubric based on the learning objectives that instructors and students co-created; students did not receive full credit for merely completing their projects.

Moreover, the equity-oriented pedagogical model strove to not replicate the institutional barriers – e.g., race, culture, sexuality, or poverty – that schools often place on those of marginalized backgrounds. Given the demographic data of all students in our study, the student outcomes in the treatment were equitable in that all these students – regardless of race, class, gender, disability – surpassed the rigorous course objectives and earned at least a 94% in the course, despite the fact that course grades were submitted as Pass/ No Pass. Therefore, the data suggests that the equity-oriented pedagogy helped increase equitable opportunities and outcomes for academic achievement.

**Transforming the Classroom into a Collaborative Community**

One may argue that the treatment’s student-centered approach is also market-based in the sense that instructors treat the students as consumers since the instructors aim to provide what students desire. In a consumerist market, the consumer is always right. As consumers, students may believe that they are right because most have paid a high price for their education. Therefore, they want the instructors to give them what is most convenient. However, instructors did not fulfill every student’s preferences in class. Instructors framed the classroom as a community in which students expressed their learning needs and visions for an ideal classroom. The agreement was to have multiple styles of instruction that would benefit all learners, albeit at different times during each class. Hence, all students would have a time when the mode of instruction would accommodate their preferred modes of learning. To address students’ learning needs, instructors discussed and reinforced the material through varying formats – lecture, discussion, and activities – which targeted the students’ preferred modes of learning.

In this setting, the treatment did not adhere to a pure consumer-based approach since it did not fulfill every student’s wishes all the time, but rather asked all students to negotiate and democratically establish guidelines that would shape the classroom atmosphere. Therefore, instructors in the treatment did not individualize instruction to each student.
but developed an approach that enabled them to adjust instruction to the needs of an entire classroom. For instance, we did not find that academic achievement automatically increased when we accommodated every student’s preferred modes of learning or gave each student what s/he wanted. Rather, we observed how the adaptive equity-oriented pedagogy can help students build community, expand their preferred modes of learning, and increase their engagement with challenging curriculum. This collective effort fostered empathy among students; they valued their peers’ needs as well as their own. For instance, one student stated:

By hearing my classmates' experiences and learning about their backgrounds and how they learn, I realized that we all had similar personal and academic struggles. This made me realize how we need to accommodate each other's needs and support each other – familia to familia. This feeling of increasing empathy has helped with creating a safe classroom community that strengthened our motivation to collaboratively succeed in this class, which really improved the class' overall learning.

In the treatment condition, students also unanimously voted in class to have lecture, discussion, and activities so they could all have a time where the mode of learning benefited each student. Many realized that a class solely centered on lecture, discussion, or activities may undermine learning and a sense of community for students. According to survey and interview responses, all students in the treatment indicated that this community-building process helped them expand both their preferred modes of learning and the ways they can demonstrate knowledge. One student added:

- Since I empathized with and cared more about my peers, I [...] became more receptive to different modes of learning that were originally out of my comfort zone.
- The gamified pedagogy provided me and my classmates with a safe and non-punitive space where I could make mistakes, focus on learning, and apply my knowledge through new modes or ways.
- As I mastered and became more confident in these modes, my list of preferred modes of learning became much larger.
- Originally, I only liked lecture, videos, and discussions. Now, I also prefer and see how activities, simulations, technology, and active learning can help reinforce new and difficult concepts. This helped me deepen my understanding of the main points in class.
- It’s much easier to like a mode of learning when you can perform well with it and benefit from it ... I think this journey has challenged us and improved the learning experience and feeling of inclusion and success in this classroom.

As documented in surveys, all students in the treatment reported that they had opportunities to strengthen their skills in demonstrating knowledge in various modes because the game-based pedagogy provided a safe and non-punitive space for failure and learning. According to our data, students indicated that their achievement improved since they learned in a psychologically-safe and game-based space that offered multiple opportunities for low-stakes assessment and ongoing feedback.
Lecture continues to be perceived as valuable; 67% of students in the treatment stated that they enjoyed lecture because it provided them with the strengths and limitations of at least three or four viewpoints on each topic. The importance of lecture rests on its content, purpose, presentation, and students’ reception of it (i.e., how they grasp and transform the lecture’s message). One student affirmed that lecture helped her “develop a more critical awareness because the class did not know that some of these points of view even existed, moving away from binary politics in the media.” Therefore, we inferred that the treatment’s lecture style was not a pure banking method, because the lectures entertained dialogue and did not impose a uniform ideological discourse for academic achievement. The treatment, however, had a banking element because instructors determined which specific points of view to teach. Nevertheless, instructors asked students to critique these viewpoints and introduce new perspectives into the discussion, activities, and/or assessments. Many students debated these perspectives, which altered and redirected their beliefs on each topic. One student recognized that “multiple points of view enabled [her] to have these discussions that expanded [her] awareness, which is useful for the class, social justice, and the final project.” One core learning objective was to help students broaden their critical consciousness by analyzing institutions of power, reimagining proposed solutions, and reflecting on the multidimensional ways they approach these topics.

**Potential Counterarguments**

However, critics of the treatment may argue that the class was not sufficiently rigorous because instructors chose not to follow a tenet of the factory model: sorting and ranking students by grades (Horn Jr., 2006). It is possible to argue that one cannot objectively measure which democratic assessments are better than others, thus deeming our study’s assessments less rigorous. One would then claim that accommodating students’ funds of knowledge and cultural capital undermines national curriculum, since students are assessed in different ways, making it difficult to compare student progress not only from one school to another, but nationally as well. Based on these premises, one could assert that the treatment’s approach is inequitable because every classroom would have a unique assessment model.

We address these counterarguments by redefining academic “rigor” as we mentioned earlier. According to the factory model, rigor refers to solely memorizing, regurgitating, and applying the instructor’s opinions (Perea-Jimenez, 2008). This definition does not allow for an expansion of one’s critical consciousness, which is necessary for more advanced problem-solving. Unlike the factory model, the treatment (i.e., the adaptive equity-oriented pedagogy) allowed students to have multiple answers and interpretations of simulations posed in the classroom. Consequently, all students in the course proposed multiple answers and suggested diverse solutions to complex, worldly problems. We defend our definition of rigor because exposure to only the instructor’s viewpoints and approaches causes students to internalize those ideas as the answers. Likewise, punitive grading and standardized exams within the factory model pressure students to determine the one correct answer – therefore suppressing creativity and spontaneity in their thought processes. Furthermore, there is no definitive proof that these exams increase
achievement, and evidence suggests they hinder student outcomes and have not decreased inequality across groups (García Bedolla, 2014).

By contrast, the treatment’s democratic assessments encouraged students to devise multiple original answers to solve social problems for which there exists no single answer. The treatment required students to practice the art of critical inquiry (i.e., researching social justice issues and collecting project resources) and effective collaboration – skills necessary for success in most professional contexts. For example, one student asserted that “putting on a successful event was much more difficult than a multiple-choice exam or essay. We had to work together and find relevant information (about our issue and much more), organizations, and materials to make our project happen.” Another student corroborated the need to compromise and collaborate, stating: “We had to negotiate competing interests […] We had to alter the theory to make things work.” Similarly, one student commented: “Many of these real-world skills, which are necessary to learn, are not even taught in other classes. The norm life cycle [a model that activists can use to frame, disseminate, institutionalize, and consolidate new norms for social justice] was so useful for implementing my project and responding to obstacles.” From these and other similar statements, we concluded that the treatment’s approach was successful in teaching students beneficial professional skills that were collaboratively established as course objectives: questioning the status quo, conducting research, acquiring project resources, and collaborating effectively. Assessing students’ ability to think outside the box and work with others is inevitably a subjective system, yet fitting for our purposes nonetheless. In conclusion, according to surveys, instructor evaluations, and interviews, all students reported that the treatment (i.e., the adaptive equity-oriented pedagogy) cultivated a safe and supportive learning community where they could move outside their comfort zones, empathize with their peers, and expand their preferred modes of learning in multiple ways. Consequently, students took risks and practiced new ways of demonstrating knowledge that helped them build real-world skills.

**Limitations and Suggestions for Further Research**

One limitation to our study is that the treatment’s method of instruction does not suit every classroom, instructor, or student. The elective course being studied offers more flexibility to pass students and does not face the same institutional barriers as other courses. For example, instructors of non-elective courses may be reprimanded or not rehired for giving every student a 94% or higher. Additionally, many K-12 teachers must follow a curriculum centered around standardized exams if they want to remain employed. These instructors have to teach a curriculum based on the textbooks or materials they receive from a school, limiting how they teach and evaluate their students. Non-elective instructors also teach courses that are part of a larger state-wide curriculum or need to provide students with foundational knowledge and skills for a major requirement or future courses in a major.

Rather than having to adhere to the requirements of a major and/or institution, instructors were able to pass or fail students based on learning outcomes the instructors and students created. Since the course was Pass/No Pass, it is possible that students freely voiced their
opinions and focused on learning, rather than on grades. In many non-elective classes, students often depend on and reiterate the instructors' opinions because reproducing the taught material has been commonly used as a strategy to obtain high grades. However, this system does not necessarily encourage students to think spontaneously or independently.

Our sample also presented several limitations. For one, many students selected the course, because they were already passionate about social justice. However, we administered an intake survey and found that students enrolled in the course for a variety of reasons, such as fulfilling the minimum unit requirement or taking a course with their friends. Nevertheless, it would be useful to test the different teaching methods on a mandatory course to determine if students who are not genuinely interested in this subject would undermine classroom management, engagement, and productivity.

Another limitation is that approximately 94% of the students requested lecture at the beginning of class, which influenced instructors to cater to that preference. Future research is needed on a student population that has not been conditioned by lecture and/or the factory model to determine if our findings remain consistent. Arguably, we did not have a large student sample in which equity and access are commonly thought to be an issue; university students are typically perceived as part of an overall privileged population, especially if they attend a top-tier university in the US.

Given these limitations with the research sample, it is worth rethinking whom the instructors admit into the course in order to maximize diversity and equity across the courses; in these courses, one may argue there were a few underserved students since they were college students at university. Conducting the study with a higher percentage of underserved students in a different context should be pursued to illuminate how race and SES may impact academic achievement. Furthermore, the above limitations of our sample population may present issues in applying the adaptive equity-oriented pedagogical model to all classrooms. Therefore, further research needs to be conducted to determine whether this equity-oriented pedagogy can be scaled and if it can address broader issues of equity and access in multiple classrooms and educational contexts.

**Recommendations for Designing Curriculum**

Although the treatment may not be suitable for every student, teacher, or classroom, we offer the following recommendations based on our findings and discussion:

1. Build rapport and a strong relationship with every student based on a democratic, collaborative, comfortable, and open environment without repercussions.
2. Identify and address barriers to equity, access, and inclusion (e.g., stereotype threat) in the classroom.
3. Document students’ interests, background knowledge, aspirations, and preferred modes of learning; use this information to design multimodal curricula, instruction, and assessments that appeal to students’ intrinsic motivations and their learning needs (i.e., strengths, interests, and areas for growth) (McCallum, 2013).
4. Align curriculum, instruction, and rubrics with assessments and learning objectives (Wiggins & McTighe, 2005); incorporate meaningful assessments (e.g., project-based learning) to connect curricula to a larger purpose, event, issue, student interest, or activity that extends beyond the classroom.

5. Articulate instructional goals/learning objectives and expectations to students. Make sure classroom instruction and activities fully prepare students for rigorous assessments. To clarify expectations for assessment and monitor student learning, instructors can regularly administer ungraded formative assessments (e.g., like the pre- and post-tests in our study), which have questions that are similar in rigor to graded summative assessments. After addressing students’ misconceptions from formative assessments, instructors can make their expectations and thought process explicit by modeling how they expect students to approach a problem or task with step-by-step instructions. Then, the instructors can ask students to practice these skills in class followed by feedback. Instructors can then offer opportunities for students to incorporate feedback in future assignments and class meetings.

6. Develop meaningful ways to evaluate and adjust instruction through student-assessment data, classroom observations, open dialogue, and anonymous course-feedback forms or evaluations.

7. Interpret ongoing feedback and assessment data as an asset for diagnosing challenges in the classroom, innovating instruction, addressing student needs, improving cultural consciousness, and developing a growth mindset as an instructor.

8. Offer examples of constructive feedback that can help students provide useful suggestions for improving teaching on anonymous course-feedback forms. To address conflicting student feedback, develop and implement norms with students on how you are addressing various learning needs at different times in each class meeting.

9. To strengthen relationships in the classroom, ask students to validate and affirm their own and their peers’ contributions to learning (Hurtado, Alvarez, Guillermo-Wann, Cuellar, & Arellano, 2012; Cohen et al., 2006). If time in the classroom is limited, instructors can create a thread on a learning management site or a physical board where students can post validation comments about each other. Instructors could also pair students up to write a short note of validation to each other after class.

10. Consider employing game-based learning where students have multiple opportunities to
   a. focus on mastering course content where they can redo assessments or retake another assessment that measures the same learning objectives.
   b. demonstrate knowledge in new ways in a nonpunitive learning environment; the goal is to create a psychologically safe space for learning, expanding skill sets, and taking risks.

11. If applicable, teach current examples or case studies of how leaders are successfully and not successfully implementing course concepts to address real world problems. To make these lessons relevant to students, ask students to synthesize course concepts and their experiences to improve and construct solutions to real world challenges.
Implications for Policy and Practice

We aim to improve equity for all college students by contributing an adaptive equity-oriented pedagogical methodology that we have refined through collaborative, mixed-methods research. The equity-oriented pedagogy could be applicable across disciplines since it promotes evidence-based teaching practices that can be used in many different types of colleges courses. For example, formative assessment can be used in many courses to identify and address students’ learning needs (i.e., their strengths, interests, and areas for growth). In addition, the pedagogy offers a teaching approach that incorporates student voice through weekly course feedback, surveys, and project-based learning. These strategies can be useful and valuable across disciplines, especially for college instructors who wish to address students’ learning needs in an inclusive way. While this pedagogy does take additional time for student and instructors, technology can transform the assessment and survey process so that instructors can focus more on analyzing student data and improving student learning. This can be a feasible way of building the assessment and survey process into regular course activities.

Centers for teaching and learning (i.e., faculty development centers) can provide models of what equity-oriented pedagogy looks like in practice, such as the examples presented in this study. These examples can help faculty understand, feel, and experience how the pedagogy works. Furthermore, centers for teaching and learning, along with equity and inclusion units, can provide programs and guides that equip instructors to use equity-oriented teaching practices. For instance, these programs can support instructors with strategies for implementing ongoing formative assessments and game-based learning.

Based on our research, we encourage continuous attention to equity-oriented practices through which faculty can see highly motivating results (e.g., higher student learning gains and course evaluation scores) of ongoing pedagogical improvements (M. Miller, personal communication, April 11, 2017). This process can also help faculty identify their strengths and find ways to improve their teaching based on classroom data (Freishtat, 2016). These strategies would be useful for instructors who seek to improve their practice in ways that are inclusive rather than punitive (Freishtat, 2016).

Some of the practices from this equity-oriented pedagogy may be particularly useful for academic departments, universities, and schools that are focused on narrowing academic achievement gaps, especially for historically underrepresented students. These institutions might begin by comparing how their current practices and equity-oriented pedagogies impact students’ academic trajectories in higher education.

These measures and metrics of equity-oriented practices can be useful for program evaluation, ongoing curriculum development, and faculty development. This program evaluation model can allow researchers and administrators to judge the efficacy of pedagogical interventions on students’ academic and psychosocial outcomes. Institutions can incorporate these measures and metrics of equity-oriented practices in job descriptions, promotion, awards, and tenure reviews. This process can incentivize faculty and professionals...
to value equity and inclusion. We believe that these practices can support faculty and professionals to transform classrooms into equity-oriented learning environments.

Conclusion

The results of our study show that transforming classroom environments can address the increasing diversity in today’s classrooms. Curiously, the site of our study rests on land susceptible to frequent seismic activity. Just as engineers have redesigned campus buildings to protect occupants, instructors in the treatment redesigned their classroom structure to establish a flexible yet secure environment for students to feel protected, accepted, and supported by a community – all of which foster greater expression and academic growth. This adaptive pedagogical model enabled instructors to better meet student needs and provide greater equity and access, thus avoiding a structural collapse from the rigidity of a one-size-fits-all model of instruction. The rigid factory model fails to respond to scholarly tremors (i.e., clashes in cultural views and critical interpretations), which result in inequitable, inaccessible, and unstable classroom environments; whereas the adaptive equity-oriented model accounted for these shortcomings. This pedagogical model is useful to instructors who seek to understand their students’ unique needs and preferences, which have been influenced by larger structures and institutions. Not only is our study advantageous for instructors teaching social justice courses, but also for those concerned with inequity and how social justice issues destabilize the classroom.

References


*The Journal of Effective Teaching, Vol. 17, No.2, 2017, 5-44* ©2017 All rights reserved.


### Appendix A

According to Figure 3 below, in Weeks 2, 5, and 8, the average gain scores of students in the treatment group had a pattern of increase among the female, male, and gender non-conforming groups. This pattern is not consistent for the female, male, and gender non-conforming groups in the control group.

According to Figure 4 below, the difference between the average gain scores among immigrant, second-generation, and non-immigrant students in the treatment and control groups is largest within weeks 8 and 9.

Based on Figure 5 below, the difference between the average gain scores between students with and without disabilities between the treatment and control groups is largest during weeks 8-10.

According to Figure 6 below, while male and female groups exhibit a similar pattern in average gain scores, the gender non-conforming group may be more erratic since it has fewer students in the control ($n = 6$) and treatment groups ($n = 3$).

According to Figure 7 below, in both the treatment and control groups, second-generation immigrants with and without disabilities appear to have similar average gain scores in the beginning, but have larger differences in average gain scores at the end.
Figure 3. Students’ average gain scores by week of course, controlling for gender.

Figure 4. Students’ average gain scores by week of course, controlling for immigrant status.
Figure 5. Students’ average gain scores by week of course, controlling for disability.
Figure 6. Students’ average gain scores by week of course controlling for gender and disability.
Figure 7. Students’ average gain scores by week of course controlling for immigrant status and disability.
Acknowledgements

We would like to give special thanks to faculty, researchers, and professionals who we have worked with. These individuals include Dr. Richard L. Freishtat, Dr. Richard McCallum, Dr. Matthew L. Miller, Dr. Brendan C. Russell, Prof. Terrence Tivnan, John Hansen, Prof. Glynda Hull, Mr. Marcos A. Ramos, Mr. Fabrizio Mejia, Ms. Elizabeth Keithley, Prof. Chris Dede, Dr. Yolanda Gamboa, Prof. Darren Zook, Dr. Tony Mirabelli, Dr. Claudia von Vacano, Dr. Evan Muzzall, Susan Grand, Dr. Carol Christ, Eileen Berger, Prof. Michael Berger, Hoag Holmgren, Brandon Geller, Dr. Amy Scharf, Shahana S. Farooqi, Claire S. Bang, Mr. John Michael Scott, Mr. José Ramón Lizárraga, Eileen Berger, Prof. Michael Berger, Artur Daylidonis, Dr. Kasra Sotudeh, Prof. John Hurst, Matt W. Courtney, Ed.M., Mrs. Judy Alessandri, Mr. Tom Alessandri, Prof. Karen Brennan, Prof. Joe Campos, Tenzin Kyizom, Ms. Elsie Carrillo, Amy Cheung, Dr. Maleka Donaldson, Mr. Americ Azevedo, Mr. Sam Bliss, Mr. Meng So, Ms. Liliana Iglesias, Mr. Ruben E. Canedo, Mr. Nick Creech, Mr. Michael Downs, Ms. Carol Giraudo, Mr. Eugene Arthur Haggerty, Mr. Abhishek Roy, Mr. Peter Hurtubise, Mr. Jeremy Lum, Mr. Russ Marcel, Mr. Esteban Leiva Parker, Professor Jerry W. Sanders, M. Pera, Mr. Jon Scherbart, Dr. Julie Shackford-Bradley, Ms. Carolyn Swalina, Ms. Sonia Torna, M. Miles, Ms. Leah Johnston, Mr. Steve Pinkston, Dr. Roben Torosyan, Dr. Kitty Boles, Rilda Kissel, James Ryan, Dr. Katie Kearns, Dr. Elizabeth Luoma, Dr. Isis Artze-Vega, Dr. C Lucas, Yuki Burton, Julian Ledesma, Prof. Zach Pardos, Prof. Brigid Barron, Prof. Bertrand Schneider, Matt Young, Chris Meyercord, Kristina Luscher, Tony Phuong, Albert Phuong, Phuong family, Estrada family, Tolano family, Prof. S Yeh, Prof. Bruce Fuller, Prof. Catherine Kosholand, Cyrell Roberson, Annie Liang, Dr. Yuki Watanabe, Prof. Roberto Gonzales, Prof. Thomas Hehir, Prof. Rick Mintrop, Mr. Aaron Ninsei Zagory, Dr. Eric Shed, Crystal Ward, Dr. Kate Perry, Mr. Don Davis, Dolores Tolano, Esthela Estrada, Matthew Phuong, and William Phuong, and everyone else in our communities.

We would also like to thank Dr. Russell L. Herman and the Journal of Effective Teaching for all of their support.

We would also like to thank the following organizations and institutions for their support: UC Berkeley's Center for Teaching and Learning, UC Berkeley's D-Lab, The Design for Equity Lab, UC Berkeley's Division of Equity and Inclusion, UC Berkeley's Centers for Educational Equity and Excellence, UC Berkeley's Educational Opportunity Program, USP Program, Division of the Vice Chancellor for Undergraduate Education, Cal Reads, Athletic Study Center, UC Berkeley's Graduate School of Education, Harvard Graduate School of Education (HGSE), HGSE Access and Disability Services, and the Professional and Organizational Development (POD) Network in Higher Education.
The eSGID Process:
How to Improve Teaching and Learning in Online Graduate Courses

Kelly O’Neal-Hixson\(^1\), Jennie Long, and Marjorie Bock
Emporia State University, Emporia, KS 66801

Abstract

Small Group Instructional Diagnosis (SGID) is a feedback process to collect midterm feedback from students. The process uses small focus group student interviews to identify strengths of the course, areas of concern, and suggestions to address concerns. The purpose of this paper is to share experiences using an online format of Small Group Instructional Design (eSGID) to improve the teaching and learning process in three graduate courses. The authors will share specific examples, including the format of the eSGID process.

Keywords: Small Group Instructional Diagnosis (SGID), online teaching, course evaluation.

Jennie is a third-year assistant professor. She accepted a position teaching in an online graduate program. She has always enjoyed onsite teaching. However, she has found the shift from onsite to online teaching to be difficult. During her first year, she sought out help from an expert in online instruction. She spent considerable time updating her courses to include video lecture captures and live video chat sessions. This has increased student retention rates in all her courses; she now rarely has students drop her classes. Nonetheless, her summative student course evaluations continue to be a concern. Both the percentage of students completing the summative evaluations and the overall evaluation data remain too low for her to meet her unit’s tenure and promotional review criteria in teaching. How can she improve the summative student evaluation response rates and overall scores? Can she meet the unit’s student course evaluation criteria for tenure and promotion or should she give up on her dream of teaching in higher education?

Kelly is a 12\(^{th}\) year associate professor who teaches in an online graduate program. She has transitioned from face-to-face to online teaching and has recently earned a teaching award. Her online courses integrate video lecture captures and live video chat sessions. Kelly enjoys the challenge of designing online learning activities that engage her students as well as enhance their understanding of the course content. While her summative course evaluations are often strong with a reasonably high student response rates, Kelly notes that she would like to see them consistently stronger with a higher student response rate.

\(^1\) Corresponding author’s email: koneal@emporia.edu

©2017 All rights reserved.
She wonders if it would be helpful to know what would help her students learn during the semester rather than after the semester has ended. As she says, “By the time I get my students’ feedback regarding the course, it is too late to revise the course to better help them learn.”

Marj is a 25th year full professor who teaches in an online graduate program. She has received three teaching awards across two different campuses while teaching online. She has enjoyed learning how to engage online learners. As a strong proponent of experiential learning, she has committed herself to designing effective online experiential learning activities. She has discovered that her online learners do establish a learning community as they complete the class; social learning does occur. Marj’s summative course evaluations are consistently very high with high student response rates. However, Marj often talks about the importance of mid-course student evaluations; how she relies upon them to teach effectively. She notes that there has been little research regarding the use of mid-course student evaluations in online courses. While many summative course evaluation instruments include a midcourse evaluation option, they rely on survey assessment. Marj feels strongly that the midcourse student evaluation is more effective when it utilizes a focus group assessment process. She also notes that when she has used a midcourse focus group student evaluation, e.g., Student Guided Instructional Diagnosis, it has increased both the student response rate and the overall course evaluation data on the summative student course evaluation.

The aforementioned concerns are not unique to these three faculty members (Keengwe & Kidd, 2010). With the increased popularity and number of online university courses (Allen & Seaman, 2011), these concerns are sure to grow as the demand for accountability and quality in online courses increases (Peterson, 2016). However, faculty and administrators have found it difficult to discern what comprises quality online instruction (Peterson, 2016). “Faculty who teach online cannot apply the same instructional techniques [as those who teach] face-to-face classes” (Thiede, 2012, p. 137). In addition, institutions of higher education cannot use the same evaluation procedures for online courses as they do for onsite courses (Jones, 2012; Pina & Bohn, 2014). “The quality of online courses continues to be debated extensively in the literature, with little consensus on how to measure it, as well as how to assess teaching effectiveness of faculty teaching these courses” (Jones, 2012, p. 49).

Student evaluations of teaching (SETs) are a common method of assessing teachers and courses (Peterson, 2016). Students complete these course evaluations at the end of the semester. They provide the instructor with information regarding the course format and the teaching methods used. These summative course evaluation SETs are often used for promotion and tenure, making them a “high stakes” evaluation process for untenured faculty members. This creates an environment where untenured faculty focus on increasing student response rates and overall evaluation scores to meet tenure and promotional review criteria rather than on using summative student course evaluation feedback to improve the course format and teaching methods (Crews & Curtis, 2011; Dangel & Lindsay, 2014; Fink, 2008; Penny & Coe, 2004; Pina & Bohn, 2014). Further, when faculty use the summative SETs for course improvement, the course improvements do not bene-
fit the students who completed the SET; rather, the SETs benefit future students (Winchester & Winchester, 2012). Consequently, there is little motivation for current students to complete the SETs (Peterson, 2016) thereby promoting lowered student SET response rates. This problem is further compounded in some cases by evaluation formats, i.e., course evaluation surveys that “do not use valid questions or do not have consistent rating approaches” (Bubb et al., 2013, p. 8). Moreover, “all too often, summative [SET] evaluation . . . tells us little more than how popular we are as faculty” (Walker, 2005, p. 7). With these confounding issues, college and university faculty members are looking for more effective ways to evaluate online teaching. Formative, mid-course, SET evaluations are an option many faculty are trying to address these issues.

Formative, mid-course SETs provide faculty insight into what is working for their students as well as what the instructors can do to help their students learn more effectively (Peterson, 2016). Formative, mid-course SETs identify the students’ feelings and perceptions on both the course design and instructional strategies. This helps “online instructors . . . adjust strategies and methods to better meet the needs of current students” (Berridge, Penney, & Wells, 2012, p. 120) thus promoting continuous improvement and quality improvement in online courses (Aggarwal & Lynn, 2012). “As assessment progresses, the learning process is continually monitored and incrementally improved” (Aggarwal & Lynn, 2012, p. 29). Bubb, et al (2013) noted that formative evaluation could also increase student participation and promote student self-evaluation thereby improving student learning. Moreover, faculty who have used formative evaluations have seen students present higher levels of “motivation to complete [SETs]” (Winchester & Winchester, 2012, p. 674) thereby increasing their participation in summative SETs and “higher summative course evaluation scores” (Bubb, et al, 2013, p. 12). Thus, formative evaluations can positively influence summative SETs. In addition, as Peterson (2016) notes, faculty can use formative evaluations in annual evaluations to validate the course improvements they have implemented.

Faculty can use traditional paper or online surveys to gather mid-course, formative evaluation data; however, this evaluation approach does not promote the rich informed dialogue with students that faculty find particularly helpful (Hurney, Harris, Prins, & Kruck, 2014). Thus, it is no surprise that the small group instructional diagnosis (SGID), an interactive midcourse evaluation process, is a formative evaluation provided by many centers for teaching and learning in institutions of higher education throughout the nation. Clark (1982) developed this process, originally called the Small Group Instructional Feedback (SGIF) to obtain formative (or midcourse) feedback from students to help improve course quality and teacher effectiveness. The SGIF instrument used a focus group assessment process to gather midcourse student feedback. During the same semester, the instructor responded to the feedback by addressing areas cited in the report (Clark & Redmond, 1982; Redmond, 1982).

To conduct an SGID, a facilitator meets with the class. (The instructor is not present.) The facilitator puts the class into small focus groups. Each focus group discusses a series of 4 to 5 open-ended questions regarding what is working well for them, what would help them to learn more effectively, and what they can do to improve their learning in the
course. Each group shares their responses with the class. The facilitator leads a discussion of each question resulting in the identification of the top three responses to each question. The SGID facilitator creates a final written report and shares it with the course instructor. The instructor then acts upon the information provided to make the course more effective for the students (Walker, 2005).

Overall, researchers have supported the use of SGID as a formative course evaluation. Early research on the SGID focused on student and staff perceptions and reactions to it. Clark and Redmond (1982) found students enthusiastic about this process, and that it had a positive impact on their motivation in the classes for which it was conducted. Diamond (2004) cited several studies that indicated instructors were more likely use the information provided as a result of the SGID than the typical end-of-semester evaluation. More recent studies, Dangle and Lindsey (2014), Diamond (2004), and Hurney et al. (2014), further support the benefits of SGID as a formative, midcourse SET.

While the SGID is a valued midcourse, formative evaluation procedure used commonly for onsite courses on college and university campuses throughout the nation, but can it be used as a formative evaluation process for online courses? Herman and Langridge (2012) suggest that it has applicability for online courses. However, they note that there is not a standard process online faculty can use to implement SGIDs in their classes. Herman and Langridge (2012) further note that college and university centers for instruction and development are not providing SGID facilitators for online courses and their instructors. The purpose of this paper is to describe a process developed to facilitate eSGID’s in three online graduate courses. The paper includes the procedures used to conduct eSGID’s as well as the faculty members’ thoughts regarding the impact the eSGID had in their courses.

The eSGID Evaluation Process

The eSGID process is meant to parallel that originally developed by Clark (1982). The course instructor requests an eSGID. The students are divided into small focus groups of 6-8 people. Each group selects a recorder who will take notes during the discussion. The eSGID facilitator will work with each group via a live video conferencing program. After each group has met and completed the eSGID, the group facilitators and the eSGID facilitator meet to create the eSGID report (Appendix B). The eSGID Evaluation Process is described in Figures 1-6 (Appendix A). The facilitator will use the script (i.e., the italicized words) and completed the specified actions when administering the eSGID (Appendix A).

eSGID Experiences in Three Graduate Courses

CD 832 Observation, Assessment, and Screening in Early Childhood

The graduate program in Early Childhood Unified is designed to prepare teachers to work effectively with young children with and without special needs in which there are three faculty members. CD 832: Observation, Assessment, and Screening in Early Childhood is
the second course in the program series. The purpose of CD 832 is to provide an overview of measurement and evaluation concepts, strategies, and techniques that are appropriate for infants and young children. The course includes both theory and practice of individual observation, evaluation, and assessment.

Most candidates in the program do not have experience with the evaluation process to determine eligibility for special education. This has historically resulted in frustration and confusion on specific course requirements, which have been noted in the end of the semester course evaluations. The eSGID process was chosen to help determine earlier the challenges candidates felt they were having.

As a result of the eSGID, there were three items provided on how the instructor could improve the course. First, it was recommended that examples of completed scoring protocols be provided for each of the assessments. Second, candidates felt it would be helpful to have further information on using the obtained information from assessments within the classroom. The third recommendation included providing information on the specific assessments including what the environment should look like when completing the assessments and more specific information clarifying specific steps on completing the assessment.

Upon receiving eSGID feedback, a discussion was held on where to access examples of completed protocols including websites and the examiner manuals. Video conferencing sessions were offered through the rest of the semester to provide further detailed information on specific assessments including how to set up the classroom, discussing the required assessments, and how to further utilize the information from the completed evaluations.

**SD802 Behavior Management**

SD802: Behavior Management is part of the endorsement courses for High Incidence Special Education. The purpose of SD802 is to provide information regarding the ethical, effective, and efficient management of behavior of students with disabilities. The course focuses on the principles of behavior management and their application in the educational programs, as well as in the home. In this course, I use case studies and discussions to help students understand different factors that are involved in behavior management. I have been exploring different ways to facilitate discussions, using both the discussion board and live audio-conferencing sessions.

Specific feedback during the eSGID noted that I could improve the course with regards to discussions. First, students noted that discussion boards could be broken into smaller groups, so the discussions would be easier to follow. Second, students stated that using a mandatory audio-conferencing session would help students to see how easy it is to participate in the sessions. Also, more times to join the sessions. Third, students wanted more information from outside resources (i.e. online links, books, etc. that might further understanding of a topic).
Upon receiving eSGID feedback, discussion boards were broken up into smaller sessions. I did not require participation in an audio-conferencing session; however, I offered more times for students to participate. The use of more times to sign up for audio-conferencing increased participation in the sessions. I also created an online portfolio with additional resources.

**SD820 Assessment in Schools**

The graduate program in High Incidence Special Education is designed to prepare teachers to work with children (i.e., either K-6 or 6-12) mild, high incidence disabilities in inclusive classroom or special education resource classrooms. SD 820 Assessment in Schools is a graduate level course in special education offered via distance education. This course is a survey of large group and individual assessments used in elementary and secondary schools. The focus is on the nature, use, and interpretation of various evaluation methods used by schools to measure aptitude, achievement, interest, personality, and intelligence of students, i.e., both groups of students and individual students. Data analysis, test interpretation, and data-based decision-making in K-12 schools are the major emphases of the course.

This course is one of the final courses in the high incidence endorsement program. It draws students from three graduate programs, i.e., high incidence special education, school counseling, and gifted special education. Some of these students bring extensive knowledge about assessment to the class while others have little knowledge about assessment. One of the programs includes students who have never taught and so have no working knowledge of or actual experience administering and interpreting educational assessments. Consequently, the course includes small group activities that integrate students from each graduate program. These small groups function as “multi-disciplinary” teams to analyze a series of case studies. In addition, students watch lectures and related you tube videos throughout the course. They also participate in live video conferencing sessions where they practice interpreting assessment data, placement recommendations, and designing educational activities aligned with the assessment results. Moreover, students complete a series of study guides throughout the semester. These are completed independently. The instructor provides individual scaffolding as needed for the students as they complete the study guides.

This course has led to an increase in student performance on the assessment subsection of the Praxis exam; however, it remains a relatively high stress course for many of the students. That issue along with the challenge the instructor encounters designing a course for such a wide range of students lead the instructor to target this course for an eSGID. A major issue that had arisen in the course prior to the eSGID related to problems using the Discussion Board section of the course web site. As anticipated, this issue surfaces as one of the things the students liked least about the course. Related to this issue, the students noted that it would be helpful to know who was actually in their case study team for each of the Discussion Board assignments. The other issue some students thought would be of help them would be the use of a formal textbook for the class; however, not all students in the class agreed with this comment. As a result of the eSGID the students made the
following three suggestions: (a) Post all modules at the beginning of the semester, (b) provide additional practice with data interpretation during live video conference sessions, and (c) put the same people in both the case study teams and the live video conference sessions.

After receiving the eSGID midcourse student evaluation feedback, the course instructor responded to the student comments by increasing the amount of time spent with data interpretation during the live video conference sessions and assigning students to the same case study teams and live video conference sessions. The instructor also noted that all modules except the final course module had been available all semester.

**Implications for Other Disciplines**

Research has shown that midterm evaluation has led to significant improvement of specific teaching behaviors across all disciplines in higher education (Hurney et al., 2014; Herman & Langridge, 2012). In fact, midcourse evaluations have proven to be so effective that many university campuses use SGID to evaluate undergraduate and graduate courses in education, arts and sciences, nursing, medicine, aerospace, and other disciplines throughout campus (Hurney et al., 2014). The eSGID process described in this article extends this midcourse evaluation to online courses. Similar to the SGID, the eSGID is appropriate for use with any undergraduate or graduate online course from any discipline.

**Conclusion**

In conclusion, the authors regardless of higher education teaching experience have found that eSGID has been very beneficial in improving the teaching and learning process. Students provided constructive suggestions related to strengths and concerns to improve the course. Instructors used the information to make changes during the course. As student evaluation of teaching (SET) continues to be common in higher education, instructors need to focus on how they use the feedback to improve courses. Participating in an eSGID is a way for instructors to improve their teaching and allow students to have control over their learning.

**References**


Appendix A

The Online Student Guided Instructional Diagnosis (eSGID) Process

Department of Elementary Education/Early Childhood/Special Education
The Teacher’s College
Emporia State University

Purpose: To solicit formative student course evaluation data (i.e., during the first 6 weeks of the semester).

Process: The eSGID process includes three phases: (a) Pre-eSGID activities, (b) eSGID administration activities, and (c) post-eSGID activities.

<table>
<thead>
<tr>
<th>Pre-eSGID Activities</th>
<th>eSGID Administration Activities</th>
<th>Post-eSGID Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Plan eSGID</td>
<td>• Select eSGID Student Recorder</td>
<td>• eSGID Post-Conference</td>
</tr>
<tr>
<td>• Request eSGID</td>
<td>• Facilitate eSGID Sessions</td>
<td>• File eSGID with SGID Coordinator</td>
</tr>
<tr>
<td>• eSGID Pre-Conference</td>
<td>• Create eSGID Report</td>
<td></td>
</tr>
<tr>
<td>• Schedule eSGID</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pre-Conference Activities

1. **Plan eSGID** Put a description of the eSGID in your course syllabus and on your course calendar. (You may wish to consider giving bonus points for student participation in the eSGID.)

2. **Request eSGID** Contact the department eSGID Coordinator to request an eSGID. Specify the week you would like to complete the eSGID. (eSGID’s should occur during the 6th, 7th, or 8th week of the semester.)

3. **eSGID Pre-Conference** The eSGID facilitator will contact the faculty member to request a copy of the course syllabus and set up a 30-minute eSGID pre-conference meeting.

During the pre-conference, the faculty member will describe the class to the eSGID facilitator. The faculty member will also discuss any issues happening in the class that may surface during the eSGID, e.g., the students seem to be having trouble posting in the Discussion Board section of the course web site.

The facilitator will describe the eSGID process. The facilitator will also ask the faculty member to identify any additional focus group questions he or she would like the facilitator to include in the evaluation.
The eSGID will include the following 4 questions:

- What do you LIKE MOST about this course so far?
- What do you LIKE LEAST about this course so far?
- What suggestions do you have for your INSTRUCTOR to improve your learning experiences in this course?
- What might YOU do to improve your own learning experiences and those of other students in this course?

Faculty may also wish to add one or more of the following 3 questions to the eSGID:

- What could YOU be doing to improve your learning in this course?
- What are YOU doing to hinder your learning in this course?

4. **Schedule eSGID**: At the end of the Pre-Conference, the facilitator and faculty member will schedule the eSGID.

   - Facilitated via live video conference program, e.g., Zoom
   - 6-8 student participants per group
   - Each session is 15 minutes in length

**eSGID Administration Activities**

1. **Select eSGID Student Recorder** This may be done prior to or at the beginning of each eSGID session. The recorders should either be volunteers or selected by their peers. The recorders will take notes during the eSGID session. They will also attend a final online session with the facilitator to write the eSGID report. (You may find it helpful to give the recorders additional bonus points.)

2. **Facilitate eSGID Sessions** Using the script provided below, facilitate each eSGID session.

   **Good morning (afternoon or evening)! My name is ___________________________. I’m a faculty member in the Department _______________. I’m here to facilitate an eSmall Group Instructional Diagnosis or eSGID. Your instructor asked me to come to your class today to get your honest feedback about your experiences in this course so far. My role will be to collect your ideas and to summarize those ideas for your instructor. What we do here today is anonymous, and will not affect your grade in any way. It’s simply to get your feedback about how the class is going for you.**

   The process we will follow today happens in three parts:
   1. You will select a recorder to keep a record of your discussion. (Omit this statement if the recorder is already selected.)
   2. You will reflect individually
   3. You will reflect in a small group.

   Your recorder will attend a final eSGID session with the recorders from all eSGID sessions on _______________. (Fill-in-the-blank with the appropriate day.) The recorder’s role at that session is to represent your group’s comments as well as create one eSGID report for the
How to Improve Teaching and Learning in Online Graduate Courses

class. I will then share that report with your course instructor. Today you will be asked to give your feedback on four questions:

1. What do you LIKE MOST about this course so far?
2. What do you LIKE LEAST about this course so far?
3. What suggestions do you have for your INSTRUCTOR to improve your learning experiences in this course?
4. What might YOU do to improve your own learning experiences and those of other students in this course?

[Post the four questions so the students can see them.]

Please take 1-2 minutes to respond to these questions. You may find it helpful to take a few notes. You can then refer to your notes during the group discussion.

[Monitor the time. Tell the students when they have one-minute left. Tell them when they have 30 seconds left. Alternatively, you may have students send you a private message via the message board when they are ready for the group discussion.]

Now you will have the opportunity to share your thoughts with the group. As a group you must:

1. Put one answer down as a response to each question.
2. Everyone in the group must agree with all responses recorded.
3. You must clarify each response as you are recording it.

Does everyone understand the process? Good! You will have 3 minutes for question 1, “What do you LIKE MOST about this course so far?”

[After 3 minutes, direct students to the next question. Continue this process until students have addressed all four questions.]

__________, please read the final responses for each question to us.

[Seek clarifications as needed to be sure everyone understands each response. Be sure the recorder has documented the students in attendance if they will receive bonus points for participation. Ask the recorder to send you her or his notes via email. You will use this to draft the eSGID report prior to the reporters eSGID meeting.]

Thank you for participating in this eSGID!

3. Create eSGID Report

[Prior to the meeting, collapse all the eSGID recorders’ notes into one draft eSGID report. This draft report should include all comments from each group. They can be put in random order for this draft report. Follow the template provided at the end of this document.]

Thank you for coming to this final eSGID session. Each one of you will share your group’s responses to the eSGID questions. After each recorder shares the response for a question, you will reach a consensus regarding the top 3 responses for each question. Does everyone understand the process? Good!

So, ____________, give me your group’s response to question #1: What do you LIKE MOST about this course so far? [You will continue this process until each recorder has shared his or her group’s response to the question.]
What do you each see as the top 3 responses for this question? [Continue this process for each question in the eSGID.]

You may ask questions to clarify what a group means by their response. But your question should not be disguised as a debate, as something that you are contesting; it should only be for clarification.

After the Group Response is complete, put the template SGID report on your screen. Ask the recorders to help you edit the report for accuracy.

1. Check that all group statements are recorded accurately.
2. Decide if all statements should be included. (For smaller classes, there may be only 1-2 rather than 3 statements per question.)
3. Decide which statements are most critical for each question.
4. Reorder statements in the report so that those considered most important are listed first under each question.

I am meeting with your instructor on ______________ to share this report. Thank you so much for participating in this eSGID process. It will help your instructor have a better idea of how the class is going.

Post-Conference Activities

1. **eSGID Post-Conference** During this conference the facilitator will share the report with the course instructor. The facilitator should encourage the instructor to thank the students for participating in the eSGID and tell the students what changes, if any, she or he will make in the course in response to their feedback.

2. **File eSGID with eSGID Coordinator** The facilitator will send the report to the department SGID coordinator.

### Appendix B

**SAMPLE eSGID REPORT TEMPLATE**

**Date:** March 4, 2016  
**To:** Marj Bock  
**From:** Jennie Long, eSGID Facilitator  
**RE:** eSGID Report

The purpose of this report is to share information resulting from an SGID completed in SD 820 Assessment in Schools. The SGID occurred across three 20-minute zoom sessions hosted during the first week of March, 2016.

SD 820 Assessment in Schools is a graduate level course in special education offered via distance education. This course is a survey of large group and individual assessments used in elementary and secondary schools. The focus is on the nature, use, and interpretation of various evaluation methods used by schools to measure aptitude, achievement, interest, personality, and intelligence of students, i.e., both groups of students and individual students. Data analysis,
test interpretation, and data-based decision-making in K-12 schools are the major emphases of the course. (Prerequisite, graduate students.)

There are currently 25 students enrolled in the course, 24 of these students participated in the SGID process. Each participated in a 20-minute zoom session with up to 9 peers. One student severed as a recorder/reporter for each group. The recorder/reporter took notes regarding the group’s responses for each of the following questions:

1. What do you LIKE MOST about this course so far?
2. What do you LIKE LEAST about this course so far?
3. What suggestions do you have for your INSTRUCTOR to improve your learning experiences in this course?
4. What might YOU do to improve your own learning experiences and those of other students in this course?

The recorders/reporters then were provided a copy of the final report with the top response to each of the four questions for all three sessions where they voted on each statement and facilitator helped create the final report.

The SGID process identified the following statements in response to each question:

1. What do you LIKE MOST about this course so far?
   a. Variety of modes- lectures, you tube videos, and readings.
   b. The course content and material are relatable to my job.
   c. Pacing of the course – not too fast; not overwhelming.

2. What do you LIKE LEAST about this course so far?
   a. Discussion board groups are too big. There are too many posts/overwhelming. We had over 300 posts the last time round.
   b. A textbook may be helpful, but has pros and cons. The online chat is sometimes difficult to participate in, with so many people wanting to share opinions and the time constraints.
   c. Directions on the case study need to be clearer. Contact information on individuals in the group. It would be helpful if our case study group uses chat group. So much easier to contact. Directions on the case study are a bit unclear on response to team (assignments all overlapped and didn’t have time to correct).

3. What suggestions do you have for your INSTRUCTOR to improve your learning experiences in this course?
   a. Would like all of the modules posted at the beginning of the course.
   b. More practice data interpretation during zoom sessions.
   c. Create case study group with zoom session; at times, some of the case study directions are a little unclear; feel like always emailing the instructor.

4. What might YOU do to improve your own learning experiences and those of other students in this course?
   a. Be more open to other people’s ideas when reading discussion board – remember that I can learn from everyone else; and don’t take anything personally.
   b. Contact the instructor when I have questions.
   c. Consulting outside resources; going outside of bare minimum requirements.
The Power of Movement: Body-engaging Activities for Teaching Economics

Leanne Roncolato¹ and Cairynne Koh
Franklin and Marshall College, Lancaster, PA 17603

Abstract

Existing research points to the critical connection between student engagement and deep learning. This paper explores body engagement as one type of student-centered learning. While other disciplines are making progress in developing body-engaging pedagogical methods as a complement to traditional lectures, the use of such innovations in undergraduate level economics courses have been limited. We contribute to the literature by explaining both why we should and how we can incorporate body movement as a part of the tool kit for teaching economics. We offer specific examples of body-engaging activities and review students’ evaluation of this pedagogical approach. We acknowledge challenges and limitations of incorporating these activities into a classroom and offer strategies to overcome these challenges.

Keywords: Student-centered learning, engagement activities, undergraduate economics.

In the fall of 2014, I was driving in the car, when a radio interview with Dr. Ann Marie Thomas from the University of St. Thomas caught my attention (Flatow, 2014). In Dr. Thomas’s engineering course, students become human pendula by swinging on a trapeze and then analyze the data collected through these active experiments. Following her interview, a man called in to share his training experience for the special forces in the military. During training courses, if students were having trouble focusing, they were encouraged to get up, go to the back of the room and do a few push-ups in order to refocus their attention on the learning task (Flatow, 2014). When I went into my microeconomics class the next Monday, I told my students, “I am not going to make you do push-ups or swing on a trapeze, but you will get up and move.”

According to Watts and Schaur’s 2010 survey of U.S academic economists, only a limited number of instructors have moved away from the traditional pedagogical approach of ‘chalk and talk’ since the first survey was conducted in 1995 (Watts & Schaur 2011). Goffe and Kauper (2014) claim that economics instructors, who are still reluctant to give

¹ Corresponding author’s email: Ironcola@fandm.edu

©2017 All rights reserved.
up traditional lecture style, either argue that alternative teaching methods are less cost effective or they believe that traditional lectures are the best way to teach economics (Goffe & Kauper 2014, p. 6). We believe that Brownell and Tanner’s (2012) explanation of the slow adoption of new pedagogical practices amongst faculty in the natural sciences is likewise applicable to economics faculty. They argue that in addition to training, time, and incentives, professional identity and norms within the academy that place a higher value on research also inhibit the adoption of new pedagogical practices (Brownell and Tanner 2012). In this paper, we advocate for an approach that overcomes these barriers to adopting new teaching methods. Specifically, this paper advocates for incorporating body movement as part of the tool kit for teaching economics and explains how such activities can be implemented. We hope that the examples presented here help generate new ideas for not only teaching economics but other disciplines as well, particularly in math and graphing based courses.

Below, my co-author, a former student from my microeconomics class, and I explore how physical activity and engagement of the body can facilitate learning. We situate our research on body engagement within the established literature on active and student-centered pedagogical approaches. Existing research points to the positive connection between active student engagement and the process of learning (Bransford, Brown, & Cocking. 2000; Zull, 2002; Tranquillo, 2008; Willis, 2010; Pelligrino & Hilton, 2012). Documented exceptions to the ‘chalk and talk’ norm within economics include the use of computer simulations, class discussions, creative incorporation of television, English literature and cartoons, integrative graph assignments, use of role play, and in the case of a Tennessee high school classroom a supply and demand dance (Luccasen & Thomas, 2010; Buchs & Blanchard, 2011; Watts & Schaur, 2011; Vachris & Bohanon, 2012; Morgan, 2012; Zhang, 2012; Green, Kelly, Peterson, & Bean, 2015). Our choice to focus particularly on body engagement as a tool for active learning is driven by our own particular experiences and interests. Namely, we have both been students of dance at the college level. While we explore how interactive activities that demonstrate or apply a concept are useful, we are also interested in how body engagement, independent of course content, may improve students’ capacity to learn. For example, is a student better able to solve a utility maximization problem after doing two jumping jacks?

Following our review of the theory and existing evidence from other disciplines, we provide examples of body-engaging and interactive activities for an economics classroom. Given our inability to empirically test the effectiveness of these pedagogical innovations due to institutional constraints, we examine perception of effectiveness with a review of student evaluations of this pedagogical approach. We conclude by exploring the need for further research on body-engaging pedagogy, particularly within fields that have thus far been resistant to such innovations.

**Body Engagement as a Pedagogical Tool**

Examples of body-engaging pedagogical practices exist across different disciplines. These activities can be as simple as getting students to dance in class. Dr. Virginia Zimmerman, a professor of English from Bucknell University, uses dance as a learning tool...
to grasp the rhythm of a poem. The activity highlights how writing styles of different authors vary their use of meter and structure (Zimmerman, 2002). Paul Moerman, from Södertörn University in Sweden, also uses dance as a teaching tool for subjects such as language, mathematics, and philosophy. He claims dance routines build upon these subjects’ content and enhance his students’ learning, creativity, tactile perception, concentration, and cooperation skills (Moerman, 2013, p. 1).

Hall and Nemirovsky (2012) claim mathematics is at the crossroads of identifying the connections between the mind, body, social, and cultural practices through “embodied mathematical cognition” (Hall & Nemirovsky, 2012, p. 209, 213). Instructors use the tile floor of a classroom to represent a complex plane to demonstrate the mathematical understanding of the movement of the body in space (Hall & Nemirovsky, 2012, p. 212-213; Nemirovsky, Rasmussen, Sweeney, & Wawro, 2012). In the related field of computer science, there is a small group of faculty that shares, via a QwikiWiki website, kinesthetic learning activities on different topics such as binary counting, graphics, and ray tracing ("Kinesthetic Learning Activities," 2015).

The example mentioned in the introduction is the course, “Dynamics with Circus Laboratory,” designed by Dr. Ann Marie Thomas, an engineering professor from University of St. Thomas. Circus equipment such as the flying trapeze, bungee trapeze, and the German wheel are used to replace common dynamics laboratory tools such as the pendulum, mass and spring, and slipping and non-slipping disk. Students are given the choice to participate in these activities with specific measuring tools strapped on them for data analysis. The course is mostly rated with positive feedback, despite the high workload (Thomas, Berrier, & Guggenbuehl, 2011). Thomas, furthermore, describes how students become engaged on a deeper level with the material and demonstrate strong commitment to the course (Flatow, 2014).

The use of body engaging activities is consistent with our existing knowledge of the way in which humans learns. Zull (2002) in his book The Art of Changing the Brain; Enriching Teaching by Exploring the Biology of Learning, writes,

“Action makes the learning cycle a cycle. Physical movement is needed to link our abstract mental notions with new concrete experience. Biology backs up this dual role for action in learning.” (Zull, 2002, p. 221)

Contributing to the volume, Mind, Brain & Education, Willis (2010) analyzes how knowledge in neuroscience yields critical insights into effective pedagogy. Research on the reticular activating system (RAS) of the brain indicates that fear and stress create barriers to learning. Thus, Willis argues that the creation of positive and relaxed classroom environment is important. Furthermore, she explains that novelty can play an important role in learning.

---

2 Summarized by Hall and Nemirovsky, Wilson explains embodied cognition as a process of “sensorimotor cognition” conducted when doing a specific thing, which can be “repurposed off-line” later in time (Wilson 2002, p. 632-633; Hall & Nemirovsky, 2012, p. 210). For example, a new dance choreography learned can be recalled before bedtime without physically doing the dance moves.

3 Dr. Judy Willis is a medical doctor and has a Masters in education.
role in stimulating the RAS. Willis also examines how increased dopamine levels in the brain promote “focus, memory, and motivation” among students (Willis, 2010, p. 54). She provides several examples of “dopamine-releasing interventions,” which include students moving around periodically, supporting positive peer interactions, creating activities that involve collaborative work and the use of humor in the classroom (Willis, 2010, p. 57). In the sections that follow we describe engaging activities that can work through the channels described by Willis to enhance learning in an economics classroom.

**Dancing to Economics?**

Morgan (2012) describes how two microeconomics high school teachers, Marty Robinson and Jennifer McKerley, have been using dance moves to help their students remember basic economic models and concepts. They guide students to draw out demand and supply curves with their arms, then add new economic concepts accompanied with other arm movements, until they form a dance. Robinson claims, “Kids really respond to the dance. It’s silly, but it helps on tests. I see students moving their arms to answer questions.” McKerley has also witnessed students doing the dance to teach their friends and family economic concepts (Morgan, 2012).

Not all concepts can be easily associated in dance routines. Drama and role-plays also can aid in understanding a concept (Jensen, 2005). For example, Buchs and Blanchard (2011) discuss their use of role-play to teach the concept of sustainable development. Tranquillo (2008) argues that students who engage in kinesthetic activities are given the opportunity for a personal interpretation of the learned concept. Furthermore, body-engaging activities often dismantle concepts to their basic components to be easily understood, without complex equations and jargon. These kinesthetic activities can act as foundations toward understanding more complicated concepts. Most importantly, such activities keep the energy levels high in the class, as they involve great levels of interaction among students and instructors (Tranquillo, 2008, p. 7).

Unfortunately, the use of body movement in the classroom seems to decline as students advance through the education system (Tranquillo, 2008). It seems classroom settings change from movement while learning to ‘sit still and listen’, where uninstructed body movement could be deemed disrespectful or disruptive. We often expect that, through the process of maturity, individuals develop a longer attention span and are able to sit still for longer periods of time. We argue that just because college students can sit still and listen, does not mean that they should or that it is the most effective way to learn.

**Getting Students Moving in an Undergraduate Economics Classroom**

Over the past year and a half, I have investigated ways in which the body can be engaged for learning, primarily in my microeconomics class at Franklin and Marshall College in

---

4 For a more in depth analysis of the differential impact that fun delivery versus fun activities have on student engagement see Tews, Jackson, Ramsay, and Michel (2015).
5 Blatt-Gross (2015) explains some opposition to ‘movement while learning’ methods comes from educators who are struggling to meet the high expectations of content coverage.
Lancaster, PA, USA. I also provide examples for activities that can be done in other economics courses.

There are a few activities/interventions, which require no preparation and minimal class time. When I teach supply and demand graphs, I have my students stand up in the middle of the lesson and trace in the air the upward sloping supply curve. This can of course also be done with a demand curve. This is not only to reinforce the slopes of supply and demand but also to engage students’ bodies and increase alertness. This is consistent with Tranquillo (2008) claim that active learning re-energizes the classroom atmosphere. I have students do a similar activity when covering Engel curves and the theory of the backward bending supply of labor curve.

When I teach elasticity, I have students get up, stand tall and rigid with their arms to their sides to demonstrate a perfectly inelastic demand curve. For perfectly elastic demand curve, I have them put their hands out to make a horizontal line. I then have students wave their arms around, demonstrating flexibility. This reinforces the rigid characteristic of an inelastic demand curve, and the flexible characteristic of an elastic curve. Often this activity leads to a bit of laughter, one the “dopamine-increasing activities” discussed by Wilson (2010). My hope is that following this activity students are alert and in a positive state of mind, thus better prepared to learn the formulas for calculating elasticity.

As we move into more advanced material through the course, such as different types of market structure, I have students draw graphs on the board instead of in the air. Students often work in pairs and each person is responsible for one portion of the graph. I allow students to walk around and see other group’s work, particularly if they are struggling. In addition to the benefit of getting students moving, this strategy creates an opportunity for students to teach concepts to each other. Note that this requires enough board space and chalk for all students to participate. In good weather, I have also taken the class outside to draw graphs on the sidewalk with chalk.

These activities do not replace class lectures but rather act as a complement to them. I limit the time I lecture in front of the class to small time increments and intersperse body-engaging activities throughout the class period. The interactive activities do use time in class that could be spent on new content. My hope is that the additional time is recovered from students learning concepts on the first or second time, without the need for repetition.

Since I spend less time doing traditional lectures in my classes, I encourage students to watch Khan Academy or YouTube videos I have preselected that cover the same material we are discussing in class. It is much easier for students to access substitutes for traditional lectures than to do interactive and body-engaging activities on their own. For a longer discussion on the use of video lectures outside the classroom see the literature on flipped classrooms.6

6 Bishop and Verleger (2013) explain flipped classrooms as a pedagogical method that uses asynchronous video lectures and problem sets outside the classroom and group-based problem solving in the classroom with the guidance of the instructor. Students benefit from a higher engagement between classmates and
I also developed student-centered activities for my classes that are more time-intensive. For a lesson on monopoly power and price discrimination in my microeconomics course, I use an activity that takes about 10 to 15 minutes of class time. I have student count off by 5 and instruct students to get into groups according to their number. Having students form groups in this ways is an easy method of getting students to move around the class and interact with each other (see Wilson, 2010). Once students are in the groups, one person is chosen to be the seller and the rest are the buyers. Slips of paper are used as currency. It is assumed that marginal cost is a constant 1 slip of paper and there are no fixed costs. The seller is instructed to sell the candy bars and try to make as much profit as possible. To add incentive to the activity, I have buyers write their name on remaining slips of paper and add them to a raffle for cash or prize of some sort. Following the activity, each group reports their producer and consumer surplus. If the seller is able to conduct perfect price discrimination, the consumer surplus is zero. Perfect price discrimination does not always happen but the activity creates a useful discussion of price discrimination and monopoly power that can be referenced throughout the rest of the class.

Another example is an activity used to teach about asymmetric information. It can take 5 to 10 minutes depending on how long you allow transactions to take place. The following instructions are given:

**Sellers:** Think of one used product that you own (laptop, car, smart phone, item of clothing). You are going to try to sell the product at the highest price possible. If you have a picture of it, you can show it to the buyers.

**Buyers:** You are going to “shop” and try to find a product you are interested in.

During this activity, I make sure students are up and walking around the class. I give students a time limit, which heightens energy level given the sense of urgency. This activity is followed by a very simple question of who knew more about the product being sold. The difference of knowledge between the seller and the buyer is discussed, prompting students to understand a seller’s capability to exploit a buyer’s lack of information about the good.

When I first covered marginal productivity of labor in my microeconomics course, I had my students work in groups to simulate a paper airplane factory. I had mixed success with this activity. After speaking with a colleague, Alex Binder, about this activity, he teachers during class times, attaining additional content from students when they provide different methods of approach to answer specific problems in class discussions (Bishop & Verleger, 2013, p. 2). Limitations of flipped classrooms include the prevention of students to ask questions during video lectures viewed outside the classroom and the inability to monitor student engagement during video viewings (Milman, 2012).

7 For a much more exhaustive list of student-centered activities see Delemeester and Brauer (2000). They have compiled and contributed to a list of more than 113 classroom games for college instructors on fundamental macroeconomics and microeconomics concepts, available at http://w3.marietta.edu/~delemeeg/games/.

8 The sellers do the same with the slips they received but must throw out 1 slip of paper per candy bar sold.

9 An anonymous referee has pointed out that a similar paper airplane activity was previously developed, for more details see Owens (2001).
improved the exercise by having students manufacture a more sophisticated product. In his Introduction of Economic Principles class, he has students make “Have a nice day!” favors. The activity takes about 30 minutes. The directions for this activity are as follows:

1. Break the class up into teams of 6 to 7.
2. Each team gets one pair of scissors, one stapler, one pen, and as much papers and mini candy bars as they need.
3. The task of the factory is to make “Have a nice day!” favors. Workers must cut a small strip of paper, write “Have a nice day!” on it, then staple it to a mini candy bar.
4. Each team starts with one worker (student).
5. The single worker is instructed to make as many “Have a nice day!” favors as possible in one minute.
6. The team records the amount of favors made.
7. The next round, two “workers” have one minute to make as many favors as possible. The amount is recorded. After each round the material used in the previous production are discarded, i.e. cut paper from round 2 can’t be used in round 3.
8. This is repeated until all team members are involved in the production process.

After students complete the activity, they are asked to calculate the marginal productivity of labor, and examine the data. The objective is that students will identify an initial increasing and subsequently diminishing marginal returns to labor.

Another activity I have used when teaching an introductory level course at another institution comes from Holt (1996). The activity simulates a market in the classroom by giving half the students prices at which they would be willing to buy a ticket and half the student’s prices at which they would be willing to sell a ticket. The end result of the activity is that an equilibrium quantity and price is found. For more detail on this activity see the write up in Holt (1996).

In a macroeconomics course, similar interventions, such as having students draw graphs on the board or trace graphs in the air, can be used. There are also other opportunities for more time-intensive interactive activities that get students moving. When teaching about expenditure multiplier in an Introduction to Macroeconomics class, I start by giving one student $100 (fake money) and have them save a little (given by the marginal propensity to save) and spend the rest on transaction with another student. The next student repeats this step. They continue for several rounds, keeping track of economic transactions in each round. Finally, as a class we calculate the total increase in aggregate demand as a result of the initial injection of $100.

Interactive activities can also be used in an economic history of thought class. For example, particular theorists can be embodied through role-play or short skits to portray the economic context in which certain theories were developed. Such interactive activities
would hopefully aid in information retrieval and provide a student with a more concrete grasp of abstract material.

As discussed above, there are several channels through which these activities can improve learning. First, as Willis (2010) explains, when students get up and move, dopamine levels increase, which enhances the capacity to learn. Second, each activity presents an economic concept in a novel way. Use of novelty has been documented as an effective pedagogical practice (Willis 2010, Pellegrino & Hilton, 2012, p. 9). Third, several of these activities require students to interact with each other and create a space for social learning (Willis, 2010; Pellegrino & Hilton, 2012; Kober, 2015). Finally, there is likely a positive effect from humor, as many of these activities invoke laughter, and at the very least these activities help create a more positive and relaxed learning environment (Garner, 2006; Willis, 2010; Pellegrino & Hilton, 2012).

**Trade Offs and Limitations**

Including body-engaging activities in an economics classroom is not without trade offs and limitations. The issue of time has been noted above. While these activities are intended to complement traditional lectures, there is also a degree of substitution that takes place. If a concept can be introduced or reviewed via a body engaging activity then less ‘chalk and talk’ time on this subject is required. If students feel that they need more time listening to lectures, alternative resources such as recorded lectures can easily be made available and accessed outside of class time.

Instructors with classes of large numbers may have problems implementing interactive activities. Providing clear instructions and explanations to students in advance can help with class coordination. Another solution is to utilize teaching assistants to make implementation of such activities more manageable.\(^\text{10}\) Student engagement exercises can cause confusion if students are unclear about the objective of the exercises. Time must be set aside before and after the activity to make sure the main objective of the activity is understood.

Another important issue to consider is student capabilities. For example, if there is a student in the class with a physical disability, the instructor should be conscious of what activities are chosen to avoid alienating the student with the disability or preventing them from participating. Many of these activities could be adapted depending on the specific physical disability of the student. For example, in cases where a student is visually impaired, the student can work with a three dimensional tactile graph instead of writing on the board.\(^\text{11}\) For a larger discussion of the application of Universal Design Learning to college classrooms see Scott and McGuire (2017).

\(^{10}\) Dr. Mary Hansen from American University has had success-utilizing TAs for successful engaging activities in a large classroom setting. For more guidelines on interactive learning in a large classroom setting see Bransford et al. (2000).

\(^{11}\) As a graduate student in collaboration my advisor, Mary Hansen at American University, I created tactile graphs with moveable parts for an online microeconomics course for students who were visually impaired.
Finally, the instructor’s preferences and objective of the course plays an important role in the decision to incorporate body-engaging activities. We acknowledge that not all instructors may be comfortable including movement into the class and recommend that instructors find pedagogical interventions that align with their preferences and course objectives.\textsuperscript{12} For example, instead of body movement, some instructors may incorporate music as a novel way of representing a concept and means of creating a relaxing and positive environment (Willis, 2010, p. 54). We also acknowledge that students respond differently to different pedagogical approaches. Sensitivity to the diversity of cultural backgrounds, personalities traits and learning styles of students is important. Utilizing a variety of different pedagogical approaches is important for the creation of an inclusive classroom environment (Chavez, 2007).

**Student Perceptions**

In theory, the effectiveness of body-engaging activities in the learning process could be evaluated with an experiment in which there is a control and a treatment group. Unfortunately, setting up such an experiment was not possible given the selection bias created by the registration process at Franklin and Marshall College. Furthermore, given the expectation that these activities are in fact useful for learning, there are ethical implications for intentionally teaching one class without these activities. For a longer discussion of the limitations of experimental and quasi-experimental design for evaluating learning see Sawyer (2014).

Students’ perceptions of the teaching process and learning experience provide some insights into the effectiveness of new pedagogical techniques. The use of student evaluations as measure of teaching effectiveness is at times viewed with skepticism, as several factors such as the instructor’s personality, difficulty of the course, and expected grade may affect student evaluations. In a review of research on student evaluations, Benton and Cashin (2012) acknowledge that interpretation of findings is complex, yet summarize the literature as follows,

“Nonetheless, the multi-section studies show that classes in which the students gave the instructor higher ratings tended to be the ones where the students learned more (i.e. scored higher on the external exam).” (Benton & Cashin, 2012, p. 4)

Still, given that pedagogical practices in my courses include a wide variety of methods, such as incorporating student discussion, in class practice problems, and connection of theory to student experiences, it is difficult to isolate the effect of body-engaging activities in particular. Acknowledging these limitations, we use the student evaluations as a starting point for analyzing teaching effectiveness. We consider student evaluations from five different sections of my microeconomics class, taught in the fall of 2014, spring of

\textsuperscript{12}McDonough, Forgasz, Berry, and Taylor (2016) conduct a self-study of embodied pedagogy as teachers. They explore what barriers exist not just among students but among instructors as well when moving toward an embodied pedagogical approach (McDonough et al., 2016).
2015, and fall of 2015. Each section of the course ranged from 19 to 22 students, primarily comprised of sophomores and juniors who are either economics majors or minors.

Using a scale from one to five, one being “Not clearly at all” and five being “Very clearly,” students were asked, “How clearly did the instructor present the course material whether through lecture, class discussion or other activities?” The average score across all sections of the course was a 4.4 out of 5. In four of the five course sections, student evaluations were more favorable than the college overall and for one section student responses were on par with the college average.13

For the question, “Please characterize the instructor’s performance in the following terms: Quality of exercises and assignments” the average response was a 4.2 out of 5.

Finally for the question, “To what extent did the instructor involve you as an active participant in the learning process?” the average response was 4.6 out of 5.

In addition to quantitative evaluations, we provide example comments selected from the evaluations:

“Professor Roncolato engaged the class through interesting exercises in class that were well received by the students”

“….. some activities were always involved in class which made us relaxed and more eager to study….”

“It was really helpful that instead of just lecturing we would do group activities or draw graphs on the board to reinforce the material.”

“You had no choice but to be active in Roncolato’s class. Having us get up every so often to sketch a graph really helped keep my attentiveness at its max.”

Many other comments of a similar nature were made in the evaluations. There were only two students who expressed negative reactions to the amount of standing up and moving that occurred in the course. The majority of the students made positive comments both in written evaluations and verbal feedback about the course.

Again, as discussed above, such activities and classroom structure is not without limitations. Covering the appropriate amount of course content and preparing students for future course work, while making the class interactive and accessible, is an ongoing challenge. To address this concern, we turn to student’s perception of their intellectual development.

The student response to the question, “To what extent did this course enhance your intellectual development?” was higher than the college average for all sections of the course.

13 A graphically representation of the comparison with the college-wide responses is available upon request.

©2017 All rights reserved.
To verify these results, a few comments are selected among similar statements from the evaluation forms:

“By far the most material I have learned from an economics course at F&M, Junior, required for major”

“I learned a lot, feel prepared to continue to more advanced material.”

“The course enhanced my intellectual development a lot by all the creative activities and energetic class atmosphere.”

There were only four negative comments out of 92 total evaluations related to the effectiveness of the course and amount of content covered.14

Conclusion

Many other disciplines, especially in STEM, have embraced the scientific research on the advantages of active learning and developed creative pedagogical methods to engage students during class. Economic instructors on the high school level have developed ways of engaging students through dance and a few undergraduate instructors have developed other innovative ways of engaging students in their economic courses (Luccasen & Thomas, 2010; Buchs & Blanchard, 2011; Watts & Schaur, 2011; Vachris & Bohanon, 2012; Morgan, 2012; Zhang, 2012; Green et al., 2015). Still, the majority of instructors in the field of economics are reluctant to step away from traditional lectures (Watts & Schaur, 2011; Goffe & Kauper, 2014). In this paper, we outline the experimentation with body engagement in an undergraduate level economics classroom in hopes that it will inspire other instructors to use and or develop creative and innovative methods to improve learning outcomes.

We have discussed several body-engaging and interactive activities for college-level economics classrooms. The goal of these activities is to improve retention and understanding, increase students’ alertness and interest in the subject, and create a more positive and relaxed learning atmosphere. While we were unable to conduct an analysis to isolate the channels through which learning took place, we do provide some evidence of effectiveness from student evaluations.

We make a key contribution to the literature by exploring innovative pedagogical techniques within a discipline that has been resistant to change. In addition to providing examples for economics instructors, our work contributes to the existing interdisciplinary work on the power of the mind body connection. We encourage instructors to find ways to connect movement to content, however we find that even when students’ movement is not explicitly connected to content, there are advantages to physical activity. Our hope is

14 These four students noted that they had covered similar material in a course taken in high school.
that this work will push instructors across all disciplines to explore body engagement as a way to enhance learning.

References


Hall, R., & Nemirovsky, R. (2012). Introduction to the Special Issue: Modalities of Body Engagement in Mathematical Activity and Learning, Journal of the Learning Sciences


Milman, N. B. (2012). "The flipped classroom strategy: What is it and how can it best be used?" *Distance Learning*, vol. 9, no.3, pp. 85.


The Feasibility of Flipping: An Exploratory Analysis of the Flipped Classroom in a Developing Country

Alana D. D. Griffith

University of the West Indies, Cave Hill, St. Michael, Barbados

Abstract

There has been an increased demand on educational institutions to provide students with value for money. The sociology course SOCI3035 Caribbean Social Problems with 111 students was transformed to a fully flipped course replacing several face-to-face lectures, tutorials and assessment with online versions as homework. Face to face lecture time featured small group discussions on content posted online. The need for exploration of student perspectives on the flipped classroom were important given the unique context in which it was implemented. That the University of the West Indies Cave Hill is located in a small island developing state, that its Blended Learning Policy had only been recently approved, Barbadian students had to begin paying tuition fees and the new GPA instituted a year prior presented a critical juncture for the introduction of new methods. Significantly more students indicated they would take another flipped class and their participation in F2F discussion in large classes increased using the flipped approach. Students also felt the breakout discussions of the flipped approach compensated for the large tutorial groups whose registration had moved from 20-25 students to approximately 40 students. It was found that the approach contributed to enhanced learning for the students.

Keywords: Flipped classroom, developing countries, sociology, student performance.

The use of technology and online teaching tools alone are insufficient to improve student learning. Rather, it has been argued that engagement is essential for student learning (O’Flaherty & Phillips, 2015). Blended learning and by extension flipping the classroom not only represent alternatives to the traditional classroom but also to fully online programmes. Crews and Butterfield (2014) posit that some courses, student audiences and programmes of study are not compatible with fully online programmes. The inverted or flipped classroom as a pedagogical method allows the use of class time to focus on knowledge application and allows any misunderstandings and errors in thinking by students to be clarified by the lecturer at that point (O’Flaherty & Phillips, 2015).

1 Corresponding author’s email: alana.griffith@cavehill.uwi.edu
While it cannot be considered as new (Herreid & Schiller, 2013), the flipped classroom can be described as “an educational technique that consists of two parts: interactive group learning activities inside the classroom, and direct computer-based individual instruction outside the classroom” (Bishop & Verleger, 2013) that utilises videos as an outside activity of the classroom. It has been found by Cohen et al. (1981) that video lectures slightly outperform face-to-face (F2F) lectures. This is not to say that having a flipped classroom negates the F2F lecture completely, as it has been pointed out by Gilboy, Heinerichs, and Pazzaglia (2015), the direct instruction method is critical when students are tabula rasa. It has also been cautioned that assigning reading outside of class time and in-class discussions based on the readings are insufficient in considering a class to be flipped. This conceptualisation is too broad and affects the evaluation of the efficacy of the approach and there is possibly a failure of students to complete the assigned readings (Bishop & Verleger, 2013).

Institutional Context

The fifty-three year old University of the West Indies (UWI) Cave Hill Campus is located in the small island developing state of Barbados. Teaching of Sociology courses involves two lecture hours and one hour of tutorial. Traditionally, the Sociology lecture is instructor led and the tutorial involves more student discussion and student-led activity. A Moodle platform called eLearning is used to facilitate blended learning at the Campus and this has several components that can be used for instruction and assessment. Of import to the UWI is the point made by O’Flaherty and Phillips (2015) that the flipped approach offers “a means of delivering cost-effective, student centred curricula … in institutional structures that favour faculty research over student learning” (p. 86). Once the initial preparations are made for the flip, there is more time for the lecturer to work with students individually (Blair Maharaj, & Primus, 2015) or even dedicate the extra time to research. The course that forms the case for this research SOCI3035 – Caribbean Social Problems is an undergraduate, Level II/III course generally taken in final year by Sociology majors. In the survey conducted for this research when students were asked about their awareness of the flipped classroom approach before taking the flipped SOCI3035, 70.6% responded in the negative. Of the 29.4% who answered yes, 0.04% or 1 student indicated they knew it from at work. Twenty-one others (99.96%) were aware of the approach from taking a course where the method was piloted by this author during Semester II of Academic Year 2014/2015.

The application of the flipped approach has generally been used with science, technology, engineering and mathematics (STEM) courses. After a careful review of the literature one has to concur with Forsey Low, and Glance’s (2013) position that there is still limited research into flipping of the sociology classroom. Recent research on flipping has utilised an Arts class, more specifically a History of Landscape Architecture as its subjects (Newman, Kim, Lee, Brown, & Huston, 2016).
Facets of Feasibility

There are several factors that can be considered when assessing the feasibility of the flipped classroom at the UWI Cave Hill. These include but are not limited to resources (physical, human, financial), technological environment, acceptance of the method by students and time required for its implementation. Two major features related to the technological environment explicitly facilitate the introduction of the flipped approach into Sociology classes. These are the University’s policy on blended learning and the technological infrastructure available. Technological lag in developing countries could exclude Universities in such contexts from pursuing some delivery methods. Internet access and use is associated with wealthier emerging and developing nations, young adults, the higher educated and English speakers more likely to access the Internet (Pew Research Centre).

A Policy on Blended Learning

The approval of the blended learning policy at UWI Cave Hill by Academic Board on October 9th, 2014 was crucial to the successful implementation of a flipped approach as it formally established blended learning as an appropriate model for instruction at the Campus. This meant that faculty could legitimately proceed without fear of obstruction from ‘traditionalists’. It represents a dramatic shift in the pedagogy at the UWI Cave Hill as there is still a dominance of F2F instruction. The implementation of the flipped class in SOC13035 came some 11 months after its approval. One potential challenge in using the flipped approach relates to the timetabling at UWI and the calculation of contact hours. The pre-recorded lectures and online assessment used in the flipped classroom while allowing for more interaction and discussion during F2F contact meant that the present requirement of 2 lecture hours and tutorial sessions based on total course enrollment was a potential restriction. Flipping the classroom also meant a transformation in one’s role as the lecturer from only standing at the lectern and speaking to going around to the various discussions or breakout groups. As Gilboy et al. (2015) would describe it, one functioned as both “sage on the stage and guide on the side”.

Internet Penetration

The Internet can significantly impact the quality of the blended course delivery whether it is simply a case of access or the speed and quality of connection. The flip also came at a time when nationally the technology and infrastructure were in place to facilitate online teaching and learning. Examination of Table 1 shows that the prevalence of Internet use in Barbados is substantially greater than it was 16 years ago.

Table 2 shows Internet subscriptions and category of Internet access of the population of the island. This is important, for as mentioned before Barbados is a small island developing state and its Internet penetration rate at 76.11% is substantially higher than the global average for developing countries of 35.3% and that of the Americas (66%) (International Telecommunications Union, 20165). The islands of Jamaica and Trinidad where the Mona and St. Augustine sister campuses are located have internet penetration rates of 42.2%
Table 1: Internet Use in Barbados 2000 – 2014.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Users in Barbados per 100</td>
<td>4.0</td>
<td>52.5</td>
<td>65.1</td>
<td>76.7</td>
</tr>
</tbody>
</table>

Source: World Bank World Development Indicators

Table 2: ICT Statistics for Barbados Ending December 2015.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Internet subscribers</td>
<td>172,716</td>
<td>305,456</td>
<td>191,823</td>
<td>246,296</td>
<td>213,345</td>
<td>211,123</td>
<td>196,533</td>
<td>254,951</td>
<td>240,115</td>
</tr>
<tr>
<td>Fixed Internet subscribers (dial-up)</td>
<td>77,158</td>
<td>628</td>
<td>885</td>
<td>1,258</td>
<td>1,213</td>
<td>1,852</td>
<td>12,795</td>
<td>19,084</td>
<td></td>
</tr>
<tr>
<td>Broadband Internet subscribers</td>
<td>66,969</td>
<td>23,999</td>
<td>67,796</td>
<td>66,884</td>
<td>60,643</td>
<td>56,190</td>
<td>51,263</td>
<td>49,216</td>
<td>47,133</td>
</tr>
<tr>
<td>DSL subscribers</td>
<td>52,730</td>
<td>57,121</td>
<td>57,592</td>
<td>58,538</td>
<td>53,441</td>
<td>50,486</td>
<td>41,012</td>
<td>28,029</td>
<td></td>
</tr>
<tr>
<td>International Internet Bandwidth (Gb/s)</td>
<td>54,148</td>
<td>80,750</td>
<td>11,110</td>
<td>8,275</td>
<td>7,505</td>
<td>4,605</td>
<td>3,540</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Barbados Telecoms Unit

and 69.2% respectively (ITU, 2016). The UWI Open Campus delivers fully online courses.

A brief survey administered at the start of the course to determine the Internet access of students found all students having access in various ways. In addition to having the Moodle platform administered as eLearning, the Campus also has open WiFi and, computer labs accessible by all students. In the same survey administered at the start of the course the students’ greatest fear or reservation with the use of online technology in the course was not having internet access at a critical moment. When all of these factors are considered along with the licensed software and technical support available to lecturers on the Campus the flipped classroom becomes a feasible option.

---

2 ICT Statistics for Barbados Ending December 2015
accessed 2016-06-27

©2017 All rights reserved.
Another Factor: Time

When the course that forms the subject of this research was flipped it required the addition of other video lectures, online discussions, online quizzes and other online activities. The move to this transformative use of technology involved remodeling the course significantly. Prior to this move, the use of technology in the course SOCI3035 in 2013 was in line with enhanced use of technology as the eLearning platform was used to disseminate course materials and communicate with students. While there was one video lecture that replaced a F2F lecture and an accompanying online discussion, the use of technology did not result in any significant reduction in F2F instruction. The flipped classroom saw approximately 65% of course activity move online. Flipping was more time consuming in the preparation of narrated PowerPoint video lectures, creation of online question banks, and the assessment of online discussions. It must be stated that the time ordinarily spent in F2F tutorials was then spent moderating and/or grading online discussions.

A flipped classroom can be implemented in several ways. In acknowledging that flipping involves much more than the insertion of video lectures into course content. Students should have enough time to read material and make any notes prior to the class. The SOCI3035 flip consisted of 3 video lectures out of 10 total lectures; 3 online discussions; 2 online quizzes. Online assessment represented 30% of the coursework grade or 15% of the total mark.

Method of Flipping in SOCI3035

1. The pedagogical approach was explained to students in the first lecture and as mentioned before a brief online survey was used to determine Internet access before lectures commenced. It should be mentioned that students in the course also used an online feedback tool to obtain student input into the selection of topics to be covered in the course. This possibly primed them for the extended use of eLearning in the course, the feedback tool and garnered a sense of investment or control in the course, aiding in engagement.

2. Readings or links to readings were posted on eLearning no less than a week before class. The references to these were as identified in the course syllabus.

3. Being a blended course, classes were either F2F or online.

F2F Class Organisation – In the event of a F2F lecture, the first hour of the lecture was spent in break out discussions. These peer-to-peer breakout groups consisting of 4-5 students facilitated group based interactive learning activities inside the classroom. They engaged in discussions guided by three questions on the scheduled topic. The questions were issued at the start of the class and were aimed at explanation and where possible application of information. Given that the knowledge acquisition should have preceded the class via watching assigned videos and reading assigned literature. The flip allows students to process information at lower taxonomic levels (knowledge acquisition) prior to class. The lecturer passed around (circulated among groups) in the first hour of the 2 hour lecture session to each group to hear the discussions on the questions and corrected...
any misunderstandings as they arose. This was bolstered by coursework questions that targeted application, analysis and evaluation. A 20 - 30 minute ‘lecture’ was given that ensured any muddy points were clarified and any key points that should have been taken away were made.

**Online Class Organisation** – Readings for online lectures were similarly posted a week before the lecture appeared on eLearning. Topics covered in narrated PowerPoint (video lectures) did not have a repeated lecture component delivered F2F. Online discussions replaced F2F tutorials that would have either covered topics covered in F2F or online lectures. On these occasions like those of F2F lectures, students were not required to physically have to attend class for tutorial that week. Online discussions remained open for one week.

Online discussions based on the video lecture followed a similar format to when only readings were provided where students would have to address three questions. Given the size of the class, students were enrolled into separate groups not visible to each other for the discussion. As student discussions progressed each group would be moderated to ascertain their progress with the problem, and determine any aspects of the topic that were giving them trouble. At this point any helpful comments were provided or further stimulating questions about their responses were asked to obtain greater clarity about the post(s). Unclear areas were noted to clarify within that group and share the clarification with the general class.

**Rationale of Study**

In its Budgetary Statement of August 13th, 2013 the Government of Barbados announced that from academic year 2014/2015 it would no longer pay the tuition fees of Barbadian students\(^3\). Since the implementation of the policy there has been a dramatic decline in enrollment, especially mature students. This has led to an adjustment to the scheduling of classes. The SOCI3035 course had an enrollment of 174 students in Academic Year 2013/2014. The average size of SOCI3035 after the introduction of the policy was 110 – 115 students. The average size for a tutorial in the past was 15-20 students with some tutorials on occasion having 25-30 students. The adjustments in academic year 2015/2016 have seen tutorial sizes increase to 40 students and upwards. The consequence of this tuition policy is that while there was a decline in the demand on the institution vis-à-vis student enrollment ratios, there was an increased demand by students for value for money.

Student evaluations of my sociology courses generally indicated that students were finding the reading list difficult to manage. In conversations with colleagues they often expressed concern about a lack of reading on the part of students. Based on personal experience in the classroom one felt as though while students were physically present and much time was spent on explaining material and soliciting interaction by asking questions that a connection was still not being made with them or they with the lecturer or the course material. So that while the student evaluations for SOCI3035 for Academic Year 2014/2015

\(^3\) Government of Barbados. Annual Budgetary Statement 2013


©2017 All rights reserved.
the students indicated that they believed the lecturer tried to encourage participation this was not felt.

More specific to this research, is the potential impact of the reduction in the number of tutorials offered, and a concomitant increase in the enrollment in each tutorial could decrease the level of interaction among students and the lecturer. For while efforts were made in the lecture to encourage student participation, smaller voices could easily be lost. The increased student to lecturer ratio also translates to a reduced potential to spot the struggling student. However, it is possible that students may find the flipped approach one that allows for greater knowledge transfer and interaction in the absence of the usual tutorial discussions. Furthermore, students may find the utilisation of a flipped approach in a three-hour lecture session a more productive and beneficial use of time than the present use of time given the combination of tutorials and lecture. Technological resources aside, while the main question in this research is, “is flipping the classroom feasible for teaching large Caribbean sociology classes?”, there are several attendant questions. These questions ask: Is there demand for the method by students? Is there acceptance of the method by students? What aspects of the approach do they like? Does flipping the classroom adversely affect the academic performance of SOCI3035 students?

This research aids in determining the impact that a flipped classroom approach can have on university level student engagement in large class contexts. Additionally, it would provide some insight into the efficacy of the model given the transition that the classes are undergoing. Most efforts at flipping classrooms are concentrated at primary and secondary level education institutions. Questions have been raised about the applicability to and efficacy of the flipped approach with large class sizes. Blair et al. (2015) in contending that most research on the flipped classroom focused on student experience and not the enhancement of examination outcomes investigated whether the flipped classroom improved the learning experience of students in relation to exam performance and student perception. The research conducted between two cohorts of undergraduate engineering students in the same course at the UWI St. Augustine Campus in analysing the student evaluations and pass rates before and after the flip found no significant impact on performance as a result of the flip (Blair et al., 2015). Furthermore, it was found that there was a decline in attendance of F2F classes with the introduction of the flip but there was an improvement in student perception of the engineering course MENG3015 – Material Technology (Blair et al, 2015). In assessing the student opinions of the flipped classroom learning environment Gilboy et al. (2015) utilised anonymous surveys that were distributed in class or online with a response rate of 72%. Students’ appreciation of the flipped approach for greater control over their learning experience was clear as it has been found that they liked the ability to work at their own pace and time (Gilboy et al, 2015). Experience of other researchers using the flipped classroom in a large class found an increased level of interaction between the lecturer and students (Neuman et al, 2016).

In contrast Herreid and Schiller (2013) posited that there was less satisfaction of students of the flipped classroom structure initially. Therefore, a potential challenge in using the flipped approach is that students may be apprehensive. Berrett (2012) has suggested that students may not be fond of flipping as they had to take greater responsibility over the

©2017 All rights reserved.
learning process and not simply write notes provided by lecturers. That is, it requires greater participation and engagement on their part. This dislike can be reflected in student evaluations as it has been pointed out that student evaluation scores for the same lecturer decline by approximately half when the flipped method is used (Franklin as cited in Berrett, 2012).

While it has been found that when compared, students who spent more time engaged with online activities had better grades than those who did not (Neuman, 2016) there is still a dearth of research on the impact of the flipped class on student performance. In calling for future research it was suggested that the examination of grades from assessments from prior to the use of the flipped approach versus the grades after implementing a flipped approach should be examined for courses (Gilboy et al. 2015). This research aims to fill this gap in the literature. This research adds to the growing body of literature on flipped classrooms for student engagement purposes in large university level classes. This research also attempts to identify the features of the online activity students liked the most as well as their feelings on the breakout discussions.

A critical part of the assessment of the feasibility of flipping is the demand for the method by students and its acceptance by students. Students logically would not wish to know that a method of instruction used by a course lecturer negatively impacts on their performance in the course. Such information can be gleaned from the use of a survey.

Methodology

The course at the centre of this research, SOCI3035 – Caribbean Social Problems had a student enrolment of 113 and 111 in academic years 2014/2015 and 2015/2016 respectively. While it has been said by Berrett (2012) that class size is not a critical factor in seeking to implement a flipped classroom, experience with SOCI3035 and time allocated for class meant that limited time could be spent with some of the small discussion groups. The size of the class also meant that more energy had to be expended in facilitating the discussions and general preparation was greater.

An online survey was conducted at the end of the semester 2015-2016 academic year to obtain the opinions of students in SOCI3035 on the approach. The online questionnaire administered on the eLearning course page comprised of twenty-four (24) questions of which eleven (11) were closed ended questions. A list of the questions is found in Appendix 1. Students were told that the survey served to gather additional information that wouldn’t be obtained using student evaluations about their opinion of the method and were given one week to complete the survey. Responses to open-ended questions were assigned functional descriptions based on commonality of the theme and then grouped under that theme. The findings of the survey were analysed in addition to results of the student evaluations of the same cohort and the preceding cohort.

Coursework, examination and final marks were obtained from the Cave Hill Online Gradebook and any cases with missing marks were excluded from the analysis. An independent samples t-test was then performed on the marks of students for each of these cat-
egories of marks. The independent samples t-test was used as the comparisons were made between two cohorts of the same course and the aim was to determine whether there was a significant difference in the marks of the two groups.

**Flipping: Past Experience & Preferences of Students**

The online survey had a response rate of 76.6% as eighty-five students of the 111 Caribbean Social Problems students replied. Of these 29.4% (N = 25) had an awareness of or experience with the flipped approach. Review of the responses of students who were aware of the flipped classroom approach found that 88% (22) of these students’ awareness was due to learning of the method through other courses previously taught by this author in Semester II of Academic Year 2014/2015 when the flipped approach was piloted. Overall 81.2%, of the students felt that given the size of the class that the flipped approach was useful.

When online activities were ranked according to preference, majority of the students preferred the online lectures (42.3%). Online discussions and online quizzes found favour with 11.8% and 11.6% of the students respectively. The second largest group of students preferred having the lecture and reading material posted online before the class (35.3%) with some 88.2% (75 students) indicating they were able to prepare the reading before attending class. Ninety-four percent (94.1%) of students found having reading material available before the lecture useful. Using a z proportion test it was found that a significant proportion of students (z = 12.47 p<0.05) found that having the reading material available before the lecture useful compared to those who did not. Generally students expressed that they felt more prepared for the lecture and better able to understand the material and topic. This is captured in student responses like “They (the availability of materials before class) made me critically evaluate the social problem being discussed, making me more knowledgeable when it was time for class.”

In considering the feedback on completion of reading and its significance means that the flipped approach results in more class preparation by students. The utility of the reading material and lectures being available before the class centred around “pre-knowledge on the topic” or an introduction of the topic to be done in the lecture [F2F class] and then clarification and better understanding from the class. It must be said that in the student evaluation for the flipped class some students indicated that they liked least the amount of reading in the course. It must be recalled that prior to the introduction of the flip students were not pleased with the amount of reading that had to be completed. However, given the nature of flipping it is possible that students perceived an increase in the reading.

Investigating whether the blending of the course impacted on participation in discussions, 38.8% of the students indicated that they would normally participate in the F2F discussions in large classes under the traditional lecture format. The data revealed that the breakout discussions that were utilised as part of the flipped class encouraged participation in class discussion.
“The flipped approach fosters a different type of discussion and allows for more face to face time with the lecturer”. SOCI3035 Student response

“It gives us as students an advantage since there is interaction between the lecturer and students in smaller groups instead of an entire lecture room, this gives everyone a chance to discuss anything they may not understand”. SOCI3035 Student response

Seventy-four percent (74.1%) of students thought that the breakout/discussion groups before class encouraged their participation in class discussion versus the 61.2% who normally participated in F2F class. In explaining why they thought the discussions were helpful it is clear that the flip facilitated peer assisted and cooperative learning. Some respondents explicitly stated, “you get to learn from your peers and hear different perspectives”, “you became aware of some of the others [students’] thoughts about the topic and … also have your input into the topic”. The “views of my [their] fellow classmates were thought provoking and we [they] were able to share our [their] different opinions”, allowing them to “share how we [they] understood what we [they] read before class and also correct and learn from each other”. Approximately 69.4% of students found the breakout discussion groups helpful as a result of the peer to peer teaching and learning that occurred, the greater awareness of other perspectives from peers and more in-depth understanding as these discussions were said to encourage critical thinking. One respondent specifically stated that “the break out session was very helpful for me, I had to read to participate, which will help me for the final exams and I heard the views of my colleagues”. Of the breakout discussions another respondent indicated that “sharing of ideas helped to further analyse the concepts learnt. We [They] also got to clarify misconceptions.”

Given that the breakout discussions were key to the flip, the positive responses from the survey are encouraging. If pressed a little further it was found that some students preferred the flip as the small groups facilitated their participation for several reasons. For instance one student wrote of “A fear of speaking in front of large groups. The fear of being wrong or judged by the rest of the class. [They] Always had questions but was blocked by the fear of asking in front of a large group”. Several others expressed similar sentiments. Some also indicated that large classes felt uncomfortable, didn’t facilitate learning, do not give individuals a chance to talk and felt the large tutorials were “too big to generate appropriate discussions needed for such a heavy course load”. The breakout discussions were also thought to prompt students to read. A latent effect of the breakout discussions identified by some of the students was the opportunity to meet and speak with new people, building of relationships and beginning of discussions that persisted beyond the in-class discussion. One student remarked “it brought a better sense of unity within the course and … formed bonds of friendship that ordinarily would not be formed based on normal circumstances.”

Evident in Table 3 below, the discussions facilitated by the flip did more to encourage student participation, with the online discussions having more favourable responses than the other two formats for discussion. On the question of given the size of the class wheth-
er the flipped classroom method was useful in encouraging participation and delivering material 81.2% of the students indicated yes. Did the flipped classroom frustrate students sufficiently to deter them from taking another flipped class? Fortunately for this researcher 76.5% of students indicated they would enroll in another course using a flipped approach.

As mentioned before, discussions mainly occurred in tutorials in the traditional format of the class although class participation was solicited in the lecture. When asked about the impacts on their participation in F2F classes since the changes to enrolment, several students stated that it was “too big a class”, “tutorials were simply too large”, “the large number [in the class] and the room the tutorial was in … was too small for the amount of people”, “the time was too short” due to the number of students.

Table 3: Discussion Participation Comparison.

<table>
<thead>
<tr>
<th>Discussion Format</th>
<th>Traditional Class</th>
<th>Breakout Group</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>38.8%</td>
<td>74.1%</td>
<td>88.2%</td>
</tr>
<tr>
<td>NO</td>
<td>61.2%</td>
<td>25.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Further exploration on the ability of the breakout discussion groups used in the flip to compensate for the large tutorial groups saw majority of the students believing that it did. One explicitly stated that “it allowed the lecturer to get her message across while at the same time using students to do so, all that was left for her to do was to clarify or elaborate.” Not all feedback was positive as four respondents indicated that they thought the discussions were annoying, noisy and unstructured and confusing. Although the flip was clearly explained in the first lecture this may point to a lack of understanding of the model or a fear of the unknown. An investigation of this is beyond the scope of this paper and presents an area for future research.

The more important points here are for those who were coded as responding negatively and ambiguously. Among the responses some indicated that “everything felt like a lecture”, “group members were a bit far from each other and you could not hear what was said” and “time goes fast”. These three points raise some important issues. That everything felt like a lecture may mean that learning was occurring and the time passing quickly may mean that students were so engrossed in the activities that they lost track of time. The layout of the lecture theatre may not have been conducive to free movement and breakout discussions. Some students lamented the lack of preparation by group members impeding the discussions and a fear that as the discussion was not led “by someone who could answer questions when confused”. The survey also revealed that some students
were not clear on the structure of the flipped class as the lecture seemed rushed while others perceived that it was a method for the lecturer to determine whether they were reading and what they knew. This meant that although some students had difficulty related to the method as one for instruction that it was serving as a good substitute for the traditional lecture.

Five functional categories were identified in student explanations of their enjoyment of the online activities. These were (i) accessibility/flexibility/convenience, (ii) Additional opportunities for discussion and assessment, (iii) more time for in depth exploration of topics (critical thinking (iv) feedback/peer-to-peer learning and (v) enhanced learning. These data were extensive and necessitate in depth exploration of student attitudes to online activities. This too is beyond the scope of this article, which explores whether the flipped approach is practical and acceptable for teaching sociology.

Data gathered in student evaluations changed between the academic years 2014/2015 and 2015/2016 as the questions changed. However, when the evaluation from the flipped class was reviewed it was found that in the category of learning activities with the lecturer that on a scale of 1-5 with 1 being strongly disagree and 5 being strongly agree the average was 4.28. The highest rated category was students feeling that the learning activities encouraged them to interact/collaborate with other students (4.41). On the other hand, the variety of activity and level of interest and stimulation equally averaged 4.36. An average of 4.25 was recorded for students who thought the learning activities helped them develop the knowledge, attitudes and skills specified in the course learning outcomes. Even though the traditional mode of delivery was not used, students still rated the course design favourably with the ease to follow the progression from one course topic to another averaging 4.31. The overall course score for the Lecturer in the flipped classroom was 4.28 compared with the GSSW departmental average of 3.89 and the FSS average of 3.95. The fact that student ratings for the quality of the learning experience averaged 4.45 and all ratings for the course were higher than GSSW and FSS averages lends support to the flipped class approach by students.

Although the structure of student evaluations had changed, the introduction of the flipped classroom did not negatively affect the rating of the course or the lecturer. These results are not completely surprising as student evaluations from classes where the flipped approach was piloted by this author, students expressed support for the method apart from the perception of a heavy reading load, with one indicating that it was too much work.

**Class Attendance**

Comparison of the student evaluations for the course are rated on a scale of 1-5 with 1 representing no attendance at classes, 2 – less than 25%, 3 – 25% to 50%, 4 – 51% to 75% and 5 – 76% - 100% attendance. It was found that mean student attendance was higher for the flipped class at 5 with 87.5% of the class indicating they attended 76-100% of lectures than in the preceding year when the mean attendance was 4. The survey results similarly found an average attendance of 86.4%. In any event this augurs well not
just for the flipped approach but the class as it is timetabled on Fridays 16:00 – 18:00 or prime unwind time for students.

Course Performance 2014 vs 2015

Figure 1 below compares the final grades for SOCI3035 students in Academic Years 2014/2015 and 2015/2016. It is evident that there was an increase in the percentage of students achieving grades A-, B+, B, B- and a reduction in the percentage of students achieving grades of C+ and C. The percentage of students failing the course moved from 18.7% in 2014 to 7.3% in 2015. There was also an ‘improvement’ in the quality of failures with a reduction in failures below 45 marks or Grade F2 with only 2 students out of the 8 failures achieved a grade F2.

Figure 1: Comparison of Final Grades of Students 2014 & 2015.

When grades are examined for the various components of the course it is seen that there was an increase in the mean mark achieved for the coursework, exam and by extension the final mark achieved for the course (Table 4). The average performance in the coursework remained stable within a grade B performance (65-69). The stability in coursework mark performance is worthy of note for several reasons. Firstly, the coursework weighting as a percentage of coursework changed from 40% in academic year 2014/2015 to 50% in academic year 2015/2016. Secondly, the coursework composition changed as the course was blended. In 2014 the coursework comprised a written paper worth 25%, a tutorial presentation worth 10% and a discussion mark of 5%. In academic year 2015/2016 the coursework composition and marks changed with a written paper worth 25%, online quizzes worth 10%, online discussions worth 5% and a presentation worth 10%. Given the coursework preparation especially online quizzes that were not complet-
ed under examination conditions students would have potentially had the opportunity to collaborate or even consult material for answers. That the marks remained stable speaks to the integrity of the online assessments. The average performance in the exam changed from a grade C (50-54) to a Grade C+ (55-59) while the overall or final grade performance moved from an average of 57 or grade C+ in 2014 to an average of 61 or grade B- in 2015.

<p>| Table 4: t-test Results Comparing Performance of Students: Group Statistics. |
|---------------------------------|---|----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Year Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework</td>
<td>2014</td>
<td>111</td>
<td>65.3450</td>
<td>12.12145</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>111</td>
<td>67.2973</td>
<td>6.16529</td>
</tr>
<tr>
<td>Exam</td>
<td>2014</td>
<td>111</td>
<td>52.6897</td>
<td>16.11943</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>111</td>
<td>56.7748</td>
<td>17.09901</td>
</tr>
<tr>
<td>Final</td>
<td>2014</td>
<td>111</td>
<td>56.4865</td>
<td>12.59139</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>111</td>
<td>61.4685</td>
<td>12.52548</td>
</tr>
</tbody>
</table>

When analysed using an independent samples t-test changes in the coursework and exam marks were not found to be significant but a significant improvement occurred in the overall final grade \(t = -2.955, p<0.01\). It may be suggestive that the increased time for critical thinking in class may have led to some improvement in student performance. However, caution has been made against drawing such conclusions as the improvement in performance observed may be due to the abilities of the cohort.4

While the online survey did try to determine the demand for the flip by students, it was found that the question directed at obtaining this information was not as clearly worded as it should have been and this may have presented issues for students. So unfortunately on this point further research will have to be conducted. However, the closest indicator of the acceptance of students of the flipped approach was mentioned earlier and that is their willingness to take a flipped class again which majority of the class indicated.

**Conclusion**

A conclusion implies an end but there is much more that can be done to advance this research. Much of the contents of this conclusion therefore focus on next steps or further research that has arisen out of this research. However, it can be said to colleagues seeking

---

4 When an earlier version of this paper was presented at The UWI Cave Hill Teaching & Learning Symposium in 2016 Professor Clive Landis raised this as a potential factor influencing the results. This author is grateful for this comment.
ways to engage students, have them complete readings and impact negatively on student performance and perceptions of them and the course, the flipped classroom presents that option. Some developing countries have the capacity to implement a flipped classroom, it may be time consuming initially but with savings in time and electricity etcetera it may prove economical without any adverse effects on the grades of students. However as mentioned this is an area for further research. Future research should also investigate whether students feel the flip meets their needs and whether students perceive a difference in grades when the flip is used. Another concern of this lecturer is whether the flipped approach contributes to positive study habits by students. That is, do students who experience a flipped classroom approach continue to use the study or class preparation skills in classes without the flip?

While this paper examined coursework, exam and overall marks for the course and found a significant difference in overall marks, it is possible that this relationship may not maintain its significance if several cohorts preceding and after the flip are analysed. Future research on the flip in SOCI3035 should analyse at least 4 cohorts preceding the flip and 4 cohorts using the flip to determine whether the relationship observed in this research persists.5

Apart from technology, one of the biggest factors that may impact on the feasibility of flipping at the universities is the institutional culture. Institutions where faculty members do not also utilise technology or are apathetic to its use or even question the efficacy of such technologies, foster an environment that works against blended learning. The increased use of technology reduces the students’ apprehension of courses utilising such delivery. The flipped classroom and other blended approaches have the ability to help universities mitigate the declines in enrolment as they present other options for students who desire more flexibility in the learning process but still wish to have a F2F connection. Encouraging the use of technology functions two-fold in that while it enhances student engagement it also allows students to gain confidence in using technology in future studies that may be completely online as well as in the workforce.

References


5 This recommendation arose out of the previously mentioned feedback from Professor Clive Landis

©2017 All rights reserved.


ICT Statistics for Barbados Ending December 2015


UWI Cave Hill Blended Learning Policy
https://www.cavehill.uwi.edu/campusquality/resources/blended-learning-policy.aspx


Appendix - Questions from Online Survey

1. Were you aware of the flipped classroom approach to teaching before taking SOCI3035 Caribbean Social Problems this semester? Yes No

2. If yes, please state which course.

3. Rank the online activities according to the one preferred most.
   - online discussion; online quiz; online lectures; reading materials posted online before the lecture

4. Were you able to read any of the assigned materials online before attending class?
   - Yes No
5. What percentage of materials were you able to prepare before attending class? (0 - 100)

6. Did you find having the reading material available before the lecture useful?
   Yes  No

7. If you answered yes to the preceding question please explain how you found the availability of the reading useful.

8. Do you think that the break out/discussion groups before the lecture were helpful?
   Yes  No

9. Explain why you thought the break out/discussion groups before the lecture were helpful.

10. What percentage of face to face lectures did you attend? (0 - 100)
    What did you enjoy most about the online activities?

11. Are you a student who normally participates in face to face class discussions in large classes?
    Yes  No

12. Do you think that the break out/discussion groups before class encourage your participation in class discussion?
    Yes  No

13. Please explain the influence you think the break out/prelecture discussions had on class interaction.

14. Did you participate in online discussions?
    Yes  No

15. What was your reason for participating in online discussions?

16. Given the size of the lecture (112 students) do you think that the flipped classroom approach was useful?
    Yes  No

17. Why was the flipped approach useful for you as a student in a large lecture?

18. Do you think that the size of your tutorial affected your participation in face to face class discussions?
    Yes  No

19. What do you think impacted most on your participation in face to face tutorial discussions?
20. Do you think that the breakout/group discussions before lectures compensated for the large tutorial groups?

21. Please explain the reasons for your answer.

22. If you had to choose between a three hour lecture using a flipped approach or the current 2 hour lecture with 1 tutorial not using a flipped approach which would you choose?

23. Please explain your reason in the preceding question 20.

24. Would you enroll in another course that used a flipped approach in the future?
   Yes    No
Agile Manifesto for Teaching and Learning

Timothy C. Krehbiel\textsuperscript{1a}, Peter A. Salzarulo\textsuperscript{a}, Michelle L. Cosmah\textsuperscript{a}, John Forren\textsuperscript{a}, Gerald Gannod\textsuperscript{b}, Douglas Havelka\textsuperscript{a}, Andrea R. Hulshul\textsuperscript{a} and Jeffrey Merhout\textsuperscript{a}

\textsuperscript{a}Miami University, Oxford, Ohio 45056
\textsuperscript{b}Tennessee Technological University, Cookeville, TN 38505

Abstract

A group of faculty members representing six colleges at a public university formed a learning community to study the Agile Way of Working – a method of workplace collaboration widely used in software development – and to determine whether the concepts, practices, and benefits of Agile are applicable to higher education settings. After more than two years of study, experimentation, and reflection, this group found that its adaptations of Agile to higher education produced positive outcomes by increasing student engagement, encouraging students to take responsibility for their learning, enhancing the level and quality of collaboration, and producing higher quality deliverables. In this paper we propose an Agile Manifesto for Teaching and Learning that can be used to direct the work of higher education faculty in the classroom and beyond. Second, we describe our diverse experiences incorporating Agile tools and techniques into the classroom. Third, we present the results of a student survey concerning their experiences. Finally, we discuss our journey for adopting the Agile Way of Teaching and Learning.

Keywords: Agile, self-directed team projects, student-driven inquiry, collaboration.

The Agile Way of Working (or Agile) is a collection of principles and practices aimed at enhancing group collaboration that emerged in the software development field in the early 2000s. In an Agile environment, workplace teams place a heavy emphasis on collectively articulating their goals, frequently reflecting upon and adjusting work plans, facilitating authentic group interactions, improving team dynamics and encouraging experimentation and innovation (Smith & Sidky, 2009). Agile teams, by definition, do not follow a rigidly defined plan of action throughout a project; rather, they work in cycles, using frequent, time-boxed iterations that allow regular check-ins with and feedback from their colleagues and their end-product customers. Practitioners of Agile in the software industry have found that this way of incorporating real-time knowledge and feedback throughout the development process is quite conducive to mutual learning and innovation. Not coincidentally, they have also found that the end-products of this flexible de-

\textsuperscript{1} Corresponding author’s email: krehbitc@miamioh.edu

©2017 All rights reserved.
development process are often better in quality and ‘fit’ to customer needs than are comparable products created by using more traditional linear working models.

Although envisioned initially for use in software development, the core principles and concepts of Agile are readily adaptable to group-based work in a wide range of professional fields as well. Building upon this basic insight, the co-authors of this article have been exploring together for over two years how the ‘Agile Way’ can be used to enhance teaching effectiveness and student learning in higher education. Our primary motivation in pursuing this work has been to create instructional environments where learning is student-centered, self-authored and collaborative (see Kegan, 1994; Baxter-Magolda, 2008). As such, we have developed and piloted a number of different collaborative Agile-based practices in classroom environments spanning across several academic disciplines. The results of these various classroom adaptations of Agile are reported below. Also proposed below is an “Agile Manifesto for Teaching and Learning,” modeled after the 2001 document that launched Agile in the software world, that provides a conceptual framework upon which future innovations in higher education may be fruitfully considered.

This paper is organized as follows. First, for context and background, we provide a brief overview of Agile’s emergence within the field of software development as an alternative to traditional approaches to group-based collaboration. Second, we discuss a proposed Agile Manifesto for Teaching and Learning that we have developed as a possible guide for future innovations in higher education. Third, we describe and evaluate our own experiences in adapting Agile methods and principles for use in our teaching of students in content courses spanning across several different academic disciplines. Fourth, we present the results of a survey concerning students’ experiences using Agile teams and methods during class-related projects. Finally, we provide a brief overview of our journey in hope that it might provide guidance for other educators wishing to explore how this method of work may offer benefits to their own work as well.

**Agile in Software Development**

At a 2001 meeting in Snowbird, Utah, a group of software industry leaders developed an ‘Agile Manifesto’ of principles and practices aimed at improving both the quality of collaboration within software development teams and their ability to respond effectively to changing environmental and product requirements. (Beck, et al., 2001). This Agile Manifesto (see Figure 1) was embraced enthusiastically within the software development field and expanded rapidly in use; indeed, today, as Schur (2015) has found, well over 90% of the nation’s software development firms use Agile for at least some of their collaborative development projects. And as Rigby, Sutherland & Takeuchi (2016) recently noted, Agile innovation methods “have greatly increased success rates in software development, improved quality and speed to market, and boosted the motivation and productivity of IT teams” (p. 31). Perhaps not surprisingly, organizational leaders in other fields, observing Agile’s success in improving software development, have begun to adapt Agile for use in their own work environments as well (Gothelf, 2014; Krill, 2011; Rigby, Sutherland & Takeuchi, 2016; Scrum Alliance, 2012).
As Agile approaches have proliferated in use over time, practitioners have developed several widely-used collaborative Agile tools as well as a corresponding nomenclature. One major technique associated with Agile is the use of Scrum – an approach that utilizes cross-skilled, self-organizing teams to produce work products in small, successive iterations (Galloway, 2012; Schwaber & Sutherland, 2013). Other Agile techniques include the regular use of story card writing, estimation and sizing, product backlogging, iteration (sprint) planning, release planning, daily standups, show and tell, retrospectives, velocity, eXtreme Programming (XP), and Kanban (LeanDog, 2012). Within groups, ‘social contracts’ are often formed to reinforce positive behaviors and overcome dysfunctional ones (Riordan & O’Brien, 2012; Dando, 2013).

---

**Manifesto for Agile Software Development**

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

This is, while there is value in the items on the right, we value the items on the left more.

Kent Beck  
Mike Beedle  
Arie van Bennekum  
Alistair Cockburn  
Ward Cunningham  
Martin Fowler  
James Grenning  
Jim Highsmith  
Andrew Hunt  
Ron Jeffries  
Jon Kern  
Brian Marick  
Robert C. Martin  
Steve Mellor  
Ken Schwaber  
Jeff Sutherland  
Dave Thomas

© 2001, the above authors
This declaration may be freely copied in any form, but only in its entirety through this notice.

---

**Figure 1: The Agile Manifesto.**
The Agile Way of Teaching and Learning

While Agile was initially conceived as a tool for software developers, its broadly applicable ideas about collaboration — as well as its essential similarities with other management approaches such as Total Quality Management (TQM) and Lean that have migrated beyond their originating environments (see Emiliani, 2015) — made Agile a likely candidate for adaptation by educational organizations. Such has been the case with the use of Agile Teaching, also referred to as Agile Instruction, which is a student-centered approach where learners work in teams and respond to rapid feedback. Instructors using this approach intentionally eschew adherence to rigid syllabi or lesson plans in favor of flexible classroom interactions and ongoing student/instructor collaboration (Briggs, 2014; Stewart, et al., 2009; Tan, 2012). As Royle and Nikolic (2016) have recently suggested, Agile has been found to be readily adaptable to educational settings despite the clear differences between profit-oriented organizations and those like schools that focus on the production of less tangible final products. Applied in any setting, they noted, “perhaps the most important facets of the [A]gile approach are ownership of the work and a collaborative supportive approach that builds in a reflective planning and review process” (p. 15).

Given Agile’s specific disciplinary origins, it is hardly surprising that the majority of applications of Agile techniques in higher education to date have focused on computer science, engineering and similarly technical fields. A pioneer in this arena was Chun (2004), whose Agile-Teaching/Learning Methodology (ATLM) centered on three essential elements: agility (i.e., instructors quickly adapting to students’ abilities and needs), XP (meaning that if something is good for teaching/learning -- e.g., giving feedback to students – then instructors should do it frequently), and independence (i.e., students taking ownership of their own learning process). Indeed, ATLM frequently involves the extensive use of blogging, wikis, instant messaging and other technologies to support collaboration, knowledge sharing, and quick feedback. Chun, in the above-cited 2004 piece, reported considerable success in using this Agile-based methodology in several technical courses taught at the City University of Hong Kong – although the piece did not provide any formal assessment of outcomes. Other scholars have found similar success in adapting Agile to their teaching in computer science courses at other institutions as well (Anderson & Romney, 2014; Berry, 2012; Fox & Patterson, 2012, 2013; Guercio & Sharif, 2012; Mahnič & Časar, 2016).

Other scholars in science, technology, engineering, arts, and mathematics-oriented (i.e., STEAM) fields have developed at least two additional education-focused adaptations of Agile ideas and methods. One is Agile Problem-Driven Teaching (APDT), which borrows from Problem-Based Learning (PBL) the use of iterative student work on complex problems while also calling for greater instructor flexibility and adaptation to different learning environments (see, e.g., Dey, et al., 2009; Romney, 2009). A 2009 study by Dey, et al. provides several examples of the use of APDL in various STEAM-oriented (i.e., Science, Technology, Engineering, Arts, and Mathematics) curricula including mathematics, database development, information technology, and programming languages. The other is Extreme Pedagogy, recently introduced by D’Souza and Rodrigues
(2015), which adapts the principles of XP and the Agile mindset to teaching and learning in engineering. As D’Souza and Rodrigues see it, students should be viewed as the primary ‘customers’ of education, while other stakeholders – including parents, sponsors and the government – are best understood as secondary customers. As such, Extreme Pedagogy calls for educators to emphasize three elements of Agile in their teaching: (1) learning by continuous doing; (2) learning by continuous collaboration; and (3) learning by continuous testing.

To date, educational applications of Agile beyond science and engineering are still uncommon. Still, a few pioneers have found success in this regard. Rebecca Pope-Ruark of Elon College, for instance, has used Scrum in her English courses to facilitate collaboration in student-group writing assignments, particularly large writing projects concerning complex real-world situations (Pope-Ruark, et al., 2011; Pope-Ruark, 2012). As Pope-Ruark explains: “In my experience, using Scrum to frame complex group projects encourages trust, engagement and accountability among students, while also promoting the learned behaviors of professionalism and reflective practice” (Pope-Ruark, 2012, p. 172). Similar examples of faculty use of Agile project management techniques for facilitating student teams can be found in chemistry (Piunno et al., 2014) and in digital media studies (Wilson, Brown, & Burke, 2013) as well.

Education Manifestos

In a relatively short time, Agile-based approaches to collaboration and innovation have migrated beyond industry and into education. Yet to date, almost all of the scholarly discussion of Agile in that latter arena has focused exclusively on the task of classroom instruction – even though Agile has much to contribute to educators’ work outside of the classroom. Indeed, as Nikolic and Gledic (2013) have argued, institutions of higher education in general “must develop their capacity for change and transform their strategies, from constructed-beforehand to permanently-in-construction” (p. 119). And in that vein, Agile techniques of collaboration and idea-generation seem to be ideally suited for application beyond the classroom to other components of higher education work such as curricular development, administration, research collaboration and strategic planning. Yet our search of a broad variety of outlets uncovered only three instances – found in a blog, a conference proceeding, and a white paper posted on Research Gate – in which scholars had developed general Agile-based value statements applicable to education.

The first instance, by Peha (2011), responded to slowing growth in student achievement and lagging teacher morale in K-12 schools by seeking to help school principals become more effective organizational leaders. Specifically, Peha’s proposed Agile Schools Manifesto called for the prioritization of:

- Individuals and interactions over processes and tools
- Meaningful learning over the measurement of things
- Stakeholder collaboration over complex negotiation
- Responding to change over following a plan
In arguing generally for an Agile approach to K-12 education in a variety of contexts, Peha especially emphasized its ready transferability to educational organizations and noted “how perfectly suited Agile is for running schools.”

In the second instance, Kamat (2012), at the 2012 IEEE Fourth International Conference on Technology for Education, similarly called for changes in three core areas of educational work: teaching/learning, evaluation, and administration. Aiming primarily at schools of engineering, Kamat presented an Agile Manifesto in Higher Education that called for a new emphasis on:

- Teachers and students over administration and infrastructure
- Competence and collaboration over compliance and competition
- Employability and marketability over syllabus and marks, and
- Attitude and learning skills over aptitude and degree.

Kamat argued that in addition to increased learning, students will make a smoother transition to the workforce – particularly in industries such as engineering where job candidates already equipped with an ‘Agile mindset’ are especially valued in the market.

Most recently, Royle and Nikolic (2016) more generally called for an Agile-based collaborative approach to work in educational settings through the use of intentionally reflective planning and review processes. Central to Royle’s and Nikolic’s approach is a prioritization by teachers on the development of students’ skills and understanding rather than on the a priori creation of detailed lesson plans. Their Agile Pedagogy Manifesto calls for an explicit value-ordering as follows:

- Practice preferred to theory
- Learner choice and agency preferred to learners being limited and controlled
- Learning and applying skills preferred to learning facts
- Collaboration preferred to competition
- Customized learning preferred to standardized one size fits all, and
- Co-constructed learning preferred to teacher-led learning

The authors suggested that for learners and teachers alike, this explicit ordering of values results in more fun for students, greater independence and choice and more support and collaboration in the learning environment.

**Agile Manifesto for Teaching and Learning**

Building upon this previous work, the authors of this paper – all faculty members at a mid-sized Midwestern public university -- have worked together for the last two years to study how Agile methods might be adapted and applied fruitfully to the day-to-day work of higher education faculty and staff. Working within an array of different disciplines,
we have used many of the specific tools and techniques used in Agile software development – such as Scrum, story card writing, social contracts, product backlogs, burn-down charts, daily stand-ups and retrospectives – in our own classrooms. More generally, we have each sought to understand the basic values and approaches that undergird ‘the Agile mindset’ and adapt those values to our work both inside and outside of formal instructional settings. In light of this collective experience, we now propose an Agile Manifesto for Teaching and Learning (see Figure 2) that we believe can usefully guide faculty, staff and administrators as they tackle a wide variety of the tasks that make up the work life of educators today.

This Agile Manifesto for Teaching and Learning is, above all else, a statement of core professional and personal values. More specifically, we believe that the key to successful application of Agile in higher education is an explicit prioritization upfront of the basic values that guide our day-to-day work as educators. To that end, we contend that faculty work, regardless of specific discipline, should value the following: (1) Adaptability over prescriptive teaching methods; (2) Collaboration over individual accomplishments; (3) Achievement of learning outcomes over student testing and assessment; (4) Student-driven inquiry over classroom lecturing; (5) Demonstration and application over accumulation of information.

**Manifesto for Teaching and Learning**

We are uncovering better ways of teaching and learning by doing it and helping others do it. Through this work we have come to value:

- **Adaptability** over prescriptive teaching methods
- **Collaboration** over individual accomplishment
- **Achievement of learning outcomes** over student testing and assessment
- **Student-driven inquiry** over classroom lecturing
- **Demonstration and application** over accumulation of information
- **Continuous improvement** over the maintenance of current practices

While we believe there is value in the items on the right, we value the items on the left more.

Michelle Cosmah, John Forren, Amber Franklin, Jerry Gannod, Doug Havelka, Andrea Hulshult, Tim Krehbiel, Gabe Lee, Eric Luczaj, Jeffrey Merhout, Dana Miller, Caryn Neuman, T.M. Rajkumar, Al Ryan, Pete Salzarulo, Doug Troy

The above authors are all affiliated with the Miami University Agile Initiative. The Manifesto may be freely copied in any form, but only in its entirety through this notice.

**Figure 2. Agile Manifesto for Teaching and Learning.**
accumulation of information; and, (6) Continuous improvement over the maintenance of current practices. Brief discussions of each of these six value statements immediately follows.

**Adaptability Over Prescriptive Teaching Methods**

As educators, we should value the ability of students to operate in an environment of uncertainty. Learning is a process of discovery that evolves as the participants are exposed to different contexts and experiences. Thus, if we are rigid in our expectations, then we lose the opportunity to create new knowledge. As such, we should ensure that we are flexible in meeting the needs of students rather than blindly enforcing a strict adherence to a syllabus. Likewise, we should aim to develop students that can navigate in the midst of ambiguity and thrive in a dynamic world.

**Collaboration Over Individual Accomplishment**

As educators, we should value a collaborative approach where all participants assist in a joint effort to accomplish an outcome. Collaboration requires transparent communication among all parties, including the ability to listen effectively and to provide positive feedback. As faculty, we should facilitate meaningful group interactions requiring engagement, cooperation, and contributions from all. We believe that a collaborative approach generally produces better results than any individual could have achieved alone. Experience with collaborative work also prepares students to work effectively in teams in their professional and personal lives.

**Achievement of Learning Outcomes Over Student Testing and Assessment**

Regular assessment is an essential element of instructional improvement and curricular development. Yet assessment is not an end in itself. Rather, as educators, we should strive to use assessment primarily as a tool to advance student learning and student mastery of disciplinary knowledge and skills. We should aim to move students from a short-term focus on doing what is needed to achieve a grade to a longer-term focus on how course material can be applied in each individual’s future endeavors. As educators, we see great value in encouraging our students to be learning-driven rather than test-driven. We should strive to nurture self-motivated, lifelong learners.

**Student-driven Inquiry Over Classroom Lecturing**

Educators across the span of disciplines recognize that learning happens best when students are interested, engaged, and motivated to learn. We also understand that the motivation to learn often comes in response to questions and problems that students encounter along their journey and are inclined to explore. As teachers, we should cultivate student empowerment and individuality by assisting them with active-learning assignments and real-world experiential opportunities. Deep learning occurs when students consider contexts, develop new questions and utilize their own voices as they engage material and develop applicable skills.
Demonstration and Application Over Accumulation of Information

As disciplinary experts, we know that knowledge within our specific fields is constantly evolving and expanding. As educators, we want to create ongoing opportunities for students not only to master disciplinary content but also to demonstrate their knowledge and skills as they attain them. When students produce tangible evidence of their achievements, they build self-confidence, learn more deeply, retain that learning for a longer period and adapt more readily to changing needs and demands. We can celebrate our success when our methods have increased graduate recruitment, employment, and salaries, when faculty deploy our techniques, and when other institutions seek to replicate our results. Success is the joy of discovering that we have helped our students accomplish more than they had thought possible.

Continuous Improvement Over the Maintenance of Current Practices

As educators, we should strive to foster learning environments that encourage risk-taking, creativity and innovation. For faculty members, pursuit of this goal requires constant evaluation of current teaching practices and a willingness to try new things. For our students, this involves an environment in which students feel safe to try new things, fail, and keep on trying. Faculty and students alike can learn a great deal from their mistakes and from frequent assessment and formative feedback. We believe that a high-quality education makes meaningful connections from the present to the future and is based upon the trial and error skills that develop confidence and a willingness to innovate.

Examples of Agile Practices in the Classroom

As members of this learning community, faculty members from several disciplines have developed several distinct Agile-based instructional methods and assignments for use in their own classrooms. Adaptations to date have involved courses in computer science and software engineering, information systems, supply chain management, English, teacher education, civic studies, and political science. Those applications are described below.

Computer Science and Software Engineering

Members of this faculty learning community have used Agile techniques in at least three undergraduate courses in computer science and software engineering to date. One of those courses – Introduction to Agile – is aimed specifically at teaching students how to use Agile in managing software development projects. Two others – Introduction to Software Engineering and User Experience Design and Software Requirements – have been altered to incorporate numerous Agile concepts in lieu of the use of more traditional, faculty-focused teaching methods.

Tools and practices. In all three courses, a range of commonly employed Agile tools and practices have been adapted including chartering, physical and virtual ‘Story/Kanban boards’ and the frequent use of retrospectives. These Agile tools have allowed students and faculty alike to track ongoing progress toward class goals, enhance transparency and
mutual understanding about course topics, and promote ongoing reflection about the course and about students’ own learning.

**Successful application.** Particularly useful has been the adaptation of a specific Agile technique called ‘project and team chartering,’ which is used in these courses at the outset in order to establish a classroom environment where students actively share, discuss ideas, and work collaboratively. In this chartering exercise, the Agile-based techniques and tools that are employed include:

- Ice Breakers – which prompt students to talk with one another and develop trust;
- Retrospectives -- which prompt students at the outset of a course to reflect on what they liked about their previous courses, what they would change in them and what they seek to gain from their coursework;
- Value sliders -- which are graphical representations that allow students to weigh the relative importance of their own subjective value choices in education (e.g., the importance of learning v. high grades; collaboration v. individual work; flexibility over rigidity);
- Social contracts – which establish explicit rules for the class about how participants (both faculty and students) will relate to one another; and
- Course mission statements – which, in a single document, states the basic values and goals to be pursued collectively in the particular course at hand.

**Information Systems Management**

Agile techniques have likewise been employed by faculty teaching two courses in information systems management. One of these courses, aimed primarily at advanced undergraduates, focuses on the application of project management concepts and techniques to a specific real-world IT project commissioned by an actual client. The structure/schedule of that course is designed so that core content is covered via lecture or discussion in between two pre-scheduled two-week sprints focused solely on the commissioned project.

Agile has also been used in a junior-level elective class entitled Governance, Risk Management, Security & Audit. The main purpose of this class is to introduce students to information technology governance concepts and principles. The course includes a group project in which student teams (selected by the instructor to provide a balanced set of skills) perform a simulated IT audit of a fictitious company developed by alumni who work at a CPA firm in IT assurance and risk management services. Selected Agile tools are used for this simulated IT audit.

**Tools and practices.** During project-focused sprints, various Agile techniques are used including ‘daily standups’ – which call on group members to provide updates on progress and challenges; frequent discussion of ‘user stories’ – which prompt group members to imagine how their collective work product will be used; ‘product backlogs’ and ‘sprint backlogs’ – which take stock of collective progress on shared goals; and ‘showcases’ and ‘retrospectives’ – which highlight tasks accomplished and evaluate lessons learned along...
the way.

**Successful application.** In order to raise awareness of peculiar issues that may arise when applying Agile techniques in specific course settings, one instructor introduces basic Agile objectives and methods in a class module on systems development; in addition, key IT governance issues, such as the possible lack of documentation are discussed with students. Following this introduction, student teams are guided through Agile processes that challenge traditional group project models. Students are introduced to the process of creating a team charter/social contract, carrying out a small number of 5-10 minute daily standups in class, as well as writing a retrospective that provides feedback at about the mid-point of the project. These adaptations of Agile techniques have been observed to improve the efficiency and interpersonal dynamics of the class’s project-based groups.

**Supply Chain Management**

Agile has similarly been used to teach a senior-level course entitled Quality Management Systems, which is taken primarily by students earning a major or minor in the business school’s supply chain management program. In this course, students learn a variety of quality management perspectives, including TQM, Six Sigma, and Lean.

**Tools and practices.** Students are assigned to five-person teams which solve authentic problems and which allows them to explore quality as a management framework. Before the first project, students are introduced to basic Agile concepts and specific Agile topics including planning meetings, Scrum, sprint reviews, and retrospectives. Tools such as Kanban boards and team charters are also introduced in order to provide techniques for effective teams. One student from each team is then selected as the ‘Scrum master’ and is made responsible for facilitating team meetings, reporting key information back to the class during daily standups, and the like. At the end of each project, retrospectives were conducted and teams changed their work agreements included in their team charters based on problems they have observed with their teamwork and how they were completing work.

**Successful application.** Because three separate projects were sequentially completed using Agile, several groups of students commented that by the end of the third project they understood how beneficial Agile truly was despite being originally resistant to it on the first project. Practically all teams had modified how they had conducted work to complete the projects and altered expectations for team member behavior from the first to last project. Specific comments were that Agile helped them complete their projects in a timely manner. They also noted that Agile reduced the free-rider effect more so than they had experienced in their other classes which had not utilized Agile. Most importantly, a few specific students commented that they would, on their own, attempt to utilize Agile methods on future team projects in other classes because they felt it was so valuable even if Agile is not used or taught in that class.
**Technical Writing**

Extending the use of Agile to an on-line instructional environment, a faculty member in English similarly used various Agile techniques in a course on technical writing. In the on-line section of the course, which is taken by students across diverse majors and disciplines, students are ultimately evaluated on a number of measures. A major component of the course, however, is a final group assignment that is managed in its entirety as a virtual Agile project.

**Tools and practices.** To facilitate student work on this project, Agile principles and practices were first introduced via a custom-developed video that reviews Agile, discusses key Agile principles and practices – such as ‘backlog,’ ‘planning sprints,’ ‘standups’ and ‘retrospectives’ -- and details how the approach was to be used for the final project. Students were then placed into virtual groups, and each group given access to a Trello board (Trello is an online site where individuals can create Kanban boards – called Trello boards – free of charge) that had been previously set up by the professor with different swim lanes for different sprint cycles. They then created virtual cards for each task they needed to accomplish for the last project and moved the cards they accomplished in each sprint into the appropriate swim lanes. The virtual Trello board significantly helped the groups visualize and manage their work.

**Successful application.** The weekly standups proved to be a highly effective instructional tool by allowing the faculty member to gauge in an ongoing manner both the students’ levels of mastery of project learning outcomes and the quality of the class groups’ interactions and collaborations. What’s more, the transparency provided by the standups enabled the instructor to make mid-project corrections or changes as the need arose. Further, since each group’s stand-ups and retrospective discussions were open to the entire class, students could also see how other groups were working together; consequently, they were given the opportunity to gain insight on others’ approaches and points of view to usefully inform the work that they were doing as well.

**Early Childhood Education**

Within teacher education, another faculty colleague has used Agile in teaching Phonics and Word Study, a junior-level course required for all early childhood education majors. The key learning objectives for this course are to familiarize prospective teachers with historical and research perspectives on phonics, word analysis concepts and terminology, concepts regarding nature of the English language and its orthography, and instructional methods of phonics and word recognition used to instruct early childhood students. The specific content of this course is mandated both by national and state licensure standards developed collaboratively with the National Association for the Education of Young Children for early childhood teachers, as well as by the International Society for Technology in Education technology standards for educators.
Tools and practices. In this course, Agile practices are used to a significant degree; indeed, an Agile ‘mindset’ is infused throughout all course learning activities. Key Agile practices that are integrated into this course include:

- the creation by students of a ‘social contract’ at the beginning of the course;
- the use of a Trello board to organize and validate one of the required group projects;
- the use of a "fail fast" approach with each assignment, which allows quick turnaround time for grading and transparency about who might need additional support;
- weekly participation by students in stand-ups to report progress; and
- regular participation in retrospectives aimed at providing constructive feedback.

Successful application. During an end-of-course retrospective, students provided positive feedback on the use of Agile practices in this course. The most positive feedback reported was in support of ‘showcases’ and for validating the work of peers. ‘Showcases’ usually occur in the middle of a project as a means of facilitating feedback and timely revisions. During a ‘showcase,’ students are put on the spot to share their contribution to the project thus far. This Agile technique is helpful in decreasing the likelihood of students that often do not pull their own weight. From the instructor’s perspective, it takes much of the authoritative role away from the instructor and puts it into the students’ hands. Students often feel more comfortable taking constructive criticism from their peers.

Civic Studies

A faculty member recently debuted the use of Agile in Theories of Civic Leadership and Democracy, an introductory-level survey course designed to provide a critical introduction to democratic theory and to leading scholarly conceptualizations of community and civic leadership. Aimed largely at majors in the University’s civic and regional development program, the course includes a semester-long group project in which students work in small teams to conduct an in-depth examination of a specific practitioner of community-based work at the local, state, national or international levels.

Tools and practices. Given the student audience for this course – mostly undergraduates in the social sciences with no formal background in software development, business practices or manufacturing methods – the instructor’s use of Agile methods in this course studiously avoids the use of Agile terminology – such as ‘Scrum,’ ‘retrospectives,’ and ‘Kanban’ – which might be confusing or off-putting for student novices. Yet several basic Agile methods and techniques – including the use of frequent iterations, self-organizing and self-governing small groups, time-blocking, frequent check-ins with the ‘customer’ and repeated revisiting of user stories – are all used to spur group creativity and to foster intra-group accountability for product completion.

Successful application. By design, the group project assignment leaves considerable discretion and creative choice to students regarding the specific practitioner that they will
study, the research questions that they will ask and the methods that they will use to explore those questions. No rigid length requirements, presentation designs or modes of analysis are prescribed up front; rather, consistent with Agile principles, groups are instructed to view the instructor as the primary ‘customer’ for their final ‘product’ – which, according to the assignment ‘contract,’ is to be an “interesting, thorough and critical examination of the chosen organization/practitioner’s structure, goals, activities and challenges.” Groups must produce two deliverables – a written group report and an in-class presentation – by the last week of the semester. To this point, the instructor has found that the use of these techniques has resulted in consistently high-quality ‘final products’ from enrolled students. Two positive outcomes are especially noteworthy. For one, the use of Agile techniques quite quickly exposes ‘free riders’ in groups who can then be coached accordingly to modify their behavior. For another, the high levels of authentic collaboration that Agile techniques produce in small student groups leads to well-integrated final ‘products’ that compare quite favorably to comparable group papers that consist largely of loosely compiled pieces of individual work.

**Political Science**

Similarly, Agile has informed the instruction of several regional campus sections of the University’s introductory course on American politics and government (American Political System). Within the curriculum, that course is designed to advance two primary goals. First, it provides a baseline of content knowledge about American political processes and institutions that political science majors and minors can build upon in subsequent coursework in the field. More broadly, the course is also part of the university’s general education ‘core;’ as such, it aims to develop in students the ability to think critically, to work collaboratively, to communicate effectively and to act ethically in the world.

**Tools and practices.** A variety of Agile-inspired tools – including time-blocking, standups, client check-ins, discussions of user stories and the development of group ‘community standards’ – are used to structure and facilitate all group-based work in the course. As with the civic studies course described above, the instructor intentionally avoids the use of Agile-specific jargon in the classroom; still, the ‘Agile mindset’ guides every major element of group activity throughout the semester. Indeed, even the initial decision of how students are assigned to groups – whether by student choice, by lots, by alphabetical order or by some other means – is made not by the instructor alone but rather by the collaborative development in small groups of competing proposals through several iterations constrained by short time-boxes.

**Successful Application.** The primary group-based activity in the course is a semester-long research project in which students work collaboratively (in groups of 4-5) to design and complete an assessment of a local community’s ‘civic health.’ On the course syllabus, students are instructed only to produce a ‘substantial written report’ that presents their groups’ research findings; consequently, groups are left largely free to determine (a) their own operating ‘ground rules;’ (b) their particular divisions of labor; (c) which communities they will study; (d) how they will study those communities (i.e., which research
methods they will use); and (e) the specific length, format and content of their final ‘products.’ Students in end-of-course evaluations have responded quite positively both to the level of autonomy provided to groups in the class and to their own experiences in working as parts of teams. The instructor, moreover, has found that the use of an Agile approach has produced research products that are significantly higher in quality and in originality than were comparable projects produced by more tightly scripted group assignments in the past. What’s more, the instructor has encountered a strikingly lower number of instances than is typical of significant student-to-student conflicts within groups and of complaints about unequal distribution of work.

**Student and Faculty Perceptions of Agile Teaching and Learning**

How have students generally responded to the use of Agile in the classroom? To find at least a partial answer to this question, the authors of this study conducted a survey of students who have enrolled in six of the Agile-infused courses described above. Altogether, 109 students participated; their responses are summarized in Tables 1 and 2 below. The survey questions were crafted both to elicit students’ general views about the utility of an Agile approach to instruction and, more specifically, to assess the usefulness of particular Agile ‘tools’ in facilitating student group work. A standard five-point Likert scale was used for each question, with a “1” signifying strong disagreement with a given statement and a “5” signifying strong agreement. Some faculty members who administered the survey to students did not utilize or teach all aspects of Agile to their students; thus, for those instances, the data reported in Tables 1 and 2 below include numerous entries of “N/A.”

Table 1 displays the survey’s results for items pertaining to students’ perceptions of Agile’s utility in advancing a range of learning outcomes. As the data indicate, a significant number of students found great value in their exposure to Agile techniques in the classroom. Most students agreed that the use of Agile contributed to “a more effective learning experience” and supported a “more efficient use” of their time. A clear majority likewise found that Agile techniques enhanced the quality of their class project deliverables. Most offered high praise for Agile’s use in enhancing teamwork on group projects and in simulating real-world conditions for team-based work. Perhaps most important, students consistently expressed strong support for the view that the use of Agile “was a beneficial learning experience” for them.

The data reported in Table 2 reflect similarly high levels of student satisfaction with the use of specific Agile techniques by their professors across a range of academic disciplines. By large majorities, students expressed a greater understanding both of how to conduct Agile-inspired retrospectives and how they contribute to effective group collaboration. They reported similarly high levels of understanding and appreciation for the use of sprint planning meetings and daily stand-ups as useful means of collaborating with others. Most students likewise understood and supported the use of project charters as a mechanism by which collaborative groups can reach agreements about shared goals and desired outcomes. In the same vein, most students expressed the view that their use of Agile in class helped them to understand the value of having a task facilitator (or
‘Scrum master’ in the lexicon of Agile) to lead certain kinds of group work. Perhaps interesting to note here is the fact that, as a general matter, the survey statements pertaining to how and why specific Agile practices are used (Table 2) elicited slightly higher levels of agreement overall from students than did the questions that connected more generally to the learning outcomes associated with the Agile projects (Table 1). Such differences in response, however, were quite small overall; indeed, students generally offered strong support for both the use of specific Agile techniques and for their utility as effective tools for advancing teaching and learning.

How about faculty perceptions of Agile? Alongside student surveys, the authors of this study also gathered feedback from participating classroom instructors in a series of small group discussions. In those fora, faculty colleagues expressed high levels of support for the use of Agile and high levels of satisfaction with student performance in Agile groups. And in perhaps the best indicator of satisfaction, each person in the working group indicated their intent to use Agile in their teaching again in the future. At the same time, some faculty members also reported that Agile methods seemed to work best with more mature students and those who had been exposed to Agile in their previous courses. What’s more, a few stressed the importance, particularly in courses outside of engineering and computer science, of avoiding excessive attention to the specific nomenclature associated with Agile while introducing students to its ideas and methods of collaboration. (Indeed, several faculty urged that their colleagues not focus not on Agile terminology per se but rather on the fostering in their classrooms of a broader Agile ‘mindset’ that can usefully guide students’ collaborative efforts in a wide variety of disciplinary settings.)

Faculty members provided several additional tips about the practical uses of Agile in classroom settings. For one, several suggested that making the Agile project(s) in a course a significant part of the grade helped considerably in gaining student ‘buy-in’ and ensuring student commitment to the often time-consuming task of participating in Agile teams. Several also suggested that, even with Agile, faculty would likely encounter an ongoing need to monitor student groups so as to avoid problems created by student freeriders. One faculty member urged that, when using Agile, it would be wise to remind students to focus their collective efforts on the needs of the ‘customer’ or end user. Finally, one faculty member believed Agile was best taught and accepted when students were assigned multiple, short, unrelated Agile projects. In this way, the students could perform multiple retrospectives throughout the semester, giving them an opportunity to improve, without being hindered by mistakes made in earlier projects.

**Faculty Spotlight**

An Agile approach to teaching and learning is by nature student-centered. It is meant to focus on engagement, collaboration, and adaptability. In being collaborative and student-centered, we are helping to students to learn to work together successfully, which is a goal of collaborative learning (Bruffee, 1995). In collaborative learning pedagogy, it is suggested that the instructor not intervene in working groups so students can learn to self-govern (Bruffee, 1995). In this regard, the instructor becomes a coach and facilitator. In
Table 1: Student perception of Agile outcomes.

<table>
<thead>
<tr>
<th>Overall</th>
<th>Agile IT Project</th>
<th>Information Quality</th>
<th>Technical Phonics Software Mgmt.</th>
<th>Risk Mgmt.</th>
<th>Writing &amp; Word Eng. Mgmt.</th>
<th>Study</th>
<th>Overall learning experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean n=109</td>
<td>Mean n=7</td>
<td>Mean n=7</td>
<td>Mean n=36</td>
<td>Mean n=36</td>
<td>Mean n=16</td>
<td>Mean n=7</td>
<td>Mean n=7</td>
</tr>
<tr>
<td>Realistic context</td>
<td>4.0</td>
<td>5.0</td>
<td>3.6</td>
<td>3.8</td>
<td>4.2</td>
<td>3.8</td>
<td>4.1</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.6</td>
<td>0.0</td>
<td>0.8</td>
<td>0.7</td>
<td>0.5</td>
<td>1.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Effective learning experience</td>
<td>3.8</td>
<td>5.0</td>
<td>3.6</td>
<td>3.6</td>
<td>3.9</td>
<td>3.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.7</td>
<td>0.0</td>
<td>1.0</td>
<td>0.7</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Efficient use of time</td>
<td>3.9</td>
<td>5.0</td>
<td>3.7</td>
<td>3.6</td>
<td>3.9</td>
<td>3.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.0</td>
<td>0.5</td>
<td>0.8</td>
<td>0.9</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Teamwork</td>
<td>3.9</td>
<td>5.0</td>
<td>3.7</td>
<td>3.8</td>
<td>4.0</td>
<td>3.8</td>
<td>3.4</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.0</td>
<td>0.8</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Deliverable quality</td>
<td>3.7</td>
<td>4.7</td>
<td>3.4</td>
<td>3.5</td>
<td>3.8</td>
<td>3.8</td>
<td>3.4</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.5</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Overall learning experience</td>
<td>4.0</td>
<td>5.0</td>
<td>3.9</td>
<td>3.8</td>
<td>4.1</td>
<td>4.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.7</td>
<td>0.0</td>
<td>1.1</td>
<td>0.9</td>
<td>0.6</td>
<td>0.9</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Table 2: Student perception of Agile techniques.

<table>
<thead>
<tr>
<th>Overall</th>
<th>Agile IT Project</th>
<th>Information Quality</th>
<th>Technical Risk Mgmt.</th>
<th>Writing &amp; Word Eng. Mgmt.</th>
<th>Study</th>
<th>Overall learning experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean n=109</td>
<td>Mean n=7</td>
<td>Mean n=7</td>
<td>Mean n=36</td>
<td>Mean n=36</td>
<td>Mean n=16</td>
<td>Mean n=7</td>
</tr>
<tr>
<td>How to retrospectives</td>
<td>4.2</td>
<td>5.0</td>
<td>4.2</td>
<td>4.0</td>
<td>4.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.0</td>
<td>1.2</td>
<td>0.9</td>
<td>0.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Value of retrospectives</td>
<td>4.1</td>
<td>4.9</td>
<td>3.8</td>
<td>3.9</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.7</td>
<td>0.4</td>
<td>1.2</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>How to planning meetings</td>
<td>3.9</td>
<td>4.6</td>
<td>4.0</td>
<td>3.3</td>
<td>4.3</td>
<td>N/A</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.7</td>
<td>0.5</td>
<td>1.1</td>
<td>0.9</td>
<td>0.6</td>
<td>N/A</td>
</tr>
<tr>
<td>Value of planning meetings</td>
<td>3.8</td>
<td>4.7</td>
<td>4.0</td>
<td>3.2</td>
<td>4.3</td>
<td>N/A</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.5</td>
<td>1.1</td>
<td>1.0</td>
<td>0.6</td>
<td>N/A</td>
</tr>
<tr>
<td>How to daily stand-up</td>
<td>4.2</td>
<td>5.0</td>
<td>4.0</td>
<td>3.9</td>
<td>4.4</td>
<td>4.1</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.6</td>
<td>0.0</td>
<td>0.6</td>
<td>0.8</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Value of daily stand-up</td>
<td>4.0</td>
<td>4.9</td>
<td>4.0</td>
<td>3.7</td>
<td>4.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.4</td>
<td>0.9</td>
<td>1.0</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>How to project charter</td>
<td>4.1</td>
<td>4.6</td>
<td>4.3</td>
<td>4.2</td>
<td>4.0</td>
<td>N/A</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.7</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.9</td>
<td>N/A</td>
</tr>
<tr>
<td>Value of project charter</td>
<td>4.0</td>
<td>4.6</td>
<td>3.5</td>
<td>4.0</td>
<td>4.0</td>
<td>N/A</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.8</td>
<td>0.5</td>
<td>1.4</td>
<td>0.7</td>
<td>1.0</td>
<td>N/A</td>
</tr>
<tr>
<td>Value of scrum master</td>
<td>3.9</td>
<td>4.8</td>
<td>3.2</td>
<td>3.5</td>
<td>4.3</td>
<td>N/A</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.9</td>
<td>0.5</td>
<td>1.3</td>
<td>1.0</td>
<td>0.8</td>
<td>N/A</td>
</tr>
</tbody>
</table>

an industrial context, there is no “manager” who instructs the Agile team on how to function or conduct their work—teams are self-organizing. In our collective experience, an Agile instructor’s place in the classroom is to provide tools (Agile tools) so students can learn to work successfully together, including how to self-organize. Agile instructors provide guidance on Agile practices and tools so students become fluent in talking about Agile and practicing Agile. In our experience, being an instructor who practices Agile does not mean that we take a disconnected distance from our students. We simply use a set of Agile practices and tools to help foster collaboration and group success.

From one instructor’s view, the Agile approach has worked at least as well as the traditional waterfall approach (e.g., sequential or linear completion of well-known tasks) in
producing both high-quality end products for course clients and high-impact learning experiences for students. Still, students new to Agile-based approaches have at times struggled in courses in at least four ways. First, some students experience considerable difficulty in converting their ‘user stories’ into discrete tasks that can be accomplished within the available time. Second, some students struggle to break free from the divisions of labor that traditionally define IT workgroups; that is, some groups, despite instruction to the contrary, tend to fall back reflexively into traditional group roles such as ‘designer,’ ‘coder,’ ‘tester,’ and the like. Third, students sometimes approach the discrete ‘sprints’ involved in a project as traditional phases of a linear assignment rather than, as Agile suggests, as separate units of work each with defined objectives. And finally, students in the course are often inexperienced in working under conditions that require significant self-direction. Indeed, for nearly all of the students in this course, this project is the first of its type that they have worked on. Especially in the absence of experienced peers, the ongoing need to ‘self-start’ in Agile projects is a challenge for many novice students to fully grasp.

Agile Teaching and Learning has created other challenges as well. For instance, the combination within a single course of significant new Agile content (in addition to the course content) along with the application of that content can prove to be confusing and difficult for even the most engaged and motivated students. What’s more, the need for dedicated physical space for the posting of Agile project notes, story boards and the like – or in the alternative, at least the availability of virtual on-line spaces on online sites such as Trello – can prove to be an obstacle depending upon the particular classroom space that is assigned for an Agile-infused course. Still, most of these challenges can be managed well enough to make the benefits of using Agile significantly greater than the costs associated with implementing and using these techniques.

**Adopting Agile Teaching and Learning**

Adoption of the Agile Way of Teaching and Learning is predicated on a desire to become more student-centered with a focus on collaboration. By adopting an Agile Mindset, a mindset where engagement of stakeholders is coupled with reflection inspection and adaptive action, the potential to enable a greater sense of ownership and an improved experience (among other things) increases.

Our own journey towards adoption of Agile occurred through faculty participation in an Agile Faculty Learning Community (FLC). The FLC was organized and led by one faculty member with experience in teaching Agile and another with both teaching and practical experience applying Agile in the workplace. Both were (and are) ICAgile Certified Professionals, while one is also certified for Agile Coaching.

The process of adoption used the following steps:

1. Training
2. Identification of Goals
3. Modeling and Piloting
4. Retrospective Evaluation

©2017 All rights reserved.
5. Modification

Training. In the software industry, adoption of Agile practices without an introduction to the motivation and mindset will typically degrade the benefits of Agile over time. We found it important to receive training from a certified Agile trainer and have since developed our own training materials for faculty. In addition, we supplement the training with participation in an Agile FLC.

Identification of Goals. We developed the manifesto with the goals of adaptability and continuous improvement (among others) with the intent of focusing on why Agile should be used. Based on our experiences, the Agile Way of Teaching and Learning is applicable to most disciplines. We suggest selecting Agile practices that are most relevant to the values and goals you want to achieve. For example, if your course includes a group project (and thus you wish to stress collaboration) we suggest having each group create a social contract or team charter. This is a simple method that can be used to hold group members accountable for their behavior.

Modeling and Piloting. While the faculty that participated in our FLC received training, in many instances, the students in the courses where the approaches were being used did not. As such, the importance of modeling and piloting cannot be understated. To address this, modeling of the approaches in the small provided a means for piloting the techniques. For instance, in courses where social contracts are being used for establishing group collaboration norms, the same method can be used at the course level through establishing a course-level social contract.

Retrospective Evaluation. Retrospectives are the backbone for Agile organizations. Without some form of reflective inspection and adaptive action, organizations cannot easily identify stakeholder concerns and cannot improve how they work together to achieve some desired goal. When adopting Agile for teaching and learning, it is important to frequently perform retrospectives rather than rely on either teaching evaluations or a single midterm evaluation such as +/-Δ (pronounced “plus-delta”) (Helminski & Koberna, 1995) and Small Group Instructional Diagnosis (SGID) (Clark & Bekey, 1979). Retrospectives can take many forms; Derby, Larsen, and Schwaber (2006) provide the best instructional treatment of retrospectives for teams.

Modification. The counterpart to retrospective evaluation is adaptive action. One of the greatest benefits of applying an Agile approach is “being Agile”. That is, adopting an Agile Mindset provides the ability to focus on adaptability and continuous improvement through collaboration with others. As such, the focus is not on rigidity of the approaches but rather the adaptability to different contexts to meet the needs of each learner or cohort of learners.

Conclusion

Faculty in a wide variety of instructional contexts express frustration at times with the quality of collaboration in group-based class projects, their students’ levels of engagement with group work and their students’ often low levels of inclination to take owner-
ship of their own learning. Seeing the parallels that exist between creative collaboration in industry and similar group-based work in higher education, an interdisciplinary group of faculty at a mid-sized public university formed a learning community to study the Agile way of working and to determine whether and how the concepts, practices, and benefits of Agile are applicable to a higher education setting. After extensive discussion and study – as well as significant ‘field testing’ of Agile methods and techniques in a variety of classroom settings – we now believe that our Agile Manifesto for Teaching and Learning - which places high value on the principles of adaptability, collaboration, achievement of learning outcomes, student-driven inquiry, demonstration and application and continuous improvement - leads to better learning outcomes for students, greater student buy-in for group-based projects, more authentic forms of group collaboration and greater opportunities for creativity and leadership by members of student groups. To be sure, the experiences and impressions that are reported in this article are still preliminary at best; indeed, most of the participating faculty in this learning community will continue to experiment with Agile in their teaching and in their other faculty work experiences in the months and years ahead. Still, at this point, enough evidence now exists to suggest that Agile provides a way of collaborating and creating that offers much of value to faculty members and others in the higher education community. With the above-reported Manifesto, we hope that our colleagues in other fields and in other institutional settings will be encouraged to explore how this method of work may offer benefits to their own work as well.

References


