Learning to Speak in the Digital Age:

An Examination of Instructional Conditions for

Teaching Public Speaking Online

by

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ABSTRACT

This dissertation study quantitatively measured the performance of 345 students who received public speaking instruction through an online platform presented in one of six experimental conditions in order to explore the ability of online lectures to replicate the characteristics of instructor presence and learner interaction traditionally associated with face-to-face public speaking courses. The study investigated the following research questions:

> RQ1: How does the visibility of an instructor in a public speaking video lesson affect students' perception of presence?
>
> RQ2: How does the visibility of an instructor in a public speaking video lesson affect student learning?
>
> RQ3: How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect students' perception of presence compared to passive lessons when presented in a video lesson?
>
> RQ4: How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect student learning compared to passive lessons when presented in a video lesson?

Additionally, the study collected qualitative feedback from participants on their experience in order to improve understanding of how to effectively design lectures for public speaking courses.

Results of the study were unable to statistically distinguish between students assigned to treatments that varied in both modality and level of activity. However, a

significant finding of this study is that learning gains and students' perception of instructor presence were positive across all conditions.

The lack of significant differences by treatment indicates that the design attributes at the center of the study may be unnecessary considerations for developing content for online learning. Consequently, the improved performance of participants regardless of their assigned treatment in this study identifies a limitation to the application of Media Equation Theory and the Interactive-Constructive-Active-Passive (ICAP) Framework for designing online learning content for public speaking students as well as identifies two key implications: 1) exposure to an online lesson can increase learning; and 2) exposure to an online lesson can serve as a cost-effective alternative for producing lessons in public speaking courses.

DEDICATION

For my father, Dale A. Butler, Jr., who taught me the meaning of the word dedication.

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Foremost, as the son of two enlisted soldiers and a veteran myself, I am eternally grateful to those who serve and support the armed services of our country. The military provided an opportunity for my parents to learn the value of service, and I consider myself privileged to have benefited from the sacrifices they, and so many Americans, made so that my classmates and I could pursue an education. This accomplishment would not be imaginable without the community of parents and teachers who took responsibility for my caretaking and education as a military dependent. Nor would it be possible without the training from my instructors at the U.S. Air Force Academy and the encouragement of my fellow Airmen to continue my service to our country as an educator. Specifically, I would like to thank my high school English instructor and mentor John Robert for inspiring me to become a teacher; my forensics coach Rachel Woodward and film professor LtCol David Boxwell for cultivating my scholarship and passion for criticism; and my commander Col Mike Woolley for investing in my development as a leader.

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CHAPTER 1

INTRODUCTION

The ability to communicate is arguably humanity's most powerful tool. Sharing ideas, whether written, gestured, or spoken, is a fundamental part of social progress and personal growth. We learn by interacting with others. Hence, learning to communicate in the public sphere and articulating one's thoughts are invaluable experiences in the developmental process. For grade school and college students, this rite of passage is formally signaled by participation in the oft-maligned public speaking course—an educational practice that is classically characterized by gathering with your peers to endure a series of humiliating attempts at oration.

However, in an era when lessons traditionally delivered in brick-and-mortar classrooms are rapidly being digitized for online consumption, and the vast majority of American students, 95% of teens according to the Pew Research Internet Project (2014), regularly access the Internet to communicate with others, should courses traditionally delivered in a face-to-face environment such as public speaking undergo similar modification? Is it possible to teach the skill of public speaking as effectively in a digital environment as it is through face-to-face interactions? Does an instructor need to be present to deliver such material? These questions are on the tips of educators' tongues and at the heart of reconceptualizing what it means to be "public" for contemporary audiences and challenging the very definition of "speaking" in the digital age.

The contemporary practice of disseminating academic content through instructional videos via Massive Open Online Courses (MOOCs), TED Talks, and YouTube demonstrations has given rise to a popular trend of supplementing, if not replacing, material traditionally communicated through face-to-face lectures. However, research surrounding the efficacy of such videos is still in its early stages, if not void in many disciplines. Specifically, the field of speech communication represents a content area that is critically germane to the study of presence and presentation skills since these subjects are routinely addressed in introductory public speaking courses. Of particular concern is the question of how to design online lectures that will produce effective results when it comes to teaching students about public speaking.

Toward answering this question, this dissertation study sought to quantitatively measure the performance of a sample group of students who received public speaking instruction through an online platform presented in one of six experimental conditions. In order to explore the ability of online lectures to replicate the characteristics of instructor presence and learner interaction traditionally associated with face-to-face public speaking courses, the study posed the following research questions:

RQ1: How does the visibility of an instructor in a public speaking video lesson affect students' perception of presence?

RQ2: How does the visibility of an instructor in a public speaking video lesson affect student learning?

RQ3: How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect students' perception of presence compared to passive lessons when presented in a video lesson?

RQ4: How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect student learning compared to passive lessons when presented in a video lesson?

Additionally, the study collected qualitative feedback from participants on their experience in an online learning environment in order to improve understanding of how to effectively design lectures for public speaking courses.

The General Problem

The question of how to most effectively design content for delivery in an online learning environment is an enduring challenge faced by educators across academic disciplines. However, when it comes to public speaking, the concept of shifting a traditionally face-to-face practice to an online environment presents a unique existential challenge to instructional pedagogy. Is the physical presence of an instructor necessary for students to learn about public speaking? Are there techniques that could effectively substitute or improve the instruction of such content? To begin to answer these questions, it is critical to review findings from the fields of instructional design and educational psychology in order to establish a foundation for the design and development of online learning modules relative to public speaking.

Of particular value to the discussion, studies on whether media influences learning (Clark, 1983; Kozma, 1991), modality affects cognition (Mayer & Anderson, 1991), and signaling reduces cognitive load (Just & Carpenter, 1980) provide a wealth of significant research findings that inform current understanding of effective instructional pedagogy and serve as the foundation for continued scholarship. The following review outlines the key findings from this literature, identifies existing knowledge gaps, and proposes a course of study to contribute to this body of research.

Does Media Influence Learning?

The question of media's influence on learning has been debated for more than a century. From Thorndike's (1912) recommendation of using pictures as a labor-saving device in instruction to Clark's (1983) criticism that "media do not influence learning under any conditions" (p. 445), instructional practices have historically reflected technological innovations in media. As Clark (1983) suggests, "The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (445). To wit, Clark further notes, "Five decades of research suggest that there are no learning benefits to be gained from employing different media in instruction, regardless of their obviously attractive features or advertised superiority" (450). However, Kozma's (1991) response to Clark that, "Some students will learn a particular task regardless of the delivery device; others will be able to take advantage of a particular medium's characteristics to help construct knowledge" (205) has proven to provide a more reasonable, if not malleable, explanation for subsequent research findings (Jeung et al, 1997; Leahy, Chandler & Sweller, 2003; Brünken, Plass & Leutner, 2004; Lowe, 2004; Miller, 2005; Austin, 2009; Kalyuga, 2011; Schoor, Bannert & Brunken, 2012; Bull, 2013; Kim, 2013). As Kozma (1991) aptly summarizes, "[O]ur ability to take advantage of the power of emerging technologies will depend on the creativity of designers, their ability to exploit the capabilities of the media, and our understanding of the relationship between these capabilities and learning" (206).

Similarly, the question surrounding variation in experimental findings on the effects of modality within a given media has received considerable attention by researchers over the course of the past two decades.

Does Modality Effect Cognition?

Presentations come in many forms, but typically incorporate audio and visual elements to deliver a message. Whether this message is more effectively communicated through reading text, hearing a narrator, or a combination of both, represents one of the key questions derived from the study of Dual Coding Theory (Clark & Paivio, 1991). Essentially, the theory describes how verbal and non-verbal information are processed separately through their own modality-specific channels. Moreover, recall is enhanced when information is communicated in a combination of ways to stimulate both channels.

The study of modality, particularly within multimedia conditions, is rooted in Mayer and Anderson's (1991) study of narrated animations and the corresponding deluge of experimental findings (Mayer & Anderson, 1992; Mayer & Moreno, 1998; Mayer et al, 1999; Moreno & Mayer, 1999; Moreno & Mayer, 2000; Mayer et al, 2001; Mayer & Moreno 2002a; Mayer & Moreno, 2002b; Moreno & Mayer, 2002a; Moreno & Mayer, 2002b) which serve as the foundation of the *Cognitive Theory of Multimedia Learning*. In sum, Mayer et al's body of research identifies seven principles for the effective use of animation in multimedia instruction: 1) the multimedia principle (present animation and narration rather than narration alone); 2) the spatial contiguity principle (present on-screen text near rather than far from corresponding animation); 3) the temporal contiguity principle (present corresponding animation and narration simultaneously rather than successively); 4) the coherence principle (exclude extraneous words, sounds, and video); 5) the modality principle (present animation and narration rather than animation and onscreen text); 6) the redundancy principle (present animation and narration rather than animation, narration, and on-screen text); and 7) the personalization principle (present words in conversational rather than formal style). Essentially, Mayer (2001) believes that multimedia lessons can promote learner understanding when designed with these principles in mind—confirming Rieber's (1990) finding that animated presentations can promote learning, but only under certain conditions.

Numerous studies have replicated Mayer and his colleagues' findings, generalizing them to other forms of multimedia instructional materials. For example, Leahy et al (2003) found that visual with audio presentations were superior to equivalent visual-only presentations, and that a non-essential explanatory text, presented aurally with similar written text contained in a diagram, actually hindered learning. Austin (2009) demonstrated that text positioning and motion distraction accounted for the inferiority of transfer test performance in certain multimedia conditions, and that display design can split attention, increase cognitive load, and reduce transfer learning. Rummer, Schweppe, Furstenberg & Scheiter (2011) observed the modality effect in comparing the simultaneous presentation of texts and pictures. Similarly, Kalyuga, Chandler & Sweller (2000) as well as Issa, Schuller, Santacaterina, Shapiro, Wang, Mayer & DaRosa (2011) found statistically significant improvements in retention and total posttest scores for students instructed using principles of multimedia design compared with those instructed using the traditional design. And, most recently, Bull (2013) concluded that when designing digital interactive learning materials instructors should ensure that information is presented in at least two modes (text, video, picture, animation and audio) of representation for clarity and understanding; since using at least two modes of representation creates a multimedia learning effect, which enables learners to effectively develop verbal and visual models and build functional connections between them.

Multimedia learning literature ultimately reveals that modality effects are strongest when relatively complex material is presented under fast-paced conditions (Ginns, 2005; Mautone & Mayer, 2007). However, more recent research has revealed the presence of reverse modality effects (Crooks, Cheon, Inan & Ari, 2012), wherein written text is superior to spoken text. Less is known about the boundary conditions for reverse modality effects, but one common condition appears to be affording learners the opportunity to apply text-processing strategies to written text (Tabbers, Martens & van Merrienboer, 2004, Kalyuga, 2011). As Crooks et al (2012) concludes, "The key appears to be providing sufficient time for learners to control their own text-processing strategies, regardless of whether they control the actual pacing of instruction or not" (p. 1065). Similarly, Lowe's (2004) findings suggest that in order to build satisfactory mental representations from interactive animations, learners may require specific guidance; especially since animations lose their superiority over static graphics over time due to working memory overload associated with large amounts of transient or auditory information (Wong, Leahy, Marcus & Sweller, 2012).

In turn, a number of studies support the superiority of learning from printed messages over audio and television messages since reading strategies for processing complex printed materials are generally more developed in learners than listening strategies. For example, Furnham (2001) found that news stories, travel advertisements, and even scientific material are remembered better when presented as print rather than as audio or audio/visual (e.g., television) messages—findings that appear to be most pronounced when adult learners (Furnham, De Siena & Gunter, 2002) read relatively difficult text (Mousavi, Low & Sweller, 1995). Unfortunately, due to the linear nature of speech, text-processing strategies cannot be employed with spoken text.

Not all of the attempts to replicate Mayer's findings related to the modality principle, however, have resulted in Brünken's (2004) affirmation that, "the modality effect is known as one of the most reliable and valid instructional design effects in multimedia learning…When textual and pictorial learning materials are presented simultaneously, an audiovisual presentation (narration and picture) is more beneficial for learning than an visual-only presentation (written text and pictures) of the same material" (p. 118). In fact, a myriad of studies have observed limitations, if not outright contradictions, associated with the modality principle. For example, Butler and Mautz (1996) concluded that multimedia does not uniformly lead to higher recall; rather, students who prefer to represent information graphically benefit from the multimedia presentations. As Hegarty (2004) notes, "There have been few studies that have shown an advantage of static over animated displays in conceptual learning. Tversky, Morrison & Betrancourt (2002) reviewed over 20 studies that compared learning from static and animated graphics. In the majority of these studies, there was no advantage of animations over static graphics. A small number of studies showed such an advantage, but in these studies, more information was presented in the animated graphics than in the static graphics, i.e., they were not informationally equivalent (Larkin & Simon, 1987)" (p. 344).

Furthermore, Schoor et al (2012) observed that the modality effect only appears within spatially non-contiguous tasks. Schuler, Scheiter, Rummer & Gerjets's (2012) results show a modality effect that was limited to simultaneous presentation only during pictorial recall. Tabbers & van der Spoel's (2011) series of experiments designed specifically to replicate the modality principle failed multiple tests of significance between narration and on-screen text conditions. And, Ying-Hua's (2009) found that subjects learned no better or even worse with the audio-visual format of learning material than did subjects with the visual-only one, and that a negative effect of auditory information on learning occurs regardless of the length of verbal information—effectively contradicting the modality principle.

However, regardless of one's position on modality as a principle, the implications of not recognizing the effects of modality and applying effective design practices to the development of learning materials can be detrimental. For example, Yue, Kim, Ogawa, Stark & Kim (2013) conducted a comprehensive review of hundreds of instructional animations currently in use and found that the majority of lessons still do not follow recommended multimedia learning principles, feature an excess of extraneous visual and auditory elements, and offer few opportunities for learner interactivity. Signaling offers one such approach for improving multimedia lessons.

Does Signaling Reduce Cognitive Load?

Gestures and facial expressions are common nonverbal techniques that are used by presenters in order to communicate emphasis and cue listener's attention. Likewise, signaling refers to the use of design elements that direct a learner's attention to important aspects of learning materials. As summarized by Plass, Homer & Hayward (2009):

> Learners focus their attention relatively narrowly on the visually most salient components of an animation (Lowe, 2003). This result corresponds to findings in neuroscience research that showed that salient perceptual properties of objects, such as contrast and visual uniqueness, determine very early in visual perception what information gets processed (Serences & Yantis, 2006). The emerging cueing design recommendation, therefore, amends the cueing principle by stating that cueing may be most important for animations without learner control, and that designers should either make the educationally most important aspects of the animation the visually most salient ones, or should use cueing to direct learners' attention to critical information (de Koning et al, 2007; Tabbers et al, 2004) (p. 40).

For example, Tabbers et al (2004) observed beneficial effects of cueing based on a change in the color used in a study on retention. Similarly, Ozcelik, Arslan-Ari & Cagiltay's (2010) study of undergraduate students who were presented with either signaled materials that changed colors or nonsignaled multimedia materials observed that the signaled group scored significantly higher on transfer and matching tests. Eye movement data from Ozcelik et al's experiment shows that signaling can effectively guide learner's attention to relevant information to improve the efficiency and effectiveness of finding necessary information—just as Lin's (2011) findings reveal that participants presented with visually cued animations have significantly higher learning outcome scores than their peers who viewed uncued animations, and cognitive load and intrinsic motivation had different impacts on learning in multimedia due to the moderation effect of visual cueing. Moreover, Bétrancourt (2005) and de Koning et al (2007) recommend the use of visual signals as an effective method of guiding users attention toward the important elements in the animation. These findings are in line with Just and Carpenter's (1980) model of reading comprehension, which explains that readers take longer pauses at points where processing loads are greatest. According to Just and Carpenter, the greatest cognitive load occurs when readers are accessing infrequent words, integrating information from important clauses, and making inferences at the ends of sentences. Hence, signaling has emerged as a practical method of managing cognitive load associated with "reading" multimedia presentations.

However, much like the beneficial effects associated with certain modalities, signaling is not without its own set of limitations and precautions. For example, Jeung et al (1997) notes that if visual search is clearly high in a multimedia lesson, then audio-visual instruction is only beneficial if visual indicators are incorporated into the instructional format. Similarly, Jamet, Gavota & Quaireau (2008) found that when a diagram is presented accompanied by a spoken explanation, learners must search through the diagram in order to establish a link between what they hear and what they see. And, perhaps most critically, Jamet et al (2008) questions that signaling may ultimately lead individuals to process isolated elements of a lesson instead of the entirety of the material being covered.

Fortunately, as Atkinson (2002) suggests, methods such as using an animated agent programmed to deliver instructions aurally can help optimize learning from such examples. Similarly, emerging signaling techniques such as Jarodzka, Van Gog, Dorr, Scheiter & Gerjets's (2013) eye-movement modeling examples as well as Van Gog, Verveer & Verveer's (2013) use of video modeling offer a fascinating vision of the future of learning from multimedia. However, the development of effective pedagogy for such techniques, particularly when it comes to the use of instructional videos, represents a significant gap in the existing literature.

A Gap in the Existing Literature

Video content, while pervasive in the online environment, remains largely a supplemental educational practice. There have been several studies examining the use of video lectures (Gillies, 2008; Bell & Bull, 2010). However, as Stammerjohan (2012) notes, there is still an enduring question surrounding the optimal use of video lectures: do they do a better job of communicating information than face-to-face lectures or poorer? According to Lombard, Reich, Bracken & Ditton (2000), "Film and a number of emerging entertainment technologies offer media consumers an illusion of nonmediation known as presence" (p. 75). Participants who watch video content find the movement in scenes more engaging, particularly with a larger screen, and results of Lombard et al's (2000) study demonstrate that a sense of *presence* can occur in the context of viewing videos.

Moreover, Stammerjohan (2012) notes that, "from an information-processing perspective, video lectures and face-to-face lectures seem equivalent in the inputs and demands on the cognitive processing systems. Both provide dual channel inputs, visuals and narration, expected to induce greater activation of working memory" (p. 177). Hence, the limits associated with a student's ability to process information, such as those outlined in Cognitive Load Theory (Sweller, 1994), may be alleviated by video's ability to be processed simultaneously in line with Dual Channel Processing theories (Paivio, 1986; Baddeley, 1992), which suggest there is no inherent conflict between presenting an audio/visual lecture that simulates face-to-face instruction. Although, it is assumed that there is limited capacity in each channel (i.e. the modality principle).

In turn, several studies have reported that students regularly use online video lectures as both face-to-face lecture replacements (Jensen, 2009) as well as supplements for the purpose of class prep, review, or tutoring (Brecht & Ogilby, 2008). Most notably, Brecht & Ogilby (2008) reported a significant difference in improved final exam grades for students who watched a video lecture than those who did not, and that students reported *value* from videos, whether it was in the form of grade improvement, entertainment, or boredom relief—similar to Tang & Austin's (2009) findings.

Most recently, Kizilec, Papadopoulos & Sritanyaratana (2014) added to these findings by noting that participants strongly prefer instruction featuring an instructor's face and perceived it as more educational. Participants in the study spent about 41% of time looking at a presenter's face during a video lecture. Prior research in the multimedia learning on the effects of an instructor's face investigated its effect on learning measures, perceived presence, and cognitive load (Homer, Plass & Blake, 2008; Lyons, Reyson & Pierce, 2012). At first glance, the presence of an instructor's face might be considered extraneous. Yet, Clark and Mayer (2003) emphasize the effectiveness of social cues (i.e. signaling) from the instructor within the Cognitive Theory of Multimedia Learning, because the technique can trigger social responses in the learner and encourage deeper engagement with the lecture content. This is similar to Atkinson (2002) and Wang et al's (2008) higher learning outcomes reported by learners responding to a pedagogical agent.

However, there is also competing empirical evidence on learners' affective response to the presence of an instructor in video lectures. Consistent with predictions from Reeves & Nass' Media Equation Theory (1996) that greater perceived presence in online learning environments is associated with increased learner satisfaction and perceived learning, Kizilec et al (2014) confirmed that learners strongly prefer video instruction with an instructor's face and their watching behavior is profoundly changed by including the face. However, participants did not perform significantly better or worse on knowledge recall tests compared to lectures without the image of an instructor. Moreover, Homer et al's (2007) study of video lecturing's impact on cognitive load noted higher levels of cognitive load for learners exposed to a video of the speaker; cautioning that too high of a cognitive load level from video media is bound to damage the learning experience. And Lyons et al's (2012) recent investigation of student responses to the presence of an instructor's face during a multimedia lecture found that learners with low technological efficacy reported lower learning measures, perceived presence, and video usefulness when the instructor was visible.

As a means of simulating instructor presence online, particularly when it comes to the concept of learner interaction, the pairing of overt learning activities such as note-taking, self-explanation, and peer dialogues undertaken while learning from a resource (Chi, 2009; Menekşe, 2012) have emerged in the literature of educational psychology as a recommended method of scaffolding lectures. According to Bauersfeld (1988), "[L]earning is characterized by the subjective reconstruction of societal means and models through negotiation of meaning in social interaction'' (p. 39). Building on this idea, recent studies (Menekşe, 2012; Purnuske, Batzli, Howell & Miller, 2012; Roscoe,

2014) identify the potential value of designing online lectures with interactive elements that foster instructor and peer dialogues; however, empirical data is unfortunately limited on the effects of such elements.

Thus, further investigation into the effects of video lectures on cognitive load and the development of techniques to maintain characteristics of presence and interaction in online courses is clearly warranted. To guide such an investigation, the following section outlines two key frameworks for the examination of instructor presence and interaction in the online learning environment.

Theoretical Frameworks

Media Equation Theory. The aforementioned collection of studies conducted by Reeves and Nass (1996) provides a seminal contribution to the study of media's effects on culture—particularly when it comes to the perception of interpersonal distance. Essentially, Reeves and Nass' methodology consisted of replacing accepted sociological findings for "a person" with the phrase "a picture of a person" in order to develop hypotheses. In regard to interpersonal distance, Reeves and Nass (1996) predicted: "1) when viewers see a picture of a person who appears close rather than far, their evaluations of the person will be more intense; 2) viewers will pay more attention to pictures of people who appear close rather than far; [and] 3) pictures of people who appear close will be remembered better than will pictures of people who appear far away" (39). Findings of the study confirmed these predictions, and ultimately imply that people presented in media are perceived as *actually present*.

Reeves and Nass suggest developing videos that place particular emphasis on the value of casting actors, distance of a subject from the camera, and scale of a viewer's display. Together, these factors represent potential covariates in the measurement of an instructional video's effectiveness and serve as guidelines for the production of the video conditions to be tested in the proposed dissertation study.

Interactive-Constructive-Active-Passive (ICAP) Framework. More recently, Chi (2009) provides a useful model for developing effective online lessons by differentiating between active, constructive, and interactive activities and underlying learning processes. For example, as Chi (2009) notes, "[A] video is a dynamic presentation, so watching it without exploring it or manipulating it actively seems to be more passive than searching and focusing on a specific location of a static chessboard, which is considered an active activity" (99). Hence, the opportunity to develop instructional video conditions based on such activities represents an exciting application of the ICAP framework. Moreover, Chi's (2009) model clearly outlines a testable hypothesis for learning: that interactive activities are most likely to be better for learning than constructive activities, which in turn should be better than active activities, which are better than being passive. Postulating underlying learning processes allows one to interpret evidence in the literature more accurately. Thus, specifying distinct overt activities for active, constructive, and interactive video conditions offers a testable method for scaffolding instructional videos.

This suggestion is in line with Kiili's (2006) study of learner engagement which found that when instructional design requires learners to produce part of the learning materials, then the processes employed to produce these materials are likely to enhance learning. In summary, according to Chi (2009), *Active* activities are those that engage a learners' attention, such as focusing or gazing upon some aspects of the learning material, repeating the materials, or manually manipulating the presented learning materials. *Constructive* activities are those that require learners to produce some outputs, such as in self-explaining, drawing a concept map, and reflecting. *Interactive* activities involve participating in dialogue patterns with experts (instructional dialogues) or peers (joint dialogues). While interactive activities represent an ideal component of online learning and are commonly integrated in courses through methods such as discussion boards, facilitating such dialogues for the participants necessary to report generalizable results is beyond the scope of the proposed study. Hence, the following overt activities are identified as instructional conditions to be tested in the proposed study: Passive (no overt activity), Active (note-taking), and Constructive (self-explanation).

Justification for the Study

In 2001, Clark and Jones conducted a prescient study on the budding transition of public speaking course content into the online environment when they surveyed the performance and self-evaluations of face-to-face sections of students with those exposed to text-based multimedia lectures featuring narrated audio by the instructor. While it is critical to note that participants were still required to attend class during the survey in order to perform their speeches and the content of the course was not delivered via video, the most fascinating finding of Clark and Jones' (2001) study is that the assessed performance of the students *did not* vary significantly between conditions. In fact, online students scored marginally higher on tests of speaking ability—suggesting that face-to-face delivery of such content may not require the sort of traditional presence and interaction that many instructors assume is necessary.

In line with this finding, numerous online public speaking programs have been developed for institutions of higher education. Community colleges across the United States such as Brookdale in New Jersey, Hillsborough in Florida, and Oregon Community Colleges have granted course credit for students who have completed online public speaking courses. Additionally, the University of Washington (www.coursera.org/course/publicspeak) and the Harvard Extension School (www.extension.harvard.edu/courses/subject/speech) are currently offering massive open online public speaking courses for free. Yet, only one known university (Rutgers University has an articulation agreement with Brookdale Community College) currently honors transfer credit for public speaking courses completed online. *Why not other universities?*

The justification for denying credit to students who take such courses is likely linked to the enduring debate surrounding online multimedia instruction as an acceptable alternative to face-to-face lectures. Of specific concern in the case of teaching public speaking content online, however, the characteristics of instructor presence and learner interaction are called to question and assumed to be limited to meeting in the same physical space. Yet, no empirical data is known to have been collected to inform this position.

Thus, in order to explore the ability of online lectures to replicate the characteristics of instructor presence and learner interaction traditionally associated with face-to-face public speaking courses, this study investigates the following research questions:

RQ1: How does the visibility of an instructor in a public speaking video lesson affect students' perception of presence?

RQ2: How does the visibility of an instructor in a public speaking video lesson affect students' learning?

RQ3: How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect students' perception of presence compared to passive lessons when presented in a video lesson?

RQ4: How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect student learning compared to passive lessons when presented in a video lesson?

The literature on multimedia learning and cognitive processing indicates that students exposed to content that traditionally requires demonstration, such as public speaking, may demonstrate higher levels of learning and perceived presence from an instructional video lesson compared to a narrated multimedia lecture. Hence, this study conducted an experiment to compare video conditions of a public speaking lesson featuring an instructor to narrated multimedia conditions derived from Media Equation Theory and the ICAP framework.

Variables

By keeping the content of the lesson consistent across conditions, the study identifies *instructor modality* (Audio or Video) and *overt activities* (Passive, Active, and Constructive) as the primary independent variables of interest. In turn, *learning gains*, *attitude*, and *presence* are identified as the dependent measures of the experiment.

CHAPTER 2

METHOD

Participants

Participants targeted for this study consisted of undergraduate students enrolled in Introduction to Public Speaking at one of three institutions: Arizona State University, Phoenix College, or Brookdale Community College. Students from various academic majors enrolled in the course were offered extra credit in their public speaking course in exchange for participating in the study. Students who had previously taken a public speaking course were allowed to participate for extra credit; however, their responses were excluded from analysis in order to protect the validity of the experiment's results. Consequently, 15 responses were excluded from analysis because participants had previously taken a public speaking course. Additionally, 25 responses were excluded from analysis because they were returned incomplete prior to being assigned an instructional condition, resulting in a total of 345 valid responses for analysis.

Of these responses, 176 students were enrolled in public speaking at Arizona State University, 73 were enrolled in public speaking at Phoenix College, and 96 were enrolled in an online version of public speaking at Brookdale Community College. 64% of participants identified as female and 36% identified as male. According to demographic information solicited from questions listed in Appendix A, participants ranged in age from 18 to 56 years with a median age of 22. 58% of participants identified as Caucasian, 17% identified as Latin-American, 4% identified as African-American, 5% identified as Asian-American, 11% identified as multi-racial or another ethnicity, and 6% identified as international students. Additionally, 75% of participants noted that they participated via laptop, 17% participated via desktop, 6% participated via tablet device, and less than 2% participated via phone.

Since all participants were over the age of 18 and identifying information remained confidential, an Institutional Review Board exemption status was granted for this study. Additional data collected from participants included time elapsed during the experiment; notes written by students assigned to the Active conditions; answers provided by students assigned to the Constructive conditions; pretest and posttest performance for all treatment conditions; as well as feedback recorded on Frechette's (2008) Attitudinal Survey and Shea et al's (2006) Teaching Presence Scale.

Learning Environment

Since the study was designed to address teaching public speaking in an online environment, materials were disseminated to participants via their course's Learning Management System instead of in a traditional classroom or laboratory setting. Students were provided with a hyperlink to access the study, and materials developed for the experiment were made available through Qualtrics online software. Students were encouraged to access the study at their convenience in exchange for extra credit; however, it is unknown in what type of learning environment students chose to take the study.

Design

In order to compare the potential effects of modality and overt activities on the design of public speaking content presented online, the study was designed as a 2 x 3 between subjects Analysis of Variance (ANOVA). The combinations of factor level by condition can be found in Table 1.

Table 1:

Instructional Conditions

	Constructive	Active	Passive
Video	Video lesson with a self-explanation activity	Video lesson with a note-taking activity	Video lesson with no overt activity
Audio	Narrated text lesson with a self-explanation activity	Narrated text lesson with a note-taking activity	Narrated text lesson with no overt activity

Essentially, participants were assigned to one of two factors (Video or Audio modes) in one of three levels based on Chi's (2009) ICAP framework: (1) Constructive, (2) Active, and (3) Passive. As Chi explains, "Being *active* can be characterized as doing something (often involving physical movement) while learning," (p. 76); "In contrast, in a *constructive* type of activity such as self-explaining, learners are articulating what a text sentence or solution step means to them" (p. 78); and "[In] *interactive* types the 'speaker' learns through activities such as self-construction, guided-construction, sequential-construction, and coconstruction" (p. 86). For example, actions such as note-taking (active), self-explanation (constructive), and participating in peer dialogues (interactive) represent overt activities that align with the ICAP framework (Chi, 2009). In turn, passive lessons without overt activities represent a null condition.

Additionally, based on Media Equation Theory (Reeves & Nass, 1996), instructional conditions in the study either feature a video of the instructor presenting the lesson or a multimedia lesson featuring the same audio and content narrated by the instructor without their image. Thus, participants were specifically assigned in blocks to one of the six instructional conditions outlined in Table 1 using matched random assignment.

Since the primary focus of the study was to advance online pedagogy for teaching public speaking, face-to-face conditions were not developed for testing in this experiment and an interactive condition was excluded from the study. Moreover, the study was designed to control for instructor reliability and the delivery of consistent content as much as possible in order to further maintain internal validity as well as protect the study from outside the potential external threat of peer influence through dialogue.

The lesson was distributed online as an extra credit assignment for students in an introductory public speaking course during the first two weeks of learning in order to reduce the potential effect of prior knowledge about the lesson's content. Moreover, the instructor and content remained consistent across treatment conditions—only the modality of the instructor is presented in and the association of overt activities to compliment the lesson.

Content

The lesson consisted of an 11-minute lecture on the subject of impromptu speaking delivered by a subject-matter expert with previous experience teaching the material at the undergraduate level. Impromptu is a style of speaking characterized by having a limited amount of time to prepare for the delivery of a speech and is a subject that is commonly included in an introductory public speaking curriculum. Since the content associated with this type of speech is smaller in scope compared to other public speaking styles and the literature on the production of online lectures recommends concise multimedia lessons, a lesson on impromptu speaking represents an ideal subject for testing in the proposed study.

Materials

Instructional conditions were developed using Microsoft PowerPoint to create the slides used for the narrated audio treatments, iMovie to edit footage captured on a handheld camcorder for the video treatments, and Adobe Captivate to layer the audio from the video footage to sync with the PowerPoint slides. Once developed, materials were made available for online access through Qualtrics software. Qualtrics allowed for the embedding of the video and narration treatments within the pretest/posttest design of the study.

Video. Since many instructors create their own lesson materials, video footage was recorded on a handheld video camera and edited with iMovie software in order to reflect production capabilities associated with computing on a personal scale and budget. Consistent with pedagogy recommended by Media Equation Theory (Reeves & Nass, 1996) and operationalized by Miller (2005) as well as Brecht and Ogilby (2008), medium range close-up footage of the instructor's face and shoulders were recorded from a distance of approximately 3 feet from the camera to simulate a conversational interaction between the instructor and participants. The instructor, Prof. Jenn Linde, is a professor of performance studies in the Hugh Downs School of Human Communication at Arizona State University and has taught public speaking for over twenty years. Her skills as a performer and credibility as an experienced instructor make her an ideal presenter of the lesson's content. The length of her lesson was restricted to less than 15 minutes in order to promote participant focus on a specific topic as well as decrease the file size of the online lesson (Hughes, 2009). Additionally, footage was captured in 640 x 480 pixels and formatted as a .mov files in order to maintain quality while keeping the file size reasonable for viewing online without lag (Mortensen & Pemberton, 2003).

Audio. Narrated instructional conditions were developed by constructing slides in Microsoft PowerPoint and importing them into Adobe Captivate in order to feature the same audio track with their parallel video conditions. A sample of the Video and Audio conditions is visible in Figure 1:

Figure 1. Passive Video and Audio Conditions

Video and Audio conditions consisted of the same presentation format visible in Figure 3; however, these treatment conditions were supplemented by the overt learning activities outlined in Table 1 and further explained in the following section.

Treatment Conditions

Active Condition. A note-taking prompt was included in active treatments through a blank text field inserted below both modalities (Video and Narration) within

Qualtrics. The blank field for note-taking was visible throughout the lesson, and students were required to input text, without a restriction on the amount, in order to complete the presentation of the lesson's content and advance the module to begin the posttest. Participants were able to pause the lesson to record notes, type during the presentation, or to input their notes at the end of the lesson.

According to Kauffman et al (2011), "The act of creating a record of the information—note taking—is among the most pervasive learning activities in our educational system" (pg. 314). The benefit of note-taking is well documented (Di Vesta & Gray, 1972; Kiewra, 1985; Kiewra et al, 1991; Titsworth & Kiewra, 2004). Although recent literature has sought to delineate between the values associated with various types of note-taking approaches such as free form (conventional), matrices (Kauffman, 2004), and copy/paste (Igo, Kiewra & Bruning, 2008); the general consensus of extant literature on note-taking concludes that it is an effective method of encoding for learning. Hence, note-taking was operationalized in the study as an unrestricted (Igo et al, 2008) opportunity for assigned participants to record information from the lesson. A note-taking prompt and field for typing (Figure 2) was provided during exposure to these two conditions and inputs were collected for data analysis.

Figure 2. Integrated note-taking prompt for Active Audio conditions.

Constructive Condition. Similarly, self-explanation prompts were included in constructive treatments through a series of four blank text fields inserted below both modalities (Video and Narration) within Qualtrics. The fields were visible throughout the lesson, and students were required to input text in each field, without a restriction on the amount, in order to complete the presentation of the lesson's content and advance the module to begin the posttest. Participants were given the options of pausing the lesson to respond to each prompt, type their answers during the presentation, or to input their responses to the four prompts once the presentation was complete

Eliciting self-explanations from learners is acknowledged in the extant literature on prompting as an effective technique for promoting learning (Chi & Bassok, 1989; Chi et al, 1994; Conati & VanLehn, 2000; Atkinson et al, 2003). Specifically, Nückles, Hubner & Renkl (2009) recommend, “mixed prompts” such as “Which examples can you think of that illustrate, confirm or conflict with the learning contents?” (p. 264) and “Which main points haven’t I understood yet?” (p. 264) to support cognitive and metacognitive learning processes. This recommendation is in line with Berthold, Nückles & Renkl’s (2007) finding that students exposed to a videotaped lecture paired with mixed prompts scored significantly higher on measures of immediate comprehension and delayed retention. Hence, self-explanation was operationalized in the study as a series of mixed, cognitive and metacognitive (Berthold et al, 2007; Nückles et al, 2009), prompts for participants to respond to based on their exposure to information in the lesson. Participants assigned to these two conditions were required to respond to four mixed self-explanation prompts that were displayed throughout the lesson (Figure 3). Specifically, participants assigned to Constructive treatment groups were asked: 1) When might you use the One Theme organizational structure; 2) When might you use the Pros/Cons organizational structure; 3) What is the difference between previewing and summarizing; and 4) What is the difference between sign-posting and previewing? These prompts were chosen because they challenge students to draw on the content of the lesson and either contrast two Public Speaking concepts or apply them to a newly generated example from the learner’s previous experience. Prompts were displayed throughout the lesson, and participants were required to respond to each prompt prior to advancing the lesson.

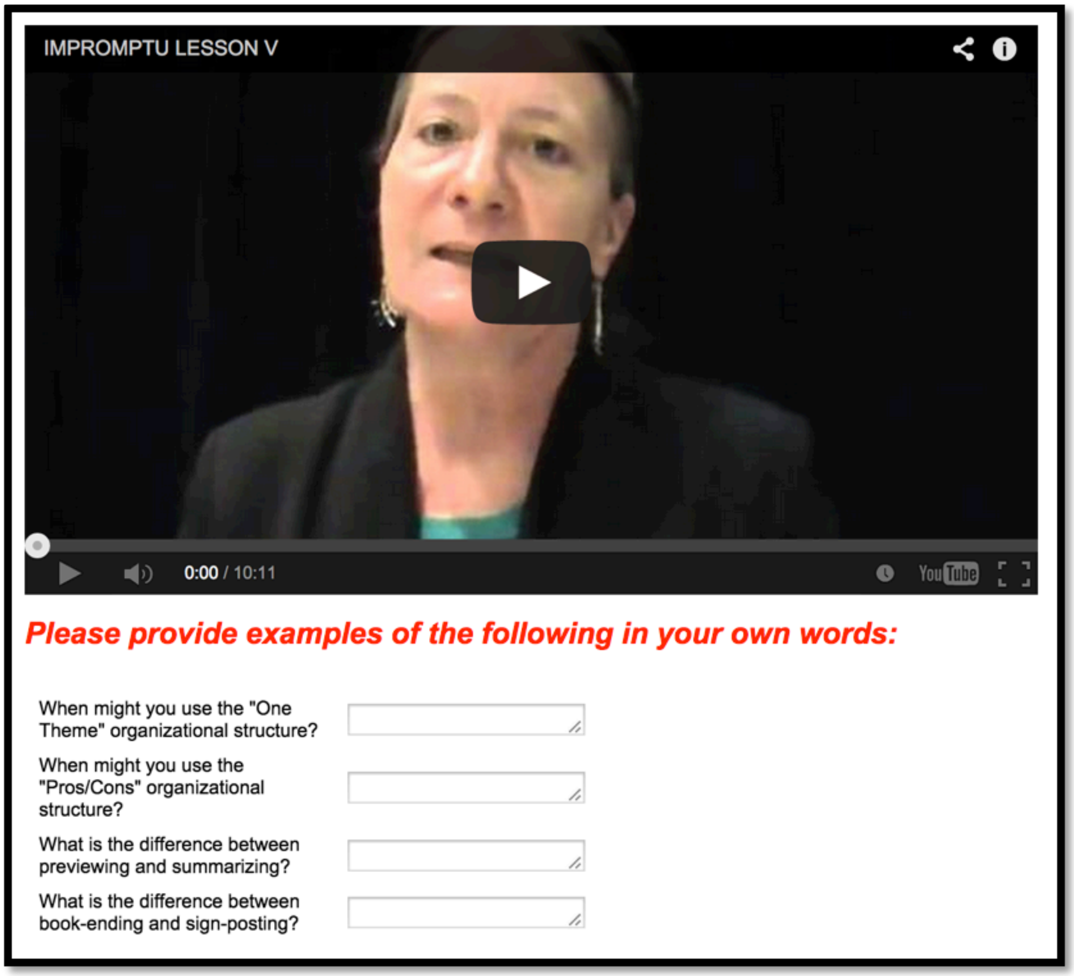

Figure 3. Integrated self-explanation prompts for Constructive Video conditions

Instruments

Pretest/Posttest. A pretest/posttest instrument (Appendix B) had to be developed for the lesson, since an existing content measure was not available in the extant literature. Retention and transfer questions were developed from content presented in the *Impromptu Speaking* chapter of *A Speaker's Resource: Listener-Centered Public Speaking* (O'Brien, 2009), the current textbook for Introduction to Public Speaking at Arizona State University. Students were asked at the beginning of the lesson to complete a learning measure in the form of a content test. At the conclusion of the lesson, participants were asked to complete the same measure as a posttest in order to gauge their learning gains. Each test was comprised of 10 randomly selected questions, consisting of 7 retention and 3 transfer types, from a pool of 20 possible questions in order to counterbalance the potential testing effect of a participant encountering the same question on the posttest that they received on the pretest. Additionally, the order of options in multiple-choice questions was also randomized from question to question in order to further protect the internal validity of the instrument.

Attitudinal Survey. Similar to Frechette's (2008) dissertation on the effects of animated pedagogical agents designed to enhance learning in computer-based environments, this study sought to investigate the potential effects of the visual presence or absence of an instructor on learners in an online environment. Frechette's (2008) study conducted factor and reliability analyses which identified four unique constructs of instructor presence, each with its own observed Chronbach's alpha: 1) perceived ease, $\alpha = .774$; 2) interest/motivation, $\alpha = .837$; 3) focus/attentiveness, $\alpha = .846$; and 4) overall satisfaction, $\alpha = .831$. Based on these high levels of observed reliability, Frechette's (2008) Attitudinal Survey was adapted to measure student perceptions of instructor presence in the treatment conditions. Additionally, two open-ended questions were added the survey to allow participants to elaborate on their responses and collect qualitative data for analysis. The adapted survey and open-ended questions are included in Appendix C.

The Teaching Presence Scale. Shea, Sau Li & Pickett's (2006) scale was deployed in the study to measure instructor presence as well as collect demographic data (Appendix D). The measure is designed to measure three teaching presence constructs:

course design (6 items), facilitating discourse (8 items), and direct instruction (6 items) anchored on a 5-point Likert scale ranging from Strongly Agree to Strongly Disagree. Initial reliability coefficients of the Teaching Presence Scale and its components were .98, .97 and .93, respectively (Shea et al, 2006). Arbaugh and Hwang (2006) conducted a study to establish construct validity for the components of teaching presence using the Teaching Presence Scale, reporting reliability coefficients of .90, .94 and .89, respectively. In later studies utilizing the Teaching Presence Scale (Arbaugh, 2007; Baker, 2010) reported Cronbach alphas of .97. Hence, Shea et al's scale represents a strongly reliable measure for the current study's purposes.

Procedure

Students were solicited by their instructors to participate in the study for extra credit in their public speaking course. Students were provided with a hyperlink to access the study online, and those who chose to navigate to the study were asked for consent prior to being randomly assigned to one of six experimental conditions: 1) Passive Audio, 2) Active Audio, 3) Constructive Audio, 4) Passive Video, 5) Active Video, or 6) Constructive Video. Once assigned, participants were administered a pretest, followed by exposure to their randomly assigned condition. To clarify, Passive Audio participants viewed a narrated PowerPoint presentation; Active Audio participants viewed the same narrated PowerPoint presentation and were prompted to take notes in a box below the video; and Constructive Audio participants viewed the same narrated PowerPoint and were additionally required to self-explain their responses to 4 questions about the lesson. Passive, Active, and Constructive Video conditions followed the same structure as well as shared the same audio narration track; however, the PowerPoint presentation was substituted by a medium-close-up of the instructor looking into the camera to create a video. After exposure to one of the six conditions, participants were administered a posttest, followed by a prompt to provide their feedback on Frechette's (2008) Attitudinal Survey and Shea et al's (2006) Teaching Presence Scale. Responses were sent directly to the author, and instructors were only notified of the names of participating students in order to protect the confidentiality of responses.

CHAPTER 3

RESULTS

Primary Analysis by Variable

345 total participants were randomly assigned to one of six treatment conditions based on the independent variables of the study: instructor modality and overt activities. Accordingly, participants were assigned as follows: 60 Passive Audio, 54 Active Audio, 54 Constructive Audio, 53 Passive Video, 57 Active Video, and 67 Constructive Video; resulting in a distribution of 51% assigned to Video conditions and 49% to Audio conditions. Additionally, 36% were assigned to Constructive conditions, 32% to Active conditions, and 33% to Passive conditions.

The results from the measure of the following three dependent variables were analyzed: *learning gains*, *attitude toward the instructor*, and *perceived presence of the instructor*. Table 2 provides a summary of the study's research questions and analytic approaches. For all statistical comparisons, the family-wise Type I error rate was set at the 0.05 level. Cohen's f was used as an effect size index, where 0.10, 0.25 and 0.40 correspond to small, medium, and large effect sizes, respectively (Cohen, 1988).

Table 2

Summary of Analytic Approaches

	Research Question	Data Source	Analyses
1	How does the visibility of an instructor in a public speaking video lesson affect students' perception of presence?	Presence Scale Attitudinal Scale	Analysis of Variance Qualitative Analysis
2	How does the visibility of an instructor in a public speaking video lesson affect students' learning?	Learning Gains	Analysis of Variance
3	How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect students' perception of presence compared to passive lessons when presented in a video lesson?	Presence Scale Attitudinal Scale	Analysis of Variance Qualitative Analysis
4	How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect student learning compared to passive lessons when presented in a video lesson?	Learning Gains	Analysis of Variance

Learning Gains

A two-way statistical Analysis of Variance (2 x 3 ANOVA) was calculated based on the comparison of pretest/posttest learning gains from exposure to the experiment's treatment conditions. The means and standard deviations of pretest, posttest, and learning gain scores for each condition are reported in Table 3.

Table 3

Overall Learning Gain Mean Scores and Standard Deviation

			Pretest		Posttest		Gains	
Modality	Activity	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	4.30	1.54	6.10	1.95	1.80	2.19
	Active	54	4.22	1.97	6.00	2.03	1.78	2.31
	Constructive	54	4.02	1.82	6.13	1.95	2.11	1.97
Video	Passive	53	4.11	1.57	6.11	2.05	2.00	2.59
	Active	57	4.26	1.74	6.11	1.90	1.84	1.67
	Constructive	67	4.54	1.57	6.06	1.88	1.52	2.01

The results for the 2 x 3 ANOVA indicated no significant main effects on overall learning gains from instructor modality $F(1,344) = 0.22$, $MSE = 4.54$, $p = 0.64$, $f = 0.00$, or overt activities $F(2,344) = 0.06$, $MSE = 4.54$, $p = 0.94$, $f = 0.00$. Additionally, there was no significant interaction between instructor modality and overt activities, $F(2, 344) = 1.14$, $MSE = 4.54$, $p = 0.32$, $f = 0.01$. Overall, the 2 x 3 ANOVA did not indicate statistical significance between the difference score means of each condition.

Since retention and transfer questions were developed for the pretest/posttest instrument, results were additionally analyzed by type of question. In turn, a second two-way statistical Analysis of Variance (2 x 3 ANOVA) was calculated based on the comparison of pretest/posttest learning gains on retention question as well as on transfer question. Hence, the means and standard deviations of pretest, posttest, and learning gain scores for each type of question (retention or transfer) are reported in Tables 4 and 5.

Table 4

Retention Learning Gain Mean Scores and Standard Deviation

			Pretest		Posttest		Gains	
Modality	Activity	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	2.65	1.28	4.53	1.49	1.88	1.80
	Active	54	3.11	0.98	4.83	1.33	1.72	1.43
	Constructive	54	3.13	1.37	4.24	1.53	1.58	1.68
Video	Passive	53	3.23	1.40	4.66	1.60	1.43	1.78
	Active	57	2.82	1.38	4.58	1.34	1.75	1.65
	Constructive	67	2.87	1.42	4.09	1.64	1.22	1.65

Table 5

Transfer Learning Gain Mean Scores and Standard Deviation

			Pretest		Posttest		Gains	
Modality	Activity	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	1.48	0.87	1.62	0.89	0.13	1.23
	Active	54	1.17	0.82	1.61	0.98	0.44	1.09
	Constructive	54	1.52	0.99	1.67	0.87	0.15	1.32
Video	Passive	53	1.38	0.86	1.47	0.87	0.09	1.20
	Active	57	1.14	0.97	1.86	0.81	0.72	1.15
	Constructive	67	1.13	0.85	1.45	0.93	0.31	0.82

The results for the 2 x 3 ANOVA indicated a significant main effect on learning gains from overt activities for both retention $F(2,344) = 4.00$, $MSE = 2.79$, $p = 0.02$, $f = 0.02$ and transfer $F(2,344) = 5.14$, $MSE = 1.29$, $p = 0.01$, $f = 0.03$ types of questions. However, results indicated no significant main effect on learning gains from instructor modality for both retention $F(1,344) = 0.32$, $MSE = 2.79$, $p = 0.57$, $f = 0.00$ and transfer $F(1,344) = 1.19$ $MSE = 1.29$, $p = 0.28$, $f = 0.00$ types of questions. Additionally, there was no significant interaction between instructor modality and overt activities for retention questions $F(2, 344) = 0.95$, $MSE = 2.79$, $p = 0.39$, $f = 0.01$ or transfer questions $F(2, 344) = 0.55$, $MSE = 1.29$, $p = 0.58$, $f = 0.00$.

Attitudes Toward the Instructor

A two-way statistical Analysis of Variance (2 x 3 ANOVA) was calculated based on the comparison of the attitudes toward the instructor measured on Frechette's (2008) Attitudinal Survey from exposure to the experiment's treatment conditions. The means and standard deviations of attitudinal scores for each condition are reported in Table 6.

Table 6

Attitudinal Mean Scores and Standard Deviation

			Overall		Question 1		Question 2		Question 3	
Mode	ICAP	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	3.68	0.62	3.83	0.74	3.9	0.73	3.50	1.00
	Active	54	3.76	0.73	4.02	0.84	3.91	0.81	3.67	0.97
	Constructive	54	3.64	0.79	3.70	0.82	3.67	0.78	3.63	0.81
Video	Passive	52	3.71	0.68	3.90	0.63	3.77	0.76	3.50	1.00
	Active	57	3.82	0.65	3.81	0.67	3.49	0.81	3.23	1.10
	Constructive	67	3.72	0.63	3.84	0.88	3.75	0.88	3.73	0.95

			Question 4		Question 5		Question 6		Question7	
Mode	ICAP	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	3.83	0.79	3.55	0.87	3.48	0.95	3.43	0.93
	Active	54	3.93	0.80	3.56	1.02	3.70	0.88	3.59	1.11
	Constructive	54	3.61	0.76	3.39	0.98	3.43	0.90	3.28	1.05
Video	Passive	52	3.96	0.74	3.58	1.09	3.58	1.05	3.33	1.04
	Active	57	3.60	0.86	3.18	1.00	3.35	0.99	3.19	1.11
	Constructive	67	3.72	0.88	3.64	1.03	3.72	1.17	3.57	1.02

			Question 8		Question 9		Question 10	
Mode	ICAP	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	4.22	0.52	4.20	0.58	3.70	0.74
	Active	54	4.19	0.75	4.31	0.58	4.02	0.90
	Constructive	54	4.06	0.63	4.02	0.74	3.76	0.70
Video	Passive	52	4.06	0.73	4.12	0.76	3.71	1.02
	Active	57	4.04	0.76	3.98	0.74	3.68	0.81
	Constructive	67	3.99	0.84	4.10	0.80	3.90	0.91

The results for the 2 x 3 ANOVA indicated no significant main effects on student attitudes based on instructor modality $F(1,344) = 0.79$, $MSE = 0.47$, $p = 0.38$, $f = 0.00$, or overt activities $F(2,344) = 0.75$, $MSE = 0.47$, $p = 0.47$, $f = 0.00$. Additionally, there was no significant interaction between instructor modality and overt activities, $F(2, 344) = 0.01$, $MSE = 0.47$, $p = 0.99$, $f = 0.00$. Overall, the 2 x 3 ANOVA did not indicate statistical significance between the difference score means of each condition.

Qualitative Feedback

As part of the Attitudinal Survey (Appendix C), participants were solicited to provide feedback on: 1) What they found to be the most helpful part of the lesson viewed in their treatment conditions; and 2) How they felt their assigned lesson could be improved. The Grounded Theory Method (Glaser & Strauss, 1967) was adopted for the qualitative analysis of data collected from these two open-ended questions. In turn, the qualitative feedback was coded based on the subject of each participant response in order to identify trends. In turn, emergent trends in subject codes developed into categories, which are reported in the following two subsections.

Helpful parts of the lesson. 4 categories were identified based on 16 codes assigned to participant responses. Categories and codes are summarized in Table 7.

Table 7

Categories and Codes for Qualitative Question 1

Category	General (55)	Instructor (103)	Interface (25)	Treatment Attributes (162)
Codes	All (4) Informative (45) None (6)	Delivery (46) Examples (57)	Structure (7) Questions (18)	Audio (4) Constructive (2) Content (67) Convenience (2) Length (5) Navigation (4) Notes (11) PowerPoint (21) Video (46)

Definition of codes and categories for question 1. Responses were summarized to identify the main subject of each response. For example, feedback directed at the tone of the instructor's voice was summarized as "Instructor Delivery." Subjects that recurred more than once were grouped and assigned a code. In turn, codes that shared a similar subject were grouped into categories. For example, codes related to "Instructor Delivery" and "Instructor Examples" were assigned the category of "Instructor." Responses were collected from all 345 participants. Based on this methodology, 47% of responses identified attributes of the treatment as helpful, 30% identified attributes of the instructor as helpful, 16% provided general comments about their overall impression of the lesson, and 7% identified attributes of the interface as helpful.

Suggestions for improvement. Similarly, 5 categories were identified based on 18 codes assigned to participant responses. Categories and codes are summarized in Table 8.

Table 8

Categories and Codes for Qualitative Question 2

Cat.	Remark (87)	Question (31)	Video (39)	Instructor (29)	Additions (159)
Codes	Positive (54)	Variety (13)	Quality (10)	Delivery (17)	Content (34)
	Negative (2)	Answers (6)	Length (29)	Pace (8)	Examples (34)
	Neutral (31)	Order (12)		Visibility (4)	Excitement (24)
					Interaction (23)
					Notes (7)
					Text (9)
					Visual Aids (28)

Definition of codes and categories for question 2. In line with the approach applied to question 1, responses were summarized to identify the main subject of each response to question 2. For example, feedback directed at the tone of quality of the video was summarized as "Video Quality." Subjects that recurred more than once were grouped and assigned a code. In turn, codes that shared a similar subject were grouped into categories. For example, codes related to "Video Quality" and "Video Length" were assigned the category of "Video." Responses were collected from all 345 participants. Based on this methodology, 46% of responses identified that the lesson could be improved with additional attributes, 25% provided a general comment on the lesson, 11% identified that the treatment video could be improved, 9% wanted the format of the questions to change, and 8% commented that the instructor needed to make improvements to their presentation.

Perceived Presence of the Instructor

Finally, a two-way statistical Analysis of Variance (2 x 3 ANOVA) was calculated based on the comparison of the perceived level of instructor presence reported on Shea et al's (2006) Teaching Presence Scale from exposure to the experiment's treatment conditions. The means and standard deviations of presence scale scores for each condition are reported in Table 9.

Table 9

Presence Scale Mean Scores and Standard Deviation

			Overall		Question 1		Question 2		Question 3	
Mode	ICAP	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	3.82	0.59	4.08	0.67	4.05	0.68	3.77	0.91
	Active	54	3.94	0.71	4.02	0.86	4.17	0.80	3.70	1.06
	Constructive	54	3.81	0.77	4.09	0.68	4.22	0.66	3.81	0.80
Video	Passive	52	3.80	0.61	4.12	0.76	4.15	0.67	3.85	0.83
	Active	57	3.91	0.57	4.19	0.67	4.11	0.62	3.81	0.85
	Constructive	67	3.86	0.59	4.22	0.60	4.16	0.71	4.03	0.94

			Question 4		Question 5		Question 6		Question7	
Mode	ICAP	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	3.92	0.70	3.62	0.76	3.50	0.98	3.70	0.81
	Active	54	4.07	0.70	3.72	0.90	3.63	1.00	3.74	0.92
	Constructive	54	3.98	0.66	3.52	0.89	3.46	0.97	3.56	0.90
Video	Passive	52	4.04	0.79	3.65	0.99	3.63	0.97	3.52	1.00
	Active	57	3.86	0.72	3.51	0.85	3.33	0.91	3.44	0.80
	Constructive	67	4.15	0.86	3.91	0.90	3.72	1.07	3.81	0.94

			Question 8		Question 9		Question 10	
Mode	ICAP	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Audio	Passive	60	3.90	0.82	4.02	0.77	3.88	0.85
	Active	54	4.00	0.70	3.74	0.81	4.00	0.67
	Constructive	54	4.00	0.78	4.00	0.80	3.83	0.91
Video	Passive	52	3.88	0.81	3.69	0.90	4.13	0.66
	Active	57	3.81	0.77	3.67	0.74	3.81	0.81
	Constructive	67	4.03	0.90	3.88	0.98	4.16	0.75

The results for the 2 x 3 ANOVA indicated no significant main effects on perceived presence based on instructor modality $F(1,344) = 0.00$, $MSE = 0.41$, $p = 0.96$, $f = 0.00$, or overt activities $F(2,344) = 0.83$, $MSE = 0.41$, $p = 0.44$, $f = 0.01$. Additionally, there was no significant interaction between instructor modality and overt activities, $F(2, 344) = 0.11$, $MSE = 0.41$, $p = 0.90$, $f = 0.00$. Overall, the 2 x 3 ANOVA did not indicate statistical significance between the difference score means of each condition.

Findings by Research Question

Research Question 1. How does the visibility of an instructor in a public speaking video lesson affect students' perception of presence?

The effect of *instructor modality* was first examined by comparing Audio treatment conditions to Video treatment conditions. The purpose of this comparison was to analyze whether the visibility of an instructor, in the form of an online video recording, significantly impacts *attitudinal scores* measured on Frechette's (2008) Attitudinal Survey instrument. Hence, the differences in the mean attitude scores were used to assess participants' perception of presence. Results of an Analysis of Variance identified no statistically significant differences between Audio and Video treatment conditions on the Attitudinal Survey. Results from 168 participants assigned to Audio conditions reported mean attitudinal scores of 3.70 ($SD = 0.71$), and 177 participants assigned to Video conditions reported extremely comparable mean attitudinal scores of 3.76 ($SD = 0.66$).

Second, the effect of instructor modality was additionally analyzed by comparing Audio and Video treatment conditions to examine whether the visibility of an instructor, in the form of an online video recording, significantly impacts *presence scores* measured on Shea et al's (2006) Teacher Presence Scale. Consequently, the differences in the mean presence scores were used to assess participants' perception of presence. Results of an Analysis of Variance identified no statistically significant differences between Audio and Video treatment conditions on the Teacher Presence Scale. Results from 168 participants assigned to Audio conditions reported mean presence scores of 3.86 (SD = 0.69), and 177 participants assigned to Video conditions reported virtually identical mean presence scores of 3.86 (SD = 0.60).

Qualitative analysis of participant feedback on the survey instrument relative to instructor modality identified several potential sources of explanation for the similar performance across treatment conditions. Although 46 responses out of 177 assigned to video conditions indicated that seeing a video of the instructor was the most helpful attribute of the lesson, the majority of participant feedback across conditions indicated that commonalities between all six treatments were more important factors than modality. Specifically, 57 identified the instructor's use of examples as particularly helpful and 46 referenced attributes of the instructor's voice, which was consistent across all treatments, as the most effective attribute of the lesson. These two trends indicate that content delivered aurally was more effective than how the lesson was presented visually. Ironically, the primary suggestions for improvement collected from the second qualitative question highlighted that the lesson needed additional examples (34) and improved instructor delivery (29)—further underscoring a familiar disconnect between student expectations and actual performance.

Research Question 2. How does the visibility of an instructor in a public speaking video lesson affect students' learning?

The effect of instructor modality was examined by comparing Audio treatment conditions to Video treatment conditions. The purpose of this comparison was to analyze whether the visibility of an instructor, in the form of an online video recording, significantly impacts *learning gains* measured on a pretest/posttest instrument. Hence, the differences in the mean scores from the pretest to the posttest were used to assess participants' learning gains. Results of an Analysis of Variance identified no statistically significant differences between Audio and Video treatment conditions. Results from 168 participants assigned to Audio conditions identified mean scores of 4.18 (SD = 1.78) on the pretest and 6.08 (SD = 1.98) on the posttest, producing an average learning gain of 1.90 points. Similarly, results from 177 participants assigned to Video conditions identified mean scores of 4.30 (SD = 1.63) on the pretest and 6.09 (SD = 1.94) on the posttest, producing an average learning gain of 1.80 points; marginally lower than participants assigned to Audio conditions.

Research Question 3. How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect students' perception of presence compared to passive lessons when presented in a video lesson?

The effect of *overt activities* was first examined by comparing *Passive*, *Active*, and *Constructive* treatment conditions. The purpose of this comparison was to analyze whether the activity of note-taking, in the form of an open field for the entry of text, and/or the activity of self-explanation, in the form of a series of prompts and open fields for the entry of text, significantly impacts *attitudinal scores* measured on Frechette's (2008) Attitudinal Survey instrument. Hence, the differences in the mean attitude scores were used to assess participants' perception of presence. Results from 113 participants assigned to Passive conditions identified mean attitudinal scores of 3.71 (SD = 0.66); Active conditions identified mean attitudinal scores of 3.79 (SD = 0.69); and

Constructive conditions with mean attitudinal scores of 3.68 (SD = 0.71).

Second, the effect of overt activities was additionally analyzed by comparing Passive, Active, and Constructive treatment conditions to examine whether the activity of note-taking, in the form of an open field for the entry of text, and/or the activity of self-explanation, in the form of a series of prompts and open fields for the entry of text, significantly impacts *presence scores* measured on Shea et al's (2006) Teacher Presence Scale. Consequently, the differences in the mean presence scores were used to assess participants' perception of presence. Results of an Analysis of Variance identified no statistically significant differences between Audio and Video treatment conditions on the Teacher Presence Scale. Results from 113 participants assigned to Passive conditions identified mean presence scores of 3.82 (SD = 0.56); Active conditions identified mean presence scores of 3.93 (SD = 0.64); and Constructive conditions with mean presence scores of 3.84 (SD = 0.68).

Qualitative analysis of participant feedback on the survey instrument relative to overt activities echoed the trends identified in the analysis of instructor modality, as only 18 (5%) responses indicated that self-reflective questions were particularly helpful and 11 (3%) responses indicated that note-taking was an effective attribute of the lesson. Furthermore, nearly half of participant responses (159) identified that the lesson could be improved with additional attributes such as added content, examples, excitement, interaction, note-taking ability, PowerPoint slides, and visual aids—yet perception of the lesson's design and performance measures remained relatively consistent across conditions.

Research Question 4. How do self-explanation (Constructive) and note-taking (Active) types of learning activities affect student learning compared to passive lessons when presented in a video lesson?

The effect of overt activities was additionally examined by comparing *Passive*, *Active*, and *Constructive* treatment conditions to analyze whether overt learning activities significantly impact *learning gains* measured on a pretest/posttest instrument. Hence, the differences in the mean scores from the pretest to the posttest were used to assess participants' learning gains. While results of an Analysis of Variance identified no statistically significant differences between Passive, Active, and Constructive treatment conditions when learning gains were compared overall, separating the types of questions (retention and transfer) resulted in the observation of statistical significance between treatments.

Specifically, results from 113 participants assigned to Passive conditions identified mean *retention* scores of 2.94 (SD = 1.33) on the pretest and 4.60 (SD = 1.54) on the posttest, producing an average learning gain of 1.66 points on a 7 point scale. Results from 111 participants assigned to Active conditions identified mean retention scores of 2.97 (SD = 1.82) on the pretest and 4.71 (SD = 1.33) on the posttest, producing an average learning gain of 1.74 points; significantly higher than the learning gain of 1.17 points reported by the 121 participants assigned to Constructive conditions with mean retention scores of 3.00 (SD = 1.38) on the pretest and 4.17 (SD = 1.58) on the posttest.

Additionally, results from 113 participants assigned to Passive conditions identified mean *transfer* scores of 1.43 (SD = 0.87) on the pretest and 1.55 (SD = 0.88) on the posttest, producing an average learning gain of 0.11 points on a 3 point scale.

Results from 111 participants assigned to Active conditions identified mean transfer scores of 1.16 (SD = 0.90) on the pretest and 1.74 (SD = 0.90) on the posttest, producing an average learning gain of 0.58 points; significantly higher than the passive treatment and the learning gain of 0.23 points reported by the 121 participants assigned to Constructive conditions with mean retention scores of 1.33 (SD = 0.92) on the pretest and 1.56 (SD = 0.90) on the posttest.

CHAPTER 4

DISCUSSION

Discussion

Given the considerable sample (345) of participants in this study, the limited ability to statistically distinguish between students assigned to treatments that varied in both modality and level of activity indicates that these design attributes may be unnecessary considerations for developing content for online learning. Similar to numerous studies such as Lipsey & Wilson (1993) and Conley (2013), despite collecting data from a large number of participants, assigning students to six treatment conditions potentially reduced the opportunity to find statistical significance in the study since effect sizes other than small, by Cohen's (1988) classification, are difficult to achieve during educational interventions—especially in the case of evaluating the impacts on learning gains (Lipsey & Wilson, 1993).

However, the key quantitative findings of this study indicate that the activity of responding to self-explanation prompts, as they were deployed in this experiment, results in statistically lower learning gains on retention types of questions, and the activity of note-taking results in statistically higher learning gains on transfer types of questions. These findings indicate a potential flaw in the study's application of self-explanation prompts; yet, oppositely, validate the application of note-taking as an effective learning activity to pair with online instruction in this content area.

Additionally, analysis of qualitative feedback indicates that the design features of the treatments for this experiment were outweighed by the primary two commonalities cited across conditions as the most helpful attributes of the lesson: the instructor's use of examples and their verbal delivery. This observation is consistent with the principles of signaling, redundancy, and modality summarized in the extant literature and formally outlined in Mayer's (2009) Cognitive Theory of Multimedia Learning, which stresses that people learn better from audio narration with cues than from on-screen text when each is paired with a visual stimulus. However, a significant finding of this study is that learning gains and students' perception of instructor presence were positive across *all conditions.*

In turn, these results identify two key implications: 1) a limitation for the application of Media Equation Theory and the ICAP Framework in the field of instructional design; and 2) a precedent that exposure to an online lesson can serve as a cost-effective alternative for teaching public speaking content.

A limitation for instructional design. While the findings of this study reinforce familiar practices in the field of instructional design relative to Mayer's (2009) Cognitive Theory of Multimedia Learning, the improved performance of participants regardless of their assigned treatment in this study also identifies a limitation to the application of Media Equation Theory, in particular, as well as the ICAP Framework for designing video content and overt activities in the online learning environment. Although recent studies conducted by Menekşe, Stump, Krause & Chi (2012) demonstrate that students will perform significantly higher on learning measures after participating in interactive and constructive activities compared to active activities in engineering courses presented in a controlled classroom environment, a similar result was only able to be replicated for public speaking students assigned to note-taking treatments in this study; while those assigned to constructive groups scored significantly lower on retention types of questions.

A cost-effective alternative. Regardless of modality or activity types associated with treatments in this study, however, comprehensive learning gains were observed. Specifically, participants assigned to the Passive Audio condition gained 1.80 points (SD = 2.19); while those assigned to the Active Audio condition gained 1.78 points (SD = 2.31) and those assigned to the Constructive Audio condition gained 2.11 points (SD = 1.97). Similarly, participants assigned to the Passive Video condition gained 2.00 points (SD = 2.59); while those assigned to the Active Video condition gained 1.84 points (SD = 1.67) and those assigned to the Constructive Video condition actually gained the least amount of points on average across all six treatments, 1.52 (SD = 2.01). On average, participants in this study enrolled in their first public speaking course scored 4.24 out of 10 possible points on the pretest and 6.01 points on the posttest. Clearly, exposure to public speaking content in the online environment has the ability to produce notable learning gains for students without prior knowledge of the subject.

Consequently, while qualitative analysis from the feedback of participants identified the addition of *Excitement* and *Visual Aids* as preferable improvements for the design of future online lessons with similar content, quantitative analysis indicates that the addition of video and overt activities fail to significantly improve performance more than the basic technique of narrating slides for undergraduate students enrolled in public speaking. In turn, results of this study indicate that the design of public speaking content for online delivery can generate equivalent learning gains *without* the cost of the equipment and time necessary for producing video content as well as storing larger files online. Hence, narrated slides may serve as a viable cost-effective alternative for the delivery or supplement of lectures in introductory public speaking courses at colleges and universities.

Limitations

Although preventive measures were taken to protect the design of the experiment conducted in this study, the interpretation of results was limited by four possible threats to internal validity: potentially faulty application of self-explanation, the inability to control the learning environment of participants, the potential testing effect of using a pretest/posttest instrument, and the limited exposure students had to their assigned treatment.

Constructive conditions. Significantly lower learning gains for participants assigned to constructive treatments on both retention and transfer types of questions indicate that exposing students to all four of the self-explanation prompts at the same time during the lesson, and not pausing the presentation for students to respond thoughtfully, may have hindered the positive effects expected from participants assigned to constructive treatments.

Learning environment. Since the study was designed to address teaching public speaking content in an online environment, it was necessary to engage participants via their course's Learning Management System instead of in a traditional classroom or laboratory setting. Unfortunately, conducting the experiment in the field limited the study's ability to control whether students used their textbooks or navigated to other websites during the lesson. Additionally, it is unknown in what type of setting students chose to take the study, so it is important to acknowledge that factors such as noise or outside assistance may have impacted the results of the study.

Reliability of instruments. A pretest/posttest instrument (Appendix B) had to be developed for the lesson, since an existing content test with a reported reliability measure was not available in the extant literature. As a result, 14 retention and 6 transfer questions were developed from content presented in the *Impromptu Speaking* chapter of *A Speaker's Resource: Listener-Centered Public Speaking* (O'Brien, 2009). Although the pretest/posttest instrument was developed by a subject-matter expert and reviewed by two additional public speaking instructors for accuracy and effective question design, the study was unable to test the reliability of the instrument because randomization was used in the design of the instrument. To clarify, each test was comprised of 10 randomly selected questions, consisting of 7 retention and 3 transfer types, from a pool of 20 possible questions in order to counterbalance the potential testing effect of a participant encountering the same question on the posttest that they received on the pretest. Additionally, the order of options in multiple-choice questions was also randomized from question to question in order to further protect the internal validity of the instrument. Answers were not provided to either test after students submitted their responses in order to insure that students could not use the answers from the pretest to improve their performance on the posttest. Hence, any gains in learning should be attributed to exposure to the treatment.

Length of treatment. Although qualitative feedback identified that 29 participants felt the length of the lesson (11 minutes) was too long, and 12 participants chose to fast-forward through the treatment despite disclosing that time tracking was enabled during the study, the vast majority of participants (333) viewed their assigned treatment in its entirety. Exclusion of participants who completed the study without completely viewing their condition did not result in a significant change to the reported results. However, the question remains whether longer exposure to lesson content would produce more significant learning gains.

Suggestions for Future Research

Based on the key finding of this study, acknowledgment of the experiment's limitations, and consideration of the implications for the design of public speaking content delivered in the online environment, it is recommended that future studies in this research agenda attempt to code the quality of participant responses to note-taking and self-explanation prompts, incorporate the significant covariates identified during post hoc analysis of results in the articulation of potential research questions, as well as address the comparison of online lessons to in-person lessons in this content area.

Qualitative analysis of overt activities. Foremost, since the design of the learning activities (note-taking and self-explanation) may have limited the reliability of this study's findings, it is critical that future studies attempt to codify inputs from participants on such prompts. As Chi and Wylie (2014) note, "[T]he ICAP framework predicts this lack of difference because both conditions [note-taking and summarizing] can be considered active. However, to accurately interpret the results, we would need to examine the product of note-taking" (Pg. 231). Hence, greater insight could be gained from future studies by examining the quality of student responses in order to more accurately determine their level of activity.

Although student responses were reviewed on a general level for authenticity by the author of this study in order to identify students who may have chosen to input random key strokes or gibberish to advance the lesson to the posttest, more subtle variations between the types of responses recorded on note-taking and self-explanation prompts were not qualitatively analyzed due to the large scale of data collected in this study. By coding such responses, future researchers will be able to establish a range of responses that can be analyzed for variance as well as measure uptake of treatment conditions.

Potential covariates. Additionally, it is critical to acknowledge that online learning is not for everyone—particularly when it comes to learning about public speaking. Post hoc analysis of variance revealed that the type of school participants were attending in this study (community college compared to university) had a statistically significant effect on students' perception of presence. Specifically, when *School* was considered as a covariate, analysis of variance indicated results of $F(1,344) = 9.34$, $p = 0.00$, $f = 0.03$ on the attitudinal measure and $F(1,344) = 6.42$, $p = 0.01$, $f = 0.02$ on the Teaching Presence Scale. Across all six conditions, community college students ($n = 169$) reported a *significantly higher* perception of instructor presence on both measures compared to university students ($n = 176$). Specifically, $F(1,344) = 8.91$, $p = 0.00$, $f = 0.03$ on the attitudinal measure for community college students compared to university students, and $F(1,344) = 6.17$, $p = 0.01$, $f = 0.02$ on the Teaching Presence Scale. Thus, further study of online learning applications in this content area should consider the type of school a participant attends as a covariate, if not an independent variable itself.

Interactive. Finally, the advancement of research in this content area requires the inclusion of the interactive element that was beyond the scope of this study—particularly the direct comparison of student performance on speaking assignments after exposure to classroom lessons versus online lessons. There is a clear delineation between measuring cognitive learning gains and evaluating the performance of students on speeches. While this study focused on addressing the former because the logistics of conducting a comparison of the latter in a controlled environment were not feasible, the findings of such a study represent a necessary point of reference for making informed policy and design decisions relative to teaching public speaking content in an online, or potentially hybrid, learning environment.

Conclusion

Learning to communicate in the public sphere and articulating one's thoughts are invaluable experiences in the developmental process. In an era when lessons traditionally delivered in brick-and-mortar classrooms are rapidly being digitized for online consumption, and the very concepts of what it means to be "public" and even "speak" in the digital age are being reconceptualized, the findings of this study indicate that, regardless of modality or added activities, learning gains and instructor presence are attainable in our increasingly digital surroundings.

The way we communicate is constantly changing. Yet, the process of learning through the sharing of ideas remains fundamentally the same. In considering the findings of this study we are reminded as researchers and educators that learning, *even public speaking content*, is possible through alternative means—namely the presentation of lesson content delivered by a recording accessed in an online environment. However, it is critical to acknowledge that the *application* of such ideas by students, in this case speaking in public, requires further study. While the philosophical question of whether public speaking content *should* be taught online remains, the findings of this study confirm that it *can* be taught effectively in such an environment.

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APPENDIX A

QUESTIONNAIRE

Demographic Questionnaire

1) Have you previously completed a public speaking course in college?
    a. Yes
    b. No
2) What is the name of your current public speaking instructor?
    a. Open answer
3) How old are you?
    a. Open answer
4) What is your gender?
    a. Male
    b. Female
5) Which of the following racial groups do you identify with?
    a. Caucasian
    b. Latin-American
    c. African-American
    d. Asian-American
    e. Multiracial or Unlisted
    f. International Student
6) What type of device did you use to access the lesson?
    a. Desktop
    b. Laptop
    c. Tablet
    d. Phone

APPENDIX B

PRETEST/POSTTEST

Retention Questions (7 per test)

1) How much time is typically associated with preparing an impromptu speech?
    a. 5 minutes or less (correct)
    b. 30 minutes
    c. 2-3 hours
    d. 1 day
2) What is the most important structural technique used in impromptu speaking?
    a. Summarizing
    b. Book-ending
    c. Sign-posting (correct)
    d. Projecting
3) What is the term used to describe the end of an effective introduction?
    a. Previewing (correct)
    b. Projecting
    c. Book-ending
    d. Summarizing
4) What is the term used to describe the start of an effective conclusion?
    a. Book-ending
    b. Projecting
    c. Previewing
    d. Summarizing (correct)
5) What is the strategy characterized by using an attention-getting device at the beginning and end of a speech?
    a. Summarizing
    b. Book-ending (correct)
    c. Previewing
    d. Projecting
6) Which of the following is impromptu speaking also known as?
    a. Extemporaneous
    b. Prepared
    c. Off the Cuff (correct)
    d. Speech to Entertain
7) What is the goal of an effective impromptu speech?
    a. Make a point (correct)
    b. Entertain your audience
    c. Provide documentation for evidence
    d. Be noticed
8) What does the lecture recommend to always keep on you to stay prepared?
    a. Timer
    b. Laptop
    c. Phone
    d. Pen and paper (correct)
9) How long should an impromptu speech generally last?
    a. 1 minute (correct)

b. 5 minutes
c. 10 minutes
d. 15 minutes

10) Which of the following is NOT a common error in impromptu speaking?
    a. Apologizing
    b. Rambling
    c. Sighing (correct)
    d. Repeating yourself
11) Which of the following is expected from an impromptu speech?
    a. Graceful delivery
    b. Visual aids
    c. Appropriate timing (correct)
    d. Statistical evidence
12) Which of the following settings is appropriate for an impromptu speech?
    a. Graduation ceremony
    b. Sales presentation
    c. Platform setting
    d. Townhall meeting (correct)
13) What organizational strategy referred to in the lesson uses chronological order?
    a. Past/Present/Future (correct)
    b. Pros/Cons
    c. Cause/Effect
    d. Problem/Solution
14) Which organizational strategy referred to in the lesson most often uses storytelling to illustrate a point?
    a. Problem/Solution
    b. Cause/Effect
    c. Pros/Cons
    d. One Theme (correct)

Transfer Questions (3 per test)

1) If you have an issue during a presentation and would like to propose an alternative during an opportunity for questions, which organizational strategy should you use?
    a. One Theme
    b. Problem/Solution (correct)
    c. Cause/Effect
    d. Pros/Cons
2) If you are in a meeting and notice that there will be unexpected consequences from making a proposed decision, which organizational strategy should use if you raise your hand to voice your concern?
    a. Pros/Cons
    b. One Theme

c. Problem/Solution
d. Cause/Effect (correct)

3) If you are the coach of a sports team and notice a pattern of your players performing poorly toward the end of games, which organizational strategy should you use in a speech to your players?
a. Problem/Solution
b. One Theme (correct)
c. Pros/Cons
d. Past/Present/Future

4) If your parents are about to buy a home and you notice several disadvantages that you sense they have not noticed, which organizational strategy should you use in voicing your concerns?
a. Problem/Solution
b. Past/Present/Future
c. One Theme
d. Pros/Cons (correct)

5) Jamie begins a speech with a story about a tiger followed by a series of points about the need to be aggressive in business. At the end of the speech, Jamie reminds the audience of how the tiger in the story succeeded by being aggressive. What strategy did Jamie use?
a. Summarizing
b. Book-ending (correct)
c. Previewing
d. Projecting

6) Xavier has several points to make in a speech. At the beginning of each new point, he uses transitional phrases and pauses, making it easier for his audience to follow his main ideas. What strategy is Xavier using?
a. Book-ending
b. Summarizing
c. Previewing
d. Sign-posting (correct)

APPENDIX C

ATTITUDINAL SURVEY

Attitudinal Survey (Frechette, 2008)

(Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree)

1) I enjoyed the presentation.
2) I'd like to learn again with the instructor.
3) I have patience for this type of learning.
4) I enjoyed the presence of the instructor.
5) I felt engaged during the presentation.
6) It was easy to focus on the instruction.
7) I'd like to learn in this manner again.
8) The presentation was easy to follow.
9) The instructor helped make sense of the content.
10) I believe this type of presentation would work well with other subject matter.

Qualitative Feedback (Open Answer)

11) What did you find most helpful about the lesson?
12) How do you feel the lesson could be improved?

APPENDIX D

TEACHING PRESENCE SCALE

Teaching Presence Scale Items (Shea et al, 2006)

(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)

1) The instructor clearly communicated important course goals (for example, provided learning objectives).
2) The instructor clearly communicated important lesson topics (for example, provided a lesson overview).
3) The instructor helped me take advantage of the online environment to assist my learning (for example, provided clear instructions on how to participate).
4) The instructor was helpful in guiding the class towards understanding lesson topics in a way that assisted me to learn.
5) The instructor encouraged me to explore new concepts in this lesson (for example, thinking out loud).
6) The instructor helped keep me engaged in the lesson.
7) The instructor helped keep me on task in a way that helped me learn.
8) The instructor presented content in a way that helped me learn.
9) The instructor helped me to revise my thinking (for example, correct misunderstandings) in away that helped me learn.
10) The instructor provided useful information from a variety of sources (for example, references to experiences) in a way that helped me learn.