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Research Article

Can Course Format Drive Learning? Face-to-Face and Lecture-Lab Models of the Fundamentals of Communication Course

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Abstract

Combining traditional classroom instruction and online instruction, or hybrid/ blended learning, has emerged as a popular option to mitigate rising enrollments and non-traditional student needs while maintaining the known advantages to the face-to-face learning format. We evaluated the effectiveness of a Fundamentals of Communication course (also known as the “hybrid” course) taught in the traditional face-to-face format and in the hybrid/ blended learning format, which included the equivalent of one credit taught face-to-face and two credits taught online (graded together as one course). Students in the blended format had stronger performances in two areas of their speeches (introduction and overall impression), had higher attendance, and had higher engagement for all types of engagement. However, there were no differences between groups in exam grades, overall course performance, or the amount of growth in self-report competence measures. Overall, results indicate that the blended lecture-lab format of the class can be at least as effective as a fully face-to-face version of the course when designed well, and course format can drive student engagement.

Keywords: blended learning, communication competence, fundamentals of communication, public speaking anxiety, public speaking performance

Introduction

Even though traditional face-to-face teaching methods remain a common practice at many universities, technology has been incorporated into most courses. Since the advent of Learning Management Systems (LMS) such as Blackboard in the early 2000s, LMS use has become increasingly popular and has been incorporated in many traditional face-to-face classes as a way to share documents, lectures, and collect assignments from students (Woods et al., 2004), as well as advanced uses to enhance students' learning experiences (Chen et al., 2018). However, there is a growing need for universities to integrate online classes to appeal to distance learning students and to make up for the lack of classroom space as enrollment numbers increase on some campuses (Tichavsky et al., 2015). Additionally, many universities are turning to online programs as a way to draw enrollments and increase revenue in the face of dwindling state support and, in some places, declining enrollments.

Online learning is the process of using technology to access learning experiences in an online format (Moore et al., 2011). Online learning, also referred to as e-learning, or distance learning (Moore et al., 2011), has consistently increased in recent years due to the flexibility and convenience it offers students (Allen & Seaman, 2016) as well as opportunities for increased participation by students who might not typically speak in a traditional face-to-face setting (Holmes & Gardner, 2006). Fully online courses also offer opportunities for students who might not otherwise be able to access in-person university classes for a variety of reasons, such as careers, families, and other responsibilities (Miller, 2010); geographic location of high school students enrolled in dual-enrollment programs (Westwick et al., 2018); and weather crises (Helvie-Mason, 2010).

Despite the growing popularity of fully online courses, there are numerous challenges associated with fully online courses, including the need for greater student independence, responsibilities, and time management skills (Stine, 2010); high attrition rates (Herbert, 2006; Smith, 2010); challenges with student motivation (Heyman, 2010); and greater challenges for some groups of underrepresented students (Wladis et al., 2015). Although there has been significant debate about whether it is appropriate to offer communication skills courses in a fully online

format (e.g., Helvie-Mason, 2010; Hunt, 2012; Miller, 2010; Vanhorn et al., 2008; Ward, 2016), others have demonstrated that a well-designed online communication skills course can be just as effective as a face-to-face course when students have appropriate support (Broeckelman-Post, Hyatt Hawkins, Arciero, & Malterud, 2019; Clark & Jones, 2001; Westwick et al., 2018).

Even though fully online communication skills courses can be an effective way to teach public speaking skills, fully online courses are not a good option for all students and should not be seen as the default option for responding to campus space or budget constraints unless they can be demonstrated to be the best option for the students being served. At the same time, some campuses are facing significant challenges related to rapid growth, classroom shortages, tightening budgets, and instructor shortages that might make our discipline's traditional model of teaching communication skills in small, fully face-to-face sections unsustainable for some. Therefore, the goal of this study is to evaluate a third possible format for teaching communication skills that brings together some of the best features of fully online and fully face-to-face courses. This study will compare the effectiveness of a pilot lecture-lab (LL) and fully face to face (FTF) format of a Fundamentals of Communication Course¹ in order to explore whether this might be an effective way to teach communication skills.

Literature Review

The Blended Learning Approach

The class format that combines traditional classroom instruction and online instruction, as is the case for our LL pilot, has several terms. Garrison and Kanuka (2004) describe blended learning as “thoughtful integration of classroom face-to-face learning experiences with online learning experiences” (p. 96). Similarly, hybrid learning is described as a mix of online learning and traditional face-to-face instruction (Blau et al., 2018). Hybrid/blended learning can be enacted in several ways, but scholars and educators agree that this approach includes some aspect of face-to-face instruction in a physical location and instruction in an online setting where students can choose the location, time, and pace of the learning (O’Byrne &

¹ In this case, the Fundamentals of Communication course includes public speaking, interpersonal, intercultural, and small group communication skills, and is referred to as a “hybrid course” in other studies (e.g., Morreale et al., 2016). Since hybrid can be used to refer to both content and format, we will use the word “hybrid” to refer to the course format in this manuscript and will use the course title to refer to the content in order to avoid confusion.

Pytash, 2015; Staker, 2011). However, while the extant scholarship in this area has surged in recent years, continued research on the best practices of instruction comparing face-to-face, online learning, and hybrid learning is needed to fully understand the benefits and limitations of each.

Hybrid/blended learning instruction first rose in popularity in the early 2000s (Güzer & Caner, 2014). As technology advanced, hybrid/blended learning was able to meet the needs of distance learners (Lei & Gupta, 2010) as well as returning students, single parents, young adults, international students, and students with physical or learning disabilities (Barker, 2015). Hybrid and online course formats offer increased flexibility allowing students to deconflict coursework from family or job responsibilities. Additionally, with the lecture lab course under examination in this study, the reduction from two or three class days each week to one reduces the total time spent commuting, reduces parking issues, and potentially involves less time missed from work. Hybrid/blended learning continues to grow in popularity in a multitude of disciplines (Güzer & Caner, 2014). However, researchers need to continue to assess the effectiveness of hybrid/blended courses to ensure the courses are meeting the learning outcomes (Garrison & Kanuka, 2004). Additionally, special attention to how these types of courses are being taught is imperative with special focus on delivery, how technology is incorporated, and ensuring students are gaining relevant skills (Chen & Jones, 2007).

Garrison and Kanuka (2004) explained that hybrid learning can be advantageous over traditional face-to-face learning or online-only learning, as hybrid learning offers “higher levels of learning through critical discourse and reflective thinking” (p. 98) and offers students the chance to critically evaluate arguments and think through responses. Further, students may improve skills in time management, problem-solving, and learn to navigate various methods of instruction (Barker, 2015) as well as critical thinking and comprehension skills (Gould, 2003). Hess et al. (2016) found significant improvements in rapport building and active listening using blended learning to teach communication skills to medical and pharmacy students. Using a blended learning course format to make a business communication course environment more rigorous and engaging, Dzakiria et al. (2012) combined traditional pedagogical techniques such as slides and videos with case studies, role-play, and other in-class activities. Students reported a more interactive and engaging learning environment. Although these techniques may be implemented in a traditional face-to-face classroom, the hybrid format described in this study removed the requirement for the classroom instructor to spend class time lecturing. With the

lecture and textbook work done online, there is more time in class for engaging activities. They also reported that their knowledge and experiences were respected as part of the learning process. This type of instruction provides a balanced learning approach that students may find more helpful than either method alone (Hilliard, 2015). In reviewing the elements of successful hybrid courses, Nortvig et al. (2018) stressed the importance of opportunities for students and teachers to interact with each other and with the content, as well as the need for intentional connections between online and in-class activities.

While hybrid learning has several advantages over the traditional and online formats, there are several drawbacks. Boelens et al. (2017) highlight four challenges hybrid/blended courses pose: incorporating flexibility, stimulating interaction, facilitating students' learning processes, and fostering an affective learning climate. Although these challenges may contribute to instructor and student fears of blended classes, Boelens and colleagues (2017) offer strategies for coping with each challenge based on a systematic review of research.

The amount of work upfront in designing a hybrid/blended learning course can be burdensome, as these courses require extensive planning in order for students to benefit from the design (Güzer & Caner, 2014). Hilliard (2015) suggests that hybrid/blended learning programs be updated at least every three years to stay up-to-date. Instructors should also encourage students to participate by creating social interaction and collaboration opportunities (Güzer & Caner, 2014). Additionally, it is vital that a solid technology support system is in place to assist students and instructors with any issues that may arise (Magiuka, 2005). It is important to evaluate the class for quality of learning (Hilliard, 2015). Evaluation should consider the software used, qualitative and quantitative feedback from students, and the usefulness to the program and university (Hilliard, 2015).

Although the blended, hybrid, and lecture-lab formats for teaching the introductory communication skills course are utilized at many universities, there is a dearth of research assessing the effectiveness of this course format. In the one study that compared blended and FTF communication skills courses, Strawser et al. (2017) found that there is no difference in communication apprehension and self-efficacy for students enrolled in face-to-face versus blended introductory courses. Although that is a valuable starting point, self-report measures do not always correspond with performance-based measures of learning (Hooker & Denker, 2014), so this study will extend those results by assessing student learning through measures of student performance, self-report measures of competence, and student engagement.

Because one of the major outcomes of most introductory communication courses is public speaking, and because that communication skill has drawn the most concern in debates about whether communication courses should be offered online, this study will test public speaking performance as well as other measures of overall course success. Attendance has been shown to be predictive of GPA, over and above SAT and high school GPA (Boeve et al., 2017), so we include that measure here. Also final exam scores and final course grades are traditional measures of overall course success. Thus, we pose the following hypotheses:

H₁: There is a difference in public speaking performance between FTF and LL fundamentals of communication course formats.

H₂: There is a difference in course performance between FTF and LL fundamentals of communication course formats.

H_{2a}: There is a difference in attendance between FTF and LL fundamentals of communication course formats.

H_{2b}: There is a difference in final exam grades between FTF and LL fundamentals of communication course formats.

H_{2c}: There is a difference in final course grades between FTF and LL fundamentals of communication course formats.

Communication Competence and Anxiety

Most research that has sought to assess the effectiveness of introductory communication courses (e.g., Broeckelman-Post & Pyle, 2017; Hunter et al., 2014; Westwick et al., 2015; Westwick et al., 2018) has relied on self-report measures of communication anxiety and communication competence, typically by using the Personal Report of Communication Apprehension (PRCA-24, McCroskey, 1982), Personal Report of Public Speaking Anxiety (PRPSA, McCroskey, 1970), Self-Perceived Communication Competence (SPCC, McCroskey & McCroskey, 1988), and other similar measures. Though these measures are a useful starting point, they do not fully capture the seven competencies that the NCA Task Force on Core Competencies argues should be achieved by any introductory course, regardless of

context (Ward et al., 2016), nor do they fully capture the achievement of outcomes outlined by the National Communication Association (2015) Learning Outcomes Project.

Because a Fundamentals of Communication Course (sometimes called the hybrid basic course; Morreale et al., 2016) includes public speaking, interpersonal, intercultural, and small group communication skills, this study sought to include self-report measures on all four of those skill sets as well as better capture the core competencies that should be met by any introductory communication course. While this study will assess whether there are differences in the reduction of Communication Apprehension (CA) so that it can be considered alongside other studies and can serve as a useful benchmark (Broeckelman-Post & Pyle, 2017), it will also include other more comprehensive measures of competence. Because the Communication Competence Self-Report Questionnaire (CCSR; Rubin, 1985) and the Interpersonal Communication Competence Scale (ICCS; Rubin & Martin, 1994) better capture outcomes such as “demonstrate self-efficacy” through the ICCS dimension of assertiveness, “utilize communication to embrace difference” through the ICCS dimension of empathy, and “create messages appropriate to the audience, purpose, and context” through CCSR items such as, “When giving a speech, I thoroughly express and fully defend my positions on issues,” these measures will be used to evaluate growth in communication competence.

H₃: There is a difference in the change in self-report competence measures over the course of the semester between FTF and LL fundamentals of communication course formats

H_{3a}: There is a difference in the change in CA over the course of the semester between FTF and LL fundamentals of communication course formats.

H_{3b}: There is a difference in the change in CCSR over the course of the semester between FTF and LL fundamentals of communication course formats.

H_{3c}: There is a difference in the change in ICCS over the course of the semester between FTF and LL fundamentals of communication course formats.

Student Engagement

Hu and Kuh (2002) defined student engagement as “the quality of the effort students themselves devote to educationally purposeful activities that contribute directly to the desired outcomes” (p. 555). Scholars have developed several ways to measure engagement, each with a different approach.

Mazer’s (2012) engagement measure consists of four dimensions: silent in class behaviors, oral in class behaviors, thinking about course content, and out of class behaviors. He also developed measures of emotional and cognitive interest, which are correlated with engagement (Mazer, 2013).

Reeve’s (2013) engagement measure includes cognitive, emotional, behavioral, and agentic dimensions. Cognitive engagement is the intellectual investment that students make to learn course material, and includes thinking about content in the moment, deeper-level study, and self-regulation (Lawson & Lawson, 2013; Mazer, 2017). Emotional engagement refers to the emotional connection students form and includes positive affect, interest, anxiety (Appleton et al., 2008), as well the sense of belonging in class (Lawson & Lawson, 2013). Behavioral engagement includes involvement in academic and social/extracurricular activities (Fredricks et al., 2004; Olivier et al., 2018; Skinner & Belmont, 1993) and may include “positive conduct, effort, and participation” (Appleton et al., 2008, p. 370). Lastly, agentic engagement is “initiating action to render one’s environment more supportive and need-satisfying” (Jang et al., 2016, p. 29). This can include students asking questions, explaining how the instructor can meet their needs to learn the material, and making suggestions to help advance the course. Agentic engagement may have more salience the college population as more experienced and mature students might know what support they need and be proactive about obtaining that support. Reeve’s (2013) measure was used in this study.

Engagement is malleable (Fredricks et al., 2004) in response to both classroom (Mazer, 2013) and environmental (Lawson & Lawson, 2013) influences. Because engagement is a necessary condition for and one of the best indicators of learning (Kuh, 2009), it is important to understand whether the LL and FTF course formats result in different levels of engagement, we pose the following hypothesis:

H₄: There is a difference in student engagement between FTF and LL fundamentals of communication course formats.

Method

Participants

This study was conducted at a large public Mid-Atlantic university. All students enrolled at this university are required to take either a public speaking course or a fundamentals of communication course (includes public speaking, interpersonal communication, and small group communication) in order to meet the general education oral communication requirement. The fundamentals of communication course is typically offered in a fully face-to-face (FTF) course that meets three times per week, which was also the case for this study. For the purposes of this study, the course was additionally taught as a pilot in a hybrid/blended learning format, which we refer to as the lecture-lab (LL) format. The LL format met asynchronously online for the equivalent of one hour per week and met synchronously in the classroom for two hours once each week. Both the FTF and LL courses were taught with the same syllabus, textbook, assignments, grading rubrics, and exams. There were four major assignments with presentations in the class: an introductory speech, exploring culture and perception interview and presentation (in pairs), an explanatory speech with an annotated bibliography, and a deliberative dialogue assignment that culminated in a group persuasive speech.

In the LL format, the online portion focused on content and preparation, including textbook readings, quizzes, and an online lecture. The in-classroom portion focused on discussion, activities, group work, and speech performances. For the online portion of the class, most weeks, students watched a short (two to three minute) overview video, read two or three chapters in the textbook, and then completed a quiz for each chapter. Unlike most online quizzes, these quizzes were designed as learning modules to foster deeper learning and to build application and analysis skills. The students began by watching two TED or TEDx talks given by scholars or experienced practitioners that added to what the students had already learned about the course concepts in the reading and answered a question about each talk. Next, students watched several video clips that showed a communication interaction and then answered a question that required them to analyze the clip using the theories that they had just learned, similar to the way that video clips are often used as examples for discussion and analysis in a classroom setting. If there were not enough video clips to complete a ten-question quiz, the final few questions were sometimes scenario-based multiple choice items. Afterward, students were instructed

to complete activities, such as working on research or outlines, to prepare for their classroom session and upcoming assignments. Because the online portion of the class helped students gain foundational knowledge and work at the application and analysis levels of Bloom et al.'s (1956) taxonomy of cognitive learning, instructors were asked to focus on active learning strategies and to keep students working at the application, analysis, synthesis, and evaluation levels of the taxonomy for the in-classroom portion of the class.

All students who were enrolled in either the traditional FTF or the pilot LL sections of the fundamentals of communication course during spring 2018 were invited to participate in this study. Students who did not complete the explanatory speech and final exam were excluded from this analysis since they did not complete the course, and students who opted out of having their results included in research studies were removed prior to analysis.

A total of 835 students participated in this study, including 723 who were enrolled in the FTF course and 112 who were enrolled in the LL course. Because the LL format of the course was being offered as a pilot, only six sections of the LL format were taught, which is why the group sizes are unequal. The mean age for all participants was 19.28 years ($SD = 2.69$). For gender, 47.1% ($n = 258$) reported that they were male, 51.6% ($n = 283$) female, 0.5% ($n = 3$) transgender, and 0.7% ($n = 4$) preferred not to disclose. Most students (70.4%, $n = 386$) were first-year students, 16.4% ($n = 90$) sophomores, 9.7% ($n = 53$) juniors, and 3.5% ($n = 19$) seniors. For ethnicity, 37.0% of participants ($n = 309$) reported that they were white or Caucasian, 14.7% ($n = 123$) Asian, 9.8% ($n = 82$) black or African-American, 7.7% ($n = 64$) Hispanic or Latino/a, 4.6% ($n = 38$) Middle Eastern or North African, 1.1% ($n = 9$) American Indian or Alaska native, 0.5% ($n = 4$) Native Hawaiian or Pacific Islander; the remaining 24.7% ($n = 206$) of participants did not complete the pre-course survey or chose not to disclose. Of students who completed the pre-course survey, 69.0% ($n = 378$) are L1 English speakers, 24.5% ($n = 134$) are Generation 1.5 speakers, 4.0% ($n = 22$) are L2 English speakers, and 2.6% ($n = 14$) were not sure which linguistic category best described them².

² Thonus (2003) defines three broad categories for students' linguistic background: L1 students speak English as their first and primary language; Generation 1.5 speakers learned a language other than English as their first language and might still speak it at home, but have attended English-speaking schools in the U.S. for several years; L2 students are still learning the English language and might have recently arrived in the U.S. from another country.

Instructors

The instructors selected for the lecture lab pilot were all PhD students and had taught at least one semester of the traditional face-to-face course format previously. The course director produced and presented the online portion of the lecture lab format.

Procedure

All students who were enrolled in the fundamentals of communication courses were required to complete an online pre-course survey and post-course survey as a course assignment. Both surveys included self-report measures, which are described in more detail below. The pre-course survey also included demographic items. The pre-survey was available during the first two weeks of the semester, and the post-survey was available during the last two weeks of the semester. Additionally, gradebooks and attendance records were collected from all course instructors. At the end of the semester, the pre-course survey, post-course survey, gradebooks, and attendance records were matched at the individual student level and merged into a single SPSS database, and students who selected to opt out of having their data included in research analyses were deleted from the data set prior to analysis, per IRB instructions.

Instructors were asked to record all students' explanatory speeches, and those video recordings were then split into individual speech video files. This assignment requires students to give a 5-7 minute speech in which they explain a concept related to their major or intended career to a non-expert audience, and this assignment occurs approximately three-fourths of the way into the semester. A total of 150 recorded speeches were selected using a stratified random sampling technique, 75 of which were from the FTF course format, and 75 of which were from the LL course format. To obtain intercoder reliability, 16 speech videos (10% of a larger sample of videos used for a larger assessment project) were viewed and graded together by four expert coders during the grading training session. Once the graders achieved intercoder reliability of Krippendorff's (2011) $\alpha = .83$, the remaining video files were randomly assigned to the four graders and evaluated individually. Speech performance grades, both for the speech overall and for five different aspects of the speech (introduction, body, conclusion, overall impression, and delivery) were merged with the complete SPSS dataset by matching student ID numbers, and then all individually identifying information was removed, per IRB instructions.

Instrumentation

Speech performance. Speech performance was measured by using an adapted version of the inter-institutional public speaking performance grading rubric that was developed as part of an NCA Advancing the Discipline Basic Course Assessment Project, *A National-Level Assessment of Core Competencies in the Basic Course*³. Because we were grading videos of speeches instead of outlines, we removed the outline portion of the rubric and added a delivery section (see Broeckelman-Post et al., 2019).

Course performance. Course performance was measured using three outcomes: attendance, final exam score, and final course grade. Attendance was calculated as a proportion of classes attended in order to account for different course meeting patterns; for instance, a student who attended 26 out of 28 class meetings received a score of .93. Both courses had a 100-point multiple-choice final exam that was completed online using the Respondus online exam proctoring software, and each exam had an even distribution of exam items across chapters and across the first three levels of Bloom et al.'s (1956) taxonomy of cognitive learning. The final course grade was the total number of points that the student earned out of the possible 1000 total points for each class.

Communication apprehension. Communication Apprehension was measured using McCroskey's (1982) Personal Report of Communication Apprehension (PRCA-24). This measure includes four sub-scales: Group Discussion, Interpersonal, Meetings, and Public Speaking. This scale includes 24 items measured on a 5-point Likert scale ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*. This scale includes items such as "I face the prospect of giving a speech with confidence" (Public Speaking) and "I'm afraid to speak up in conversations" (reverse-coded, Interpersonal). In our study, this measure had a reliability of $\alpha = .97$ in the pre-test and $\alpha = .95$ in the post-test for the overall measure, $\alpha = .90$ in the pre-test and $\alpha = .86$ in the post-test for Group Discussion, $\alpha = .91$ in the pre-test and $\alpha = .89$ in the post-test for Meetings, $\alpha = .91$ in the pre-test and $\alpha = .85$ in the post-test for Interpersonal, and $\alpha = .90$ in the pre-test and $\alpha = .87$ in the post-test for Public Speaking.

Interpersonal communication competence. Interpersonal Communication Competence was measured using Rubin and Martin's (1994) Interpersonal Communication Competence Scale (ICCS). This measure includes 30 items

³ Grant team members: Melissa Broeckelman-Post, Lindsey Anderson, Andrew Wolvin, Angela Hosek, Cheri Simonds, John Hooker, Joshua Westwick, Karla Hunter, Kristina Ruiz-Mesa, and LeAnn Brazeal

measured on a 5-point Likert scale ranging from 1 = *Almost Never* to 5 = *Almost Always*. Example items include “I can put myself in others’ shoes” and “I accomplish my communication goals.” In our study, this measure had a reliability of $\alpha = .89$ in the pre-test and $\alpha = .89$ in the post-test.

Communication competence. Communication competence was measured using Rubin’s (1985) Communication Competency Self-Report Questionnaire (CCSR). This measure includes 19 items measured on a 5-point Likert scale ranging from 1 = *Never* to 5 = *Always*. (The original version of this scale has 1 = *Always* and 5 = *Never*, but we reversed the scale to be consistent with other scales in our survey.) Example items include, “When I speak with others, my ideas are clearly and concisely presented” and “When I explain something to someone, it tends to be disorganized” (reverse-coded). In our study, this measure had a reliability of $\alpha = .86$ in the pre-test and $\alpha = .86$ in the post-test.

Engagement. Engagement was measured using Reeve’s (2013) Student Engagement Scale (SES), which includes four dimensions: Behavioral, Agentic, Cognitive, and Emotional. This scale includes 21 items measured on a 7-point Likert scale ranging from 1 = *Strongly Disagree* to 7 = *Strongly Agree*. This scale includes items such as “I try hard to do well in this class” (Behavioral Engagement) and “When I need something in this class, I’ll ask the teacher for it” (Agentic Engagement). In our study, this measure had a reliability of $\alpha = .96$ in the pre-test and $\alpha = .96$ in the post-test for the overall measure, $\alpha = .85$ in the pre-test and $\alpha = .87$ in the post-test for Behavioral Engagement, $\alpha = .89$ in the pre-test and $\alpha = .89$ in the post-test for Agentic Engagement, $\alpha = .85$ in the pre-test and $\alpha = .86$ in the post-test for Cognitive Engagement, and $\alpha = .89$ in the pre-test and $\alpha = .90$ in the post-test for Emotional Engagement.

Results

Public Speaking Performance

To test whether there was a difference in public speaking performance for the explanatory speech between the FTF and LL fundamentals of communication course formats (H_1), a MANOVA with one independent variable (course format) and six dependent variables (total score, introduction, body, conclusion, overall impression, and delivery) was conducted. Box’s M test for the equality of covariances could not be computed, so Wilk’s Lambda values were used. Multivariate tests showed a significant main effect for course format [$F(5, 144) = 2.54, p = .003, \eta_p^2 = .08$,

power = .78]. Univariate tests showed significant main effects for the speech introduction [$F(1, 148) = 5.64, p = .02, \eta_p^2 = .04, \text{power} = .66$] and overall impression [$F(1, 148) = 4.17, p = .01, \eta_p^2 = .04, \text{power} = .71$], but not for body, conclusion, delivery, or total speech grade. Students enrolled in the LL format of the course were stronger than students enrolled in the FTF format of the course for both the introduction (LL: $M = 8.45, SD = 1.19$; FTF: $M = 7.93, SD = 1.50$) and overall impression (LL: $M = 9.39, SD = 1.00$; FTF: $M = 9.06, SD = 1.00$). H_1 was partially supported. Means and standard deviations are shown in Table 1.

Table 1
Means and Standard Deviations for all Variables

Variable	Face to Face					Lecture/Lab				
	N	M	SD	M	SD	N	M	SD	M	SD
Total Speech Score	75			82.87	9.09	75			84.54	10.02
Introduction ^a	75			7.93	1.50	75			8.45	1.18
Body	75			40.43	5.87	75			41.68	6.94
Conclusion	75			7.87	2.06	75			7.46	2.78
Overall Impression ^a	75			9.06	1.00	75			9.40	0.55
Delivery	75			17.59	1.14	75			17.55	1.76
Final Exam	679			75.34	10.57	112			75.46	9.83
Course Grade	679			866.57	81.26	112			869.75	100.26
PRCA	309	67.61	22.40	62.53	20.05	45	69.20	23.51	61.58	18.97
ICCS	309	108.04	16.29	111.27	15.13	45	110.11	13.07	116.80	11.99
CCSR	309	73.46	9.99	76.54	9.14	405	73.60	7.91	78.91	8.64
Engagement Total ^b	439			5.17	1.06	63			5.59	0.98
Behavioral Engagement ^b	439			5.38	1.17	63			5.87	0.97
Agentic Engagement ^b	439			5.02	1.13	63			5.44	1.01
Cognitive Engagement ^a	439			5.37	1.11	63			5.71	1.07
Emotional Engagement ^a	439			5.02	1.31	63			5.45	1.28

Notes: Pre = Scores on the pre-course survey. Post = scores on the post-course survey or end of course as applicable.

SD = Standard Deviation. Total score, Introduction, Body, Conclusion, Overall, and Delivery refer to speech performance grades. Final Exam is the score students received on the course final examination. Course Grade is the total number of points students received out of a possible 1000 points for the course, including all graded assignments and examinations. PRCA = scores for Personal Report of Communication Apprehension; ICCS = scores for Interpersonal Communication Competency; CCSR = scores on the Communication Competency Self-Report Questionnaire. All engagement scores are from the post-course survey.

a = Significant difference between face-to-face and lecture lab formats ($p < .05$). b = $p < .01$

Course Performance

Next, to test H₂, a MANOVA with one independent variable (course format) and three dependent variables (attendance, final exam score, and final course grade) was conducted to find out whether there was a difference between the public speaking course and fundamentals of communication course in student performance. Box's M test for the equality of covariances was not significant at the .001 level, $F(6, 219012.77) = 2.40, p = .03$, so Wilk's Lambda values were used. Multivariate tests showed a significant main effect for course [$F(3, 787) = 2.74, p = .04, \eta_p^2 = .01$, power = .67]. Tests of between-subjects effects indicated that there was a significant difference between courses in attendance, $F(1, 789) = 7.21, p = .007, \eta_p^2 = .01$, power = .77, but not for final exam or final grade. Students enrolled in the LL format ($M = .90, SD = .14$) attended a greater proportion of classes than students enrolled in the FTF format ($M = .85, SD = .15$). H_{2a} was supported, but H_{2b} and H_{2c} were not supported.

Self-Report Competence Measures

To test H₃, a within-subjects MANOVA with one between-subjects factor (course format) and three within-subjects factors (CA, ICCS, and CCSR) was conducted to determine whether there were changes in these self-report competence measures over time, as well as whether there were between-subjects differences. Box's M test for the equality of covariances was not significant at the .001 level, $F(21, 21759.30) = 1.00, p = .46$, so Wilk's Lambda values were used. Multivariate tests showed a significant main effect for time [$F(3, 350) = 16.67, p < .001, \eta_p^2 = .13$, power = 1.00], but not for course format [$F(3, 350) = 1.89, p = .13$], nor for the time by course format interaction [$F(3, 350) = 1.18, p = .32$]. Univariate within-subjects effects were significant for CA [$F(1, 352) = 30.12, p < .001, \eta_p^2 = .08$, power = 1.00], ICCS [$F(1, 352) = 23.75, p < .001, \eta_p^2 = .06$, power = 1.00], and CCSR [$F(1, 352) = 36.45, p < .001, \eta_p^2 = .09$, power = 1.00]. Although there was an overall significant decrease in CA and increase in ICCS and CC, there were no differences between course formats, so H_{3a}, H_{3b}, and H_{3c} were not supported.

Engagement

To test H₄, a factorial MANOVA with one independent variable (course format) and five dependent variables (overall engagement, behavioral engagement, agentic

engagement, cognitive engagement, and emotional engagement) was conducted to find out whether there was a difference between the FTF and LL course formats in student engagement. Box's M test could not be computed, so the more conservative Hotelling's Trace values were used. Multivariate tests showed a significant effect for course type [$F(4, 497) = 2.69, p = .03, \eta_p^2 = .02, \text{power} = .75$]. Univariate tests showed significant effects for all five types of engagement. For overall engagement, $F(1, 500) = 9.02, p = .003, \eta_p^2 = .02, \text{power} = .85$. For behavioral engagement, $F(1, 500) = 10.20, p = .001, \eta_p^2 = .02, \text{power} = .89$. For cognitive engagement, $F(1, 500) = 6.16, p = .026, \eta_p^2 = .01, \text{power} = .61$. For emotional engagement, $F(1, 500) = 6.02, p = .015, \eta_p^2 = .01, \text{power} = .69$. For agentic engagement, $F(1, 500) = 9.77, p = .005, \eta_p^2 = .02, \text{power} = .80$. Students in the LL course format had higher levels of engagement overall as well as higher levels of each of the four types of engagement, so H_4 was supported.

Discussion

Overall, our results showed that the LL format of the fundamentals of communication course was more effective in a number of areas than the FTF format of the course. Students in the LL format had stronger performances in two areas of their speeches (introduction and overall impression), had higher attendance, and had higher engagement for all types of engagement. However, there were no differences between groups in exam grades, overall course performance, or the amount of growth in self-report competence measures.

One of the most important implications of this study is that course format can impact student learning and engagement in some areas. Though the effect sizes were small and should be interpreted with some caution, we believe that the LL format required instructors to change the way that they used class time, which in turn impacted student attitudes and behavior. The format of the LL course moved the primary content delivery elements of the course out of the classroom and forced instructors to use class time for learner-centered activities at higher levels of Bloom et al.'s (1956) taxonomy rather than relying on instructor-centered teaching techniques. This is consistent with previous research that found blended learning requires students to actively participate with the course material, as opposed to traditional classrooms that may allow for more passive participation (Chen & Jones, 2007). Since novice instructors tend to rely on more instructor-centered and content-focused pedagogical techniques that allow them to maintain more control over what happens in the classroom, this course format can be more challenging for novice

instructors since discussion and activities require a higher level of adaptability. This highlights the vulnerability of teaching in the hybrid format and reinforces the need for adequate support and a sustained training program that provides basic training before instructors enter the classroom for the first time as well as ongoing pedagogical development (Broeckelman-Post & Ruiz-Mesa, 2018; Sprague & Nyquist, 1991).

These results show how campus scheduling challenges can become a catalyst for creative change that can benefit students if implemented carefully and thoughtfully. This pilot was done in response to a series of challenges: a rapidly growing undergraduate student population, classroom shortages due to a major construction project, an instructor team that was growing too large to be trained and mentored effectively, poor access to classroom technology, and a desire to create a communication center that could meet individual students' coaching needs. Though several other course formats were considered, the LL format was chosen because it allowed our program to ensure content consistency through the online component, made it possible to develop a media-rich online experience that could not be achieved in all classrooms, and created an opportunity to build an integrated communication center component if the pilot was successful. Additionally, whereas it was not possible to hire MA students in communication to teach the course in the traditional format because of state accreditation rules, the new LL format opened the door for training and hiring more graduate student instructors who have content expertise in communication (Hunt et al., 2014), rather than from other related disciplines, while also enhancing the instructor training component of the program and bringing the instructor team to a more mentoring-appropriate and sustainable size. Although the Communication Center component of the course had not yet been incorporated into the LL format for the pilot, we anticipate that it will further enhance student engagement, learning, and performance in the course.

Limitations and Future Research

One of the limitations of this study is that this was not a truly randomized experiment. While all instructors went through the same training and used the same course materials, it is impossible to know whether some of the differences might have been due to instructor effects since instructors taught either the FTF or LL format of the course, but not both. Blau et al. (2018) suggest that the instructor is the most important factor in perceived favorability for online and hybrid courses, and

that engagement in a hybrid course could be due to the specific instructor. We also do not know whether different types of students tended to enroll in one type of course over the other. The LL courses were listed at the bottom of the course schedule, and because this format and registration process was new, many students and advisors sent emails expressing confusion and asking questions about the course format. As a result, the LL sections were the last sections to fill, so many of the students who enrolled in the LL format did so because they had no other options remaining. If it is practically feasible, future research should randomly assign students to groups and to have instructors teach both formats of the course in order to distribute any potential instructor effects across conditions. If this design can be used, future research should use multi-level modeling to explore whether any of the differences observed across formats can be attributed to the instructors.

Another benefit and limitation of this study is that the Communication Center that will be a part of this course format was not yet in place for this pilot study. Although this study found that a LL model of a Fundamentals of Communication course can be as or more effective than a traditional FTF course, which in and of itself is a valuable research contribution, this study is not yet evaluating the full planned renovation of our course format that will include a required Communication Center component. Previous research has shown that students who attend communication centers earn higher grades in their oral communication classes (Dwyer et al., 2002; Hunt & Simonds, 2002), gain more confidence delivering speeches in class (Dwyer & Davidson, 2012) and in other situations (Dakum & King, 2015), and reduce communication apprehension (Dwyer et al., 2002). We expect that adding at least one required communication center visit to the course will further enhance the effectiveness of the LL course, so a follow-up study should be conducted to investigate how much additional benefit the communication center component contributes. That follow-up will be part of an ongoing program of continuing research on the best practices of instruction comparing face-to-face, online, and blended learning to better understand the benefits and limitations of each and to continue to improve basic communication course offerings.

Implications for Teaching and Learning

The first implication that this study offers is that the lecture-lab format is an effective option for teaching the introductory communication course. Even though students and instructors had less time together in the physical classroom, there were

some learning benefits to the lecture-lab format. Although the small effect sizes suggest that we should be cautious about making claims about the superiority of the lecture-lab format, this study suggest that this is a viable format for large skills-based service courses like this one. When departments are facing challenging constraints, those challenges can become a catalyst for creative change that might allow us to engineer a better learning experience for students. Additionally, this format allows course directors to facilitate a strong faculty development experience for new instructors and can help to model effective student-centered pedagogies in both online and face-to-face formats, which can then be scaffolded into more independent teaching opportunities in other courses, especially for graduate students who are preparing for future full-time faculty roles. At the same time, programs must be mindful that the high level of standardization that necessarily accompanies this course format reduces individual instructor autonomy and can reduce the number of adjunct teaching positions available for non-graduate student instructors, which can be particularly challenging for contingent faculty who are already in precarious, undervalued positions (Mapes, 2019).

The second implication of this study is that curriculum revision and assessment processes should not be seen as a “one and done” operation. This pilot of the course format followed several years of continuous course revision, and now that it has been successful, it has been launched full-scale, which has also allowed this program to build a communication center that will further support students in this course. However, further research will be needed to evaluate the effectiveness of the communication center component of the course, and further adjustments will need to be made to the course to respond to additional challenges that were discovered when the course format was deployed on a larger scale. This study offers a model for how to do comprehensive assessment to make sure innovations are helpful...or at least not harming students. At the same time, it offers a reminder that course directors need to have strong pedagogical, administrative, and research skills, and that the assigned responsibilities for course directors should give appropriate time and credit for each of those skills. Too often, course directors and instructors are in non-tenure-track positions in which time is not assigned to do research and assessment work similar to what is modeled here (Morreale et al., 2016). Even though the introductory communication course is the “front porch” of our discipline (Beebe, 2013), by failing to provide the appropriate faculty resources to do robust ongoing assessment and curriculum development (Mello, 2016), too many communication programs are leaving that front porch untended.

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