A Longitudinal Analysis of Student Learning Gains in Oral Competency

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Research Article

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Abstract

Declining enrollments and increased competition for college students have emphasized the need to demonstrate students are learning what we think they are learning. Taking a longitudinal look at speech evaluations from the basic course, this study tracked student learning gains in each rubric area on speeches evaluated between 2009-2019. Using a digital evaluation template called WebGrader (Cooper, 2011), students who had delivered informative (exposition) speeches and persuasive speeches to convince (N = 2,725) were compared, with a separate analysis comparing gains from the informative speech to the persuasive speech to actuate (N = 2,764). The study furthers instrument validation and a pedagogical model based on 3,951 archived student speeches collected from 22 instructors over the last 10 years. Results showed small, but significant student learning gains in each of the rubric areas. However, a ceiling effect appears in the initial speech evaluation, making it difficult to demonstrate gains. A principal component analysis was performed on 14 core rubrics used to rate student learning outcomes on informative speeches. Support was found for a two-factor (Delivery and Structure) model.

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Introduction

The increased presence and importance of the basic communication course in American education is evident. Publications by the Association of American Colleges and Universities and its Liberal Education and America's Promise (LEAP) initiative include communication as an important learning outcome, while both the National Association of Colleges and Employers and the National Association of Colleges and Businesses endorse oral communication skills as essential (AACU, 2018; Morreale et al., 2015; Morreale et al., 2017). Based on results from a national survey (Kuh et al., 2014), assessment efforts have moved from required work imposed by government or accrediting agencies to collective faculty efforts to enhance learning (Boyd & Morgan, 2018; Dannels, 2016). In an age of declining enrollments and debate about the value of higher education (Barshay, 2018; Moody, 2020; Mathers, 2017; National Center for Education Statistics, 2020; U.S. News, 2020) we no longer need to prove the importance of oral communication competency for college and career success, but rather demonstrate such skill acquisition is actually taking place (Jankowski & Marshall, 2014; National Communication Association 2015b).

This study continues earlier work (Cooper & Sietman, 2016) using students' self-reports to demonstrate learning gains occurred during the basic course and persisted over time. To better assess how these learning gains were achieved, we looked at 10 years of instructors' evaluations of informative and persuasive speeches to measure student improvement over the presentation of three speeches. An on-line template called *WebGrader* (Cooper, 2011) and principal component analysis were used to examine the model of oral competency suggested by this data. Our goal was not only to understand more about how students on our campus learn but provide insight to other instructors and campuses using a standardized speech curriculum.

Learning Outcomes in the Basic Communication Course

Measures of instructional outcomes are important even as assessment and achieving consistency across sections of the basic course are no longer identified as top administrative problems (Kahl, 2014; Morreale et al., 2015; Wallace, 2014). Worldwide, there is growing interest in how undergraduate students learn (AACU,

2018; McGrath et al., 2015) as well as whether students are learning as much as expected from their coursework (Marcus, 2018; Mathers, 2017; Pascarella et al., 2003; Roohr et al., 2017; Sharp et al., 2017). Hunt et al. (2005) synthesized 61 empirical studies published from 1989 to 2004 in the *Basic Communication Course Annual (BCCA)*. Only five dealt explicitly with student outcomes. Few studies among 2005-2014 issues showed evidence of student learning gains (Cooper & Sietman, 2016). Even when learning gains in oral competency exist, there is little empirical support to suggest the basic course was responsible or that these gains persisted over time (Morreale et al., 2011).

The goal of oral competency is to be able to apply communication knowledge and reasoning in meaningful, real-world situations. In the basic speech course, students must be able to organize and use knowledge and skills in successful performance (Broeckelman-Post et al., 2020). Compared to multiple-choice evaluations, performances are high-stakes assessments that are particularly difficult because they rely upon trustworthy observations of complex behavior (Jonsson & Svingby, 2007). The accuracy and consistency of performance assessments can be determined by the extent the same performance get the same score (consensus), whether these scores correlate among raters (consistency), and the degree the score be attributed to common scoring rather than error components (measurement, Stemler, 2004). Measurement was our focus.

Evaluating Performance through Common Rubrics

Instructors use their own observations and judgments to evaluate classroom performance, but their subjectivity is balanced by focusing consistently on the most important parts of the performance. The criteria for making the communication process as clear, consistent, and defensible are rubrics.

A rubric commonly denotes levels of performance on a particular task as well as a qualitative rating of the performance standard. The development and use of scoring rubrics in the classroom clarify the instructional target, provides valid and reliable assessment of student learning, and improves performance (Arter & McTighe, 2001). While there is little research on the effects of rubrics on the quality of performance assessment, rubrics clearly bring transparency to the assessment process (Jonsson & Svingby, 2007), increases consistency, facilitates judgment of complex competencies, and promotes learning (King et al., 2009). A content analysis of communication assessment research (Morreale et al., 2011) suggests that the rubrics for oral communication are clear and consistent. Researchers have published

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standards of practice for learning outcomes involved in oral competency (Backlund et al., 2010; Kidd, 2015; Mandeville et al., 2017; Morreale, 2007; NCA, 2015a; Schreiber et al., 2012).

Establishing Performance Goals

Student learning gains show the growth or change in knowledge, skills, and abilities over time linked to performance outcomes or goals. Since communication competency can be identified in different ways in the basic course different outcomes for measurement may be used. There are also standardized tests that assess something other than oral skill (Hunter et al., 2014). For example, some researchers note a relationship between successful performance in the basic course and greater integration into the larger academic community as it fosters emotional support and connections between students (McKenna-Buchanan et al., 2020; Munz & Colvin, 2018; Munz & Colvin, 2019). The ability to develop and improve oral performance in this sense is seen as part of a growth mindset that is associated with lower public speaking apprehension, especially in intensive as opposed to traditional classrooms (Stewart et al., 2019). The reduction of speech anxiety therefore becomes an important goal for performance gain (Elfering & Grebner, 2012; Stevens et al., 2019; Westwick et al., 2019). Researchers (Hunter et al., 2014) use standardized tests like the Personal Report of Public Speaking Anxiety (PRPSA) or the Public Speaking Anxiety Inventory as a means of assessing effectiveness as something other than oral skill (i.e., reduced speech fright).

Measuring Performance Gains

Work done by Hooker and Denker (2014) demonstrates some of the challenges in measuring performance gains and losses. One approach to measuring learning gains is longitudinal (i.e., looking at repeated measures on students across time), to reveal students' learning trajectories (Arum & Roksa, 2011; Roohr et al., 2017). A second approach would examine comparisons between students (Pascarella & Blaich, 2013), but may not take into account the complexity of influential factors such as motivation or learning design. The third approach examines variations occurring between courses or instructors in order to allow researchers to see whether the variance is between modules or students (Darby & Newman, 2014; National Center for Public Policy and Higher Education, 2006). Assessment of learning gains are sometimes determined by the student (Cooper & Sietman, 2016; Roona & Danube,

2015), but the focus of the current study is on instructor evaluations (Lim et al., 2012).

Measuring Performance with *WebGrader* Rubrics

Hunt et al. (2005) found positive assessment outcomes focused on a broader instructional purpose that develops a standardized and easy-to-use grading rubric. The rubrics used for this study grew out of The Competent Speaker form (Morreale et al., 1990; Morreale et al., 2007; Speech Communication Association, 1993). For eight years prior to 2004, it was the standard for performance evaluation used successfully by all full-time and adjunct instructors on the campus in this study. However, a common complaint among students and instructors was the vague and sometimes awkwardly worded rubric. Competency scores were often contested because the student did not understand the comment, or because the rubric was differently interpreted. Instructors struggled to balance specificity and constructive criticism without triggering student defensiveness (Smith & King, 2004). A second complaint was the amount of repetitious writing that the instructor needed to do to make that feedback clear. Students often made similar mistakes or had common areas of improvement that needed to be individually noted on each evaluation. Faculty spent significant time adding comments to the form that praised successful performance areas, highlighted areas of concern, and detailed needed change. Related to the first two complaints) was the time lost between the delivery of the speech and receipt of instructor feedback. The longer the delay in feedback, the less useful evaluation was to the learning process.

Development of WebGrader

In order to foster a streamlined, paperless system of evaluation and assessment, *WebGrader* was developed. Core concepts were broken down into more user-friendly, specific behaviors that were relayed online to students as well as archived for institutional use. Creating a computer template for speech evaluation provided a shorthand through which instructors could give prompt feedback and (especially for novice teachers) enhance commentary. *WebGrader* was designed to be easy to learn, easy to interpret, and easy to collect for assessment. It was originally scored on a three-point scale since the computer template available at that time could not easily illustrate more discrete categories on one screen. A 2007 revision to a five-point grading scale created up to 15 Likert-like categories scored from "1" (incompetent)

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to "5" (highly competent). A total of 75 points are given for speeches, with added points for the outline, bibliography, and use of visual aids.

Model and Rubrics

On campus, all classes use an Aristotelian model. Rubric items incorporate invention (generating raw material for a speech), organization (formulating and displaying a coherent plan for accomplishing the speech purpose), delivery (presenting ideas extemporaneously in an engaging manner), and audience analysis (adapting supporting materials with peers in mind). *WebGrader* rubrics include Invention (topic, thesis, main points, supporting materials, audience adaptation), Organization (introduction, organizational pattern, conclusion, oral style), and Delivery (extemporaneous presentation, vocal energy, vocal fluency, eye contact, body movement) (Cooper, 2011). Appendix A illustrates *WebGrader* rubrics for the informative speech.

Persuasive speeches differentiate aspects of logical argument (the speech to convince) and emotional appeals (the speech to actuate). Basically, the speech to convince builds an argument and relies on facts, expert testimony, and statistics to support the thesis (i.e., "What do you want me to believe?"). This message rests on the logical development of a well-developed and relevant argument. The speech to actuate builds from the logic of the argument in order to answer, "What do you want me to do?" providing emotional appeals to support the message. Emotional appeals could include incentives, fear tactics, patriotic appeals, guilt, and stylistic devices to personalize the message and move the audience to act. Since logical and emotional appeals are not evaluated on the informative messages, two different 15-item templates were created for persuasive speeches.

Invention and organization items are interspersed at the top of the *WebGrader* template, mimicking the order in which the audience would hear the speech. Delivery aspects are scored later so any nervousness and/or idiosyncratic responses are not unduly influential in the teacher's appraisal of the student's content. Speeches must be delivered extemporaneously; time requirements are programmed into the template. Bonus points can be awarded through a pull-down menu for non-required but potentially helpful use of presentational aids. The template allows space for individual comments and is programmed with hyperlinks to the campus' online speech center for 24/7 virtual instruction.

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Implementation of WebGrader Rubrics

Instructors work from a laptop to critique the speech or later enter the data using student identification and an instructor password. Specific cells for each rubric are highlighted, and all must be completed to submit the critique. A narrative form of the evaluation that includes personalized instructor comments, standardized rubric explanations, and total score is sent to the student's email. Hyperlinks are triggered by entering a "1" (incompetent), "2" (somewhat competent), or "3" (competent) score.

Appendix B illustrates the electronic feedback a student would receive, usually within 24-36 hours of delivering a speech. The grading system allows any recording errors to be corrected and resubmitted. A copy of this critique is sent to the instructor's grade book and captured for the department archive. For the past 16 years, *WebGrader* has efficiently evaluated thousands of performances.

A Longitudinal Study of Oral Competency

This study highlights trends among faculty using this on-line rubric and extends earlier work (see Kauffman & Tatum, 2017). First, the study tracks student learning gains using this model and data. It is assumed *WebGrader* would show gains in student learning across speeches. Because there is more complexity between persuasive speech types (i.e., the more logical speech to convince versus the emotional call to action), as well as variance in the persuasive assignments between instructors, the researchers expect informative speech evaluations will provide more stable data than the persuasive speeches. Significant learning gains are projected to be evident from the preliminary informative speech to later persuasive messages. Second, the study includes a principal component analysis used to further test the internal properties of *WebGrader* (Cooper, 2011).

> H1: Significant gains in student learning will occur between the informative speech and the persuasive speech to convince.
>
> H2: Significant gains in student learning will occur between the informative speech and the persuasive speech to actuate.
>
> H3: WebGrader rubrics can be combined to represent a smaller number of reliable scales that can be compared across the

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informative speech, the persuasive speech to convince, and the persuasive speech to actuate.

Method

Students at a small liberal arts college who completed one of the basic communication courses—an eight-week public speaking course for non-majors or a 16-week hybrid course taken by Communication majors and minors—were included in these studies. Regardless of course, the public speaking performance assessment takes place over a six-week period embedded in the course after deadlines for student withdrawal are past, so participant mortality is low. Both courses use the Aristotelian competencies (Invention, Organization, Delivery, and Audience Analysis) that have been broken down into 14 or 15 rubrics scored on a five-point scale from 1 (incompetent) to 5 (highly competent). Twenty-two instructors contributed speech evaluations, including both full-time faculty and adjunct staff. Full-time faculty hold doctorates, as do some adjuncts; none of these individuals are graduate students. This group includes 14 females and four people of color. New instructors are trained in *WebGrader* rubric by the departmental chair, though interrater reliability has not been a consistent part of this training.

The study first tracks student learning gains in each of the *WebGrader* rubric areas on speeches evaluated between 2009-2019. These data included several generations of students who had delivered informative (exposition) speeches (N = 3,951), persuasive speeches to convince (N = 3,079), and persuasive call to action messages (N = 2,873). Scores for each were paired based on student ID number. *WebGrader* data was combined with department oral competency data (Cooper & Sietman, 2016) in order to include student's sex, year in school, and course taken (quad or semester). The only other data collected in *WebGrader* archives are the instructor and date the rubric was entered for a specific student's speech.

Slightly more female students (N = 2,313) than male students (N = 2,275) are included within the *WebGrader* data set, consistent with this campus' overall enrollment average of 55% female to 45% male ratio during this time period. Approximately 46% of students are freshman (N = 2,154), 34% sophomores (N = 1,591), 12% juniors (N=559), and 8% seniors (N=398). This also is consistent with campus norms requesting students complete their public speaking requirement before their junior year. Nearly 4,000 students over the 10-year span took the eight-week public speaking course, while 519 students took the sixteen-week hybrid

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(Fundamentals of Oral Communication) course. Full-time faculty taught about two-thirds of the students (N = 2,640), with the remaining were taught by adjuncts (N = 1,311). Students who perceive themselves to be competent speakers (roughly 10% each year) may take an oral competency test, which consists of developing and performing an extemporaneous persuasive speech to convince before a public speaking instructor. Less than 10% use the Argumentation and Debate course to fulfill their speech requirement.

The grading template for the speech to actuate differs from the speech to convince in specifying a particular organizational pattern (i.e., the motivated sequence), which may not have been used or recorded by all instructors. This accounts for the lower number of speeches evaluated for the call to action speech. The speech to actuate template also differs by separating emotional from logical appeals. H1 tests if there are significant gains from the informative speech to the persuasive speech to convince (N = 2,725) in each rubric area. H2 looks for gains from the informative to persuasive speech to actuate (N = 2,764), using paired-samples t-tests comparing overall student scores with each speech and rubric area.

In addition, *WebGrader* evaluations collected from 2009-2019 were used to conduct a principal component analysis. The analysis included data from informative speeches (N = 3,951), and Cronbach's alpha coefficient was used to determine internal reliability. The rationale for conducting a reliability analysis is to assess whether or not it makes sense, psychometrically, to create a composite (or overall) rating of a student speech by combining the ratings obtained on each of the 14 characteristics. In this case, reliability analyses were run on each of the fundamental competencies indicated by each rubric. Establishing the internal consistency of the subscales across raters does not stop students from making different errors in their speeches, but rather provides a justification for adding up raters' responses on multiple items into a composite score. This technique similarly is used in scaling communication dimension (King et al., 2009) and helps demonstrate empirical fit.

Results

H1 predicted that there are significant gains from the informative speech to the persuasive speech to convince in each of the rubric areas. The results are in Table 1. Paired-samples t-tests (N = 2,725) comparing student scores in each rubric area of the informative speech and the persuasive speech to convince found significant differences between the means of most rubric areas. These area include the topic (t = 4.94, p < .001), thesis (t = 12.72, p < .001), introduction (t = 8.65, p < .001),

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organization (t = 7.15, p < .001), supporting materials (t = 12.73, p < .001), audience adaptation (t = 9.43, p < .001), conclusion (t = 8.46, p < .001), oral style (t = 12.02, p < .001), extemporaneous delivery (t = -2.13, p = .033), vocal energy (t = 13.89, p < .001), vocal fluency (t = 12.36, p < .001), eye contact (t = 9.24, p < .001), and body movement (t = 13.12, p < .001). Extemporaneous delivery scores were slightly higher for the informative speech than the speech to convince. In each of the other rubric areas, students' persuasive speech to convince scores were significantly higher than their informative speech scores.

Table 1

Rubric Area Gains between Informative Speech and Persuasive Speech to Convince

	Informative Mean (SD)	Convince Mean (SD)	Change Mean (SD)	Paired Sample t (df)	Sig. P
Topic	4.77 (.63)	4.83 (.51)	.07 (.71)	4.94 (2724)	***
Thesis	4.38 (.83)	4.62 (.69)	.24 (1.00)	12.72 (2724)	***
Introduction	4.31 (.70)	4.46 (.66)	.14 (.86)	8.65 (2724)	***
Organization	4.22 (.78)	4.35 (.76)	.13 (.94)	7.15 (2724)	***
Supporting Materials	4.00 (.91)	4.25 (.81)	.25 (1.04)	12.73 (2724)	***
Audience Adaptation	4.11 (.84)	4.28 (.83)	.18 (.98)	9.43 (2724)	***
Conclusion	4.14 (.72)	4.29 (.73)	.15 (.92)	8.46 (2724)	***
Oral Style	4.55 (.60)	4.70 (.54)	.15 (.64)	12.02 (2724)	***
Extemporaneous	4.25 (.88)	4.21 (.87)	-.04 (.94)	-2.13 (2724)	*
Vocal Energy	4.17 (.77)	4.38 (.69)	.21 (.79)	13.89 (2724)	***
Vocal Fluency	4.07 (.82)	4.28 (.77)	.21 (.90)	12.36 (2724)	***
Eye Contact	4.20 (.79)	4.35 (.74)	.15 (.83)	9.24 (2724)	***
Body Movement	4.16 (.78)	4.35 (.73)	.19 (.77)	13.12 (2724)	***

Note: Rubric scores based on Likert-type scale from 1 to 5 (n = 3,473)
* p <.05, *** p <.0005

The second hypothesis asked if there are significant gains from the informative speech to the persuasive speech to actuate in each of the rubric areas. The results are in Table 2. Paired-samples t-tests (N = 2,764) comparing student scores in each

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rubric area of the informative speech and the persuasive speech to actuate found significant differences between the means. In fact, persuasive speech to actuate scores were significantly higher than informative speech scores in all but one of the rubric areas. These areas included the topic (t = 7.30, p < .001), thesis (t = 2.92, p =.004), introduction (t = 7.86, p < .001), supporting materials (t = 11.13, p < .001), audience adaptation (t = 20.92, p < .001), conclusion (t = 6.39, p < .001), oral style (t = 14.02, p < .001), extemporaneous delivery (t = 4.87, p < .001), vocal energy (t = 16.76, p < .001), vocal fluency (t = 14.39, p < .001), eye contact (t = 11.40, p <.001), and body movement (t = 15.07, p < .001). In one area—organization—student scores were significantly lower for the speech to actuate as compared to the informative speech (t = -6.09, p < .001).

Table 2

Rubric Area Gains between Informative Speech and Persuasive Speech to Actuate

	Informative Mean (SD)	Actuate Mean (SD)	Change Mean (SD)	Paired Sample t (df)	Sig. P
Topic	4.68 (.71)	4.79 (.58)	.11 (.78)	7.30 (2763)	***
Thesis	4.48 (.86)	4.53 (.78)	.06 (1.03)	2.92 (2764)	**
Introduction	4.32 (.74)	4.44 (.69)	.13 (.88)	7.86 (2763)	***
Organization	4.29 (.80)	4.17 (.91)	-.12 (1.07)	-6.09 (2763)	***
Supporting Materials	4.04 (.98)	4.28 (.85)	.24 (1.13)	11.13 (2763)	***
Audience Adaptation	4.17 (.88)	4.57 (.68)	.40 (1.02)	20.92 (2763)	***
Conclusion	4.20 (.79)	4.31 (.76)	.12 (.97)	6.39 (2763)	***
Oral Style	4.62 (.63)	4.80 (.48)	.18 (.67)	14.02 (2763)	***
Extemporaneous	4.14 (.91)	4.23 (.85)	.09 (.99)	4.87 (2763)	***
Vocal Energy	4.19 (.77)	4.44 (.67)	.25 (.78)	16.76 (2763)	***
Vocal Fluency	3.95 (.86)	4.20 (.81)	.25 (.92)	14.39 (2763)	***
Eye Contact	4.14 (.84)	4.33 (.78)	.20 (.91)	11.40 (2763)	***
Body Movement	3.99 (.81)	4.22 (.74)	.24 (.84)	15.07 (2763)	***

Note: Rubric scores based on Likert-type scale from 1 to 5 (n = 2,870)
** p <.01, *** p <.0005

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To track gains on overall speech scores, paired-samples t-tests were computed comparing informative speech scores and persuasive speech to actuate scores. Significant differences were found between the mean informative speech scores and persuasive speech to actuate scores (t = 17.18, df = 2,763, p < .001). Specifically, the persuasive speech to actuate scores (M = 66.31, SD = 5.35) were significantly higher on average than informative speech scores (M = 64.42, SD = 5.90). Due to the risk of type I error associated with multiple paired sample t-tests, a one-way within-subjects ANOVA was performed to provide additional support for the overall gains between the informative speech and the persuasive speech to actuate. The observed F value was statistically significant, F (2,763) = 295.01, p < .001, $\eta2$ = .096, which indicated significant gains from the informative speech to the persuasive speech to actuate.

While not hypotheses, earlier research on this campus (Cooper & Sietman, 2016) suggested other variables might be influential in gains from informative to persuasive speeches. Therefore, additional tests were conducted for sex, year in school, instructor (full-time vs. adjunct), and type of course (eight-vs. 16-week). These exploratory tests are potentially valuable to program administrators and are warranted because all four of these demographic variables were significant factors in student perception of gains from oral competency courses.

First, an independent samples t-test was calculated comparing the overall gains of male and female students. No significant difference was found for gains from the informative speech to the persuasive speech to convince (t = .39, df = 2,313, p =.39) or from the informative speech to the persuasive speech to actuate (t = .77, df = 2,399, p =.77). The average gains for male students (M = 2.09, SD = .4.76 and M = 1.99, SD = 5.85 respectively) were not significantly different from the average gains for female students (M = 1.92, SD = 4.66 and M = 1.92, SD = 5.70 respectively).

For year in school, a one-way ANOVA was computed comparing the overall gains. A significant difference was found among the overall gains from the informative speech to the persuasive speech to actuate (F = 3.39, df = 2460, p = .02). All possible pairwise comparisons using the Games-Howell method to correct for multiple tests (Hayes, 2005) revealed a significant difference between freshmen and sophomores (p = .02). Freshmen had significantly higher gains (M = 2.31, SD = 5.88) than sophomores (M = 1.58, SD = 5.71).

An independent samples t-test comparing the overall gains of students taught by full-time faculty as compared to adjunct faculty found a significant difference between the means of the two groups (t = 3.90, df = 2,762, p < .001). The average

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gains from the informative speech to the persuasive speech to actuate for students taught by adjunct faculty was significantly higher (M = 2.42, SD = 6.45) than the average gains from informative to speech to actuate for students taught by full-time faculty (M = 1.55, SD = 5.31).

Finally, an independent samples t-test looked at the overall gains of students in the eight-week course as compared to the 16-week course found a significant difference between the means of the two groups (t = 4.58, df = 2,439, p < .001). The average gains from the informative speech to the persuasive speech to actuate for students in the 16-week course was significantly higher (M = 3.36, SD = 4.17) than the average gains from informative to speech to actuate for students in the eight-week course (M = 1.73, SD = 5.94).

To test H3, a principal component analysis was conducted on the informative speech. The results are in Table 3. A scree plot of the eigenvalues demonstrated a clear two-factor solution, so the analysis was run again using a varimax rotation for a two-factor solution. Six items loaded on each of the two scales. The first scale ("Delivery") included the following items: oral style, extemporaneous delivery, vocal energy, vocal fluency, eye contact, and body movement. This first scale accounted for 21% of the variance and had a reliability (Cohen's alpha) of .75. The second scale ("Structure") included topic, thesis, introduction, organization, main points, and conclusion. This scale accounted for 20% of the variance and had a reliability of .72. Using Cronbach's alpha coefficient as the reliability estimate is most relevant in performance assessment (Stemler, 2004), where high-stakes assessment requires a minimal reliability of 0.70. Two items were excluded from the scales. Audience adaptation loaded similarly on both scales, so it was excluded to keep the scales as separate as possible. Supporting materials lowered the reliability of the Structure scale, so it was excluded to ensure the scale was as reliable as possible.

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Table 3
Rotated Component Matrix* for Informative Speeches

	Delivery	Structure
Speech Topic	.234	.477
Thesis	-.065	.656
Introduction	.243	.567
Organization	.081	.689
Main Points	-.056	.748
Supporting Materials	-.006	.434
Audience Adaptation	.421	.345
Conclusion	.191	.563
Oral Style	.501	.316
Extemporaneous	.729	-.009
Vocal Energy	.686	.110
Vocal Fluency	.537	.118
Eye Contact	.753	-.007
Body Movement	.695	-.026

*Rotation method: Varimax with Kaiser Normalization; rotation converged in three iterations (n= 3,951). The Delivery component accounted for 21% of the variance, and the Structure component accounted for 20% of the variance.

Paired-samples t-tests were conducted to track gains based on the scales developed from the principal component factor analysis. These compared student informative speech structure scores and persuasive speech to convince structure scores, informative speech delivery scores and persuasive speech to convince delivery scores, informative speech structure scores and persuasive speech to actuate structure scores, and informative speech delivery scores and persuasive speech to actuate delivery scores. Tables 4 and 5 illustrate the findings. Significant differences were found between the mean informative speech structure scores and persuasive speech to convince structure scores ($t = 15.23$, $p < .005$). Significant differences were also seen between the mean informative speech delivery scores and persuasive speech to convince delivery scores ($t = 16.18$, $p < .005$), between the mean informative speech structure scores and persuasive speech to actuate structure scores ($t = 3.72$, $p < .005$), and between the mean informative speech delivery scores and

persuasive speech to actuate delivery scores (t = 21.12, p < .005). In each test, the persuasive speech structure and delivery scores were significantly higher, on average, than the informative speech structure and delivery scores.

Table 4

Structure and Delivery Gains between Informative Speech and Persuasive Speech to Convince

	Informative Mean (SD)	Convince Mean (SD)	Change Mean (SD)	Paired Sample t (df)	Sig. P
Structure Score	4.36 (.47)	4.51 (.44)	.15 (.52)	15.23 (2724)	***
Delivery Score	4.23 (.51)	4.38 (.47)	.15 (.47)	16.18 (2724)	***

*** p <.0005

Table 5

Structure and Delivery Gains between Informative Speech and Persuasive Speech to Actuate

	Informative Mean (SD)	Actuate Mean (SD)	Change Mean (SD)	Paired Sample t (df)	Sig. P
Structure Score	4.41 (.50)	4.45 (.48)	.04 (.55)	3.49 (2763)	***
Delivery Score	4.17 (.53)	4.37 (.46)	.20 (.50)	21.12 (2763)	***

*** p <.0005

Discussion

This study represents one institution's work to develop tangible evidence of student learning gains in the basic speech performance course from the instructors' perspective. It closes the loop from earlier work among former students demonstrating the persistence of student learning long after the course is completed (Cooper & Sietman, 2016). To summarize the findings, from the first to the last speech students showed improvement in both the delivery and structure of their messages over time. Students on this campus improved in the right direction, and in every objective measure these were consistent gains.

We first looked at learning gains over a 10-year period to determine patterns of how faculty evaluated students' progress across speeches in the basic communication courses. Support was found for both hypotheses one and two, with small but

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significant gains in student learning seen between the informative speech and the persuasive speeches. The results are fairly generalizable given a stable sample of 22 instructors.

The length of the course was influential in this study as well as in previous work (Cooper & Sietman, 2016). More significant gains were seen in students who participated in the 16-week fundamentals of communication course than those members of the 8-week public speaking class, even though the speaking unit is the same length and features the same assignments. In the broader context of what students learn and experience in the fundamentals course (e.g., more time to develop a relationship with the faculty member, greater familiarity leading to comfort and trust in front of peers, individual student motivation) the 16-week course is beneficial.

WebGrader data does not address the timing of the course in the student's career, which could be another control variable in this data analysis. The earlier study (Cooper & Sietman, 2016) indicates the persistence of basic instruction over time, especially when the course is taken early (i.e., freshman or sophomore year). Together, these studies lend support to the motivational incentives or model of instruction used in the course.

This study also sought to further validate the usefulness of *WebGrader* as a scoring rubric and instructional model by principal component analysis based on student speeches collected over the past 10 years. The two-factor structure that emerged from the principal component analysis establishes a well-grounded pedagogical base encompassing the structure and delivery of speeches. The robust sample size lends credibility to the reliability of the underlying factor structure and item loadings. *WebGrader*'s reliability using Cronbach's alpha showed good levels of internal consistency in evaluations of informative and persuasive speeches. The two-factor solution demonstrates empirical fit and provides a useful tool for pedagogy and instructional feedback (Kersten-Griep et al., 2003).

This study provides evidence of good internal consistency based on the alphas from this large sample size. Evidence of inter-rater reliability (i.e., that professors are scoring speeches the same way using *WebGrader*) would require a large number of recorded student speeches be reviewed and graded by at least two different faculty members to be supported. Collecting this data in the future would be a worthwhile follow-up to this work.

Scale scores were computed by averaging the items for each scale. Both scales demonstrate a high mean score: 4.22 for Delivery and 4.38 for Structure, suggesting a

possible ceiling effect. According to Salkind (2010), this is a measurement limitation that occurs when the highest possible score or close to the highest score on a test or measurement instrument is reached, raising questions about whether the testing instrument has accurately measured the student's learning. When large numbers of students score toward the top of the scale on the first speech, only small gains are possible on the next two speeches.

There are many ways that the existence of a ceiling effect threatens the validity of these research findings. One way is through statistical regression (or regression toward the mean), the tendency for individuals with initial extreme scores on a measurement instrument to behave less atypically the second and subsequent times using that same instrument. "Staying put" over time at the top of a scale then may reflect underlying improvement, since we would have predicted (due to regression toward the mean) that their scores would have dropped.

The initial high scores could also be indicative of too-generous grading on the instructors' part, and grade inflation is a concern on many campuses. This outcome could reflect teachers being too generous in grading the first speech and becoming stricter as time goes on so that remaining the same or small improvements in scores actually reflect meaningful improvement over time among the students. In conversation with several instructors whose *WebGrader* evaluations were used in the analysis, the challenges of grading the first speech were illustrated. Pedagogically, the instructor needs to minimize anxiety and maximize confidence ("Don't let them tank on the first speech"). The ability to balance motivating the student and helping them see the potential of their skills without "sugar-coating" the critique is essential. By finding things students do well on the first speech, the evaluation builds an important baseline for self-efficacy (Munz & Colvin, 2019; Stewart et al., 2019; Westwick et al., 2019).

Department chairs and basic course directors may be interested to find the data collected for this study noted differences between adjunct and full-time faculty scoring. The significant differences between learning gains in courses taught by adjunct instructors as compared to full-time instructors were consistent with prior research (Cooper & Sietman, 2016), which indicates that students taught by adjuncts perceive themselves to have significantly higher gains in motivation, skill, and knowledge as compared to students taught by full-time faculty. In that study, the significantly lower levels of skill and knowledge at the beginning of the course among students taught by adjunct faculty helps to explain, in part, the perception of higher gains. However, the findings of the current study raise additional questions in

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this area given that students taking the 16-week had significantly higher gains than students taking the 8-week course. On the campus targeted for this research, the 16-week course is required for Communication majors and minors and taught exclusively by full-time faculty. Student motivation, time to develop a congenial classroom climate before the public speaking unit begins, and faculty who are more invested in these relationships may explain these somewhat contradictory results.

Work by other researchers may explain why adjunct faculty saw greater student learning gains. Although not the case on this study, on most campuses part-time instructors carry the majority of the teaching load for introductory public speaking courses (Mapes, 2019; Morreale et al., 2015; National Communication Association, 2018). Adjuncts typically are paid less for their labor, have few employment benefits, and carry a different workload than full-time faculty (Murray, 2019). For these "contingent" teachers, the only form of performance evaluation comes from student surveys (National Center for Public Policy and Higher Education, 2006; U.S. Government Accountability Office, 2017) so these evaluations represent higher stakes for adjunct instructors. Part-time workers are faced with balancing academic rigor, enforcing campus policy and rules, appropriately managing the classroom, and keeping students happy. With few resources for professional development, and fear of losing teaching seniority, contingent workers must learn to teach inside institutional norms with minimal supervision or oversight. Not surprisingly, different expectations from students toward full or part-time instructors may also negatively affect the classroom (Fassett & Warren, 2008; Hurlburt & McGarrath, 2015; Mapes, 2019; National Communication Association, 2018; Sidelinger et al., 2011).

There are undoubtedly more possible explanations for small gains over time. Unfortunately, it is impossible to distinguish among the many plausible explanations when there is a ceiling effect. In an environment where it is important to document student improvement, any scale must be developed and used so that there is room for improvement for the majority of students.

To the administrator reading this study, some caveats about the small learning gains seen in this study must be noted. First and foremost, in the basic communication course the speeches get progressively harder, so significantly improved scores (even if small gains) indicate that students are making worthwhile gains in oral competency. For example, it is more difficult to get a "3" on a persuasive delivery than on an informative delivery. The informative speech allows a student to talk about a topic about which they are somewhat familiar. They can provide personal data and are not as dependent on specific data, making it easier to

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be conversational and have stronger eye contact. However, persuasive speaking requires reliance on statistics and expert testimony that is less familiar. The slight dip in extemporaneous delivery from informative to speech to convince scores can be explained by the fact that students have a much higher demand for the use of cited sources in the form of evidence. In the persuasive speeches, students must include enough evidence and cite it correctly to substantiate their message. Second, the results of this study make sense. If the student practices the same number of times for both speeches, they will get a lower score in the persuasive delivery because they do not know the material to perform as well extemporaneously. Therefore, the standard for getting a "3" in extemporaneous speaking did not change. What changed is the difficulty of doing it and the time and effort required to meet the same standard. This is less a limitation of the rubric than a normal aspect of education; namely, students have to spend more time as the task becomes more difficult. It is noteworthy that there is a gain in extemporaneous delivery from informative to speech to actuate, showing that students are able to improve overall despite the added difficulty. The dip in organization between informative and speech to actuate is also understandable considering that the speech to actuate uses Monroe's motivated sequence. Some students may find this new requirement to be significantly more challenging than using the same organizational pattern as they did in the previous speech.

It is important to note that students can display learning losses as well, which may stem from initially high student achievement, assessment difficulty, or learning design (Sharp et al., 2017). As the principal component analysis showed, students in this sample had initial scores at the upper limit of *WebGrader*. It may be difficult to tell whether students improve in subsequent speeches since they already begin at the top of the scale. In an environment where it is important to document improvement over time, it is important that the assessment scale used is trustworthy.

While we cannot confirm whether the initial high mean score on both the informative and persuasive speeches indicates grade inflation or student expertise, the need on this campus to close the loop is noted. The primary reason the gains are significant but small are because the initial scores on the informative speech are so high that only small average gains are possible. While it may not be practically possible, it would be helpful if there were a pre-class speech or pre-instruction performance given so that a true baseline score could be recorded for each student. It is possible that even a short instructional period prior to the informative speech and its delivery could lead to an improvement for many students that would never be

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evidenced by the data. However, any small change at the top of a scale may be meaningful because regression to the norm would naturally pull the scores down so even "staying put" is evidence of improvement.

Given the reliability of the informative speech assignment, using the informative speech as a baseline control would allow instructors to work with students to understand critical components of delivery and structure before later, more difficult, graded persuasive messages are constructed. Since honest and constructive instructor feedback is a crucial part of the learning experience, initial feedback that may discourage students or make them more likely to drop out of the course is avoided, and students who already hold basic speech competencies can be identified. In addition to thorough feedback, students also become familiar with the *WebGrader* tool. This initial, constructive instructor feedback early in the course should foster credibility for the instructor and lend more weight to later feedback. Backed by good relationships and a positive classroom environment, focused feedback has a positive effect on decreasing anxiety and heightening student learning outcomes (Dannels et al., 2016; Kersten-Griep et al., 2008).

Strategic faculty training, structural evaluation of the basic course, and refinement of assessment processes through the first few rounds of data collection and analysis are effective counter measures (Frey et al., 2015; Procopio, 2017). Fortunately, the campus that conducted this research also uses student pre- and post-assessments for students taking one of the basic courses (Cooper & Sietman, 2016). Together, this mixed method approach (i.e., student pre- and post-test assessment and instructor *WebGrader* evaluations) enables researchers to have a sort of checks and balances system, to move beyond the quantitative ceiling effect and gain a more meaningful explanation of effectiveness and student satisfaction.

For faculty reading this report, the results of this study are encouraging. While the significant but small gains in student learning are not surprising given changes in organizational requirements for logical and emotional persuasive messages, they are notable given the six-week window of instruction for public speaking in these courses. The results of this research confirm that even within a short, required public speaking class, a relevant and engaging curriculum delivered by qualified professionals can result in significant learning gains, especially when the course is taken early in the students' college career (Cooper & Sietman, 2016). Furthermore, this learning can persist over time as instructors usefully modeled and reinforced oral communication knowledge and skills and provided motivational incentives for recreating them in different situations. Within this window on campus, learning

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outcomes engaged students beyond a how-to model and encouraged growth of communicative abilities.

Kahl (2014) believes traditional outcomes for the basic course include the development of formal speech outlines, presentation of several types of speeches, and effective delivery techniques. To be able to accomplish these goals as well as see student learning gains can be challenging to instructors, especially given the limited number of minutes of public speaking time per student within class (Kice, 2018). However, focusing on key areas of Delivery (oral style, extemporaneous presentation, vocal energy, vocal fluency, eye contact, body movement rubrics) and Structure (topic, thesis, introduction, organization, main points, conclusion rubrics) seems pedagogically useful. Focusing on a pre-approved single subject area for speeches may also help focus student efforts.

The principal component analysis revealed a stable two-pronged structure within *WebGrader* rubrics. Using a two-factor pedagogy is especially appealing given the limited instructional time within the basic course and suggests a more simplified approach to the Aristotelian model. However, beyond questions of delivery and structure (which accounted for less than half of the variance), this study suggests some specific terms and concepts may be absent. *WebGrader* was based on initial NCA rubric developed 25 years ago, well before major curricular changes occurred on campus, for a different generation of students, and within what some might argue was a gentler social and political milieu. Without diminishing the important findings of this study, one might question whether changes to the rubrics are required. Adding curriculum goals that move beyond classification (e.g., critically analyze messages) to serve outcomes (e.g., advocate a plan of action for your community before the election) can shift the classroom in interesting ways for students already exhibiting public speaking skills (Engleberg et al., 2017; Wahl et al., 2016; Weintraub et al., 2016; Westwick et al., 2019).

Dannels (2016) notes the NCA learning outcomes for communication should be seen as a starting point, rather than a list of outcomes that is exhaustive or prescriptive. Review and refinement of critical knowledge and skills associated with communicating appropriately and effectively are especially important today. Our students live in an increasingly conflictive and often hostile world that raises the larger question of what is not covered (Ball et al., 2016; Engleberg et al., 2017). The absence of key concepts in learning outcomes (e.g., diversity, ethics, technology) limits our credibility, and marginalizes students and external stakeholders alike (Hendrix & Wilson, 2014; Kvam et al., 2018; Simmons & Wahl, 2016; Sprague, 2016;

Weintraub et al., 2016). A more exhaustive rubric that provides a reliable and valid means of measuring student success serves everyone without diminishing the achievement of classic learning outcomes.

Regardless of the instrument used or campus culture, Communication departments need to consider how each individual instructor and course fit into the larger picture of institutional performance (Bertelsen & Goodboy, 2009; Farris et al., 2013; Fassett & Warren, 2008). Taking time for faculty training as well as collective reflection using basic course assessments can better improve instructor engagement and student performance (Frey et al., 2015; Hurlburt & McGarrath, 2015). Involving more faculty in meaningful ways in the collection of student learning outcomes data and using the results (Kuh et al., 2014; Mello et al., 2016) can identify gaps in the curriculum and find artifacts that can be used as evidence of learning outcome achievement. Judging from this research, *WebGrader* can play this role as well. Underscoring successful student learning while revisiting whether we are evaluating the right outcomes for a new generation of students is important (Broeckelman-Post et al., 2020).

The results of this longitudinal study should encourage other campuses to update departmental conversations on defining and measuring learning outcomes (see Cooper & Sietman, 2016; Lim et al., 2012; McGrath et al., 2015; Roohr et al., 2017). Sharing research within and outside of the discipline that highlights different methodologies as well as learning outcomes rewards educators with best practices for instruction; it also reminds us that student learning can be attributed to many factors unrelated to instruction (Frey et al., 2018; Jacob et al., 2008; Pascarella & Wolniak, 2004; Pike, 2004). These conversations facilitate faculty motivation and performance as well in the traditional classroom (Farris et al., 2013; Hunt et al., 2005; LeBlanc et al., 2011).

In conclusion, this research demonstrates that a two-pronged approach covering the structure and delivery of informative and persuasive messages is appropriate for the basic communication course. It illustrates rubrics behind the structure and delivery of speeches that can be consistently taught across multiple instructors and multiple sections. By extending the scope of inquiry and methods, students and instructors will benefit from straightforward evidence of how existing learning outcomes are working (or not). As a result, our communities are served through learning gains that maximize the probability of thoughtful, expressive, and responsible citizens in the future.

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Appendix A: Informative Speech Template

Category	(5)	(4)	(3)	(2)	(1)
Topic	strong connection to assignment & audience (5)	narrows, connects to purpose, audience (4)	appropriate for purpose & audience (3)	shifts in focus (2)	inappropriate for purpose and audience (1)
Thesis	clear, identifiable, important; well suited to audience & topic (5)	clear, identifiable thesis, suited to audience (4)	communicated in appropriate manner (3)	too broad, or shifts focus (2)	weak or unclear (1)
Introduction	highly effective & complete; creative connection (5)	clear & complete; effectively gains audience's interest (4)	reasonably effective & connected to thesis (3)	minimally effective; not related to thesis (2)	weak (1)
Main Points	cogent with well-reasoned claims; strongly linked to thesis (5)	clear and cogent (4)	clear, but at times an illogical progression of ideas (3)	too many; incomplete or awkwardly worded (2)	not clearly expressed; unrelated to thesis (1)
Organization	well developed, appropriate; strong transitions (5)	balanced development with clear transitions (4)	recognizable pattern, appropriate to topic (3)	undeveloped, unrelated to thesis or transitional problem (2)	unclear; awkward or illogical progression (1)
Supporting Materials	extensive, dense citations support message (5)	cited, appropriate to audience & purpose (4)	some appropriate to audience & purpose (3)	minimal use; not always relevant (2)	none cited (1)
Audience Adaptation	highly effective connections to purpose, audience (5)	effective, several attempts to engage listeners (4)	reasonably effective; some attempts to adapt topic (3)	minimally effective; few attempts to adapt topic (2)	no attempts to adapt topic (1)
Conclusion	complete original & compelling (5)	good summary & final statement (4)	summary, or adequate closure (3)	too brief, lacks closure (2)	none (1)
Oral Style	strong use of language; connects well with audience (5)	good use of language to engage audience (4)	clear overall, appropriate for topic & audience (3)	some use of unclear, discriminatory language (2)	unclear, or discriminatory language (1)
Extemporaneous Delivery	conversational, strong use of voice, body to keep interest (5)	conversational, good use of voice & body (4)	somewhat conversational, over-reliance on notes (3)	rarely conversational, memorized (2)	none; speech is read or scripted (1)
Vocal Energy	highly effective; dynamic & well-paced (5)	fluent, changes in pitch, rate, and force (4)	changes in pitch, rate & force; occasionally slow or rapid (3)	distracts; uneven or garbled, slow or rapid; limited pitch changes (2)	lacks energy (1)
Vocal Fluency	very fluent & well spoken (5)	fluent, no distracting vocal habits (4)	overall fluency; some vocalized pauses (3)	pronunciation or articulation; voiced pauses (2)	vocalized pauses, garbled speech (1)
Eye Contact	direct, sustained, distributed; strong connection to all listeners (5)	appropriate & sustained connection (4)	appropriate; some indirect, minimal focus on listeners (3)	intermittent, indirect connection (2)	minimal connection (1)
Body Movement	poised, purposeful movement, natural gestures (5)	overall control & purposeful movement (4)	non-distracting, occasional random movement (3)	shifting, leaning, random, forced, repetitive movement, distracting (2)	ineffective motion (1)

Outline: Visual Aid: Time (under, at or over time limit):   Total Score:

Comments:

Appendix B: Sample Student Evaluation

Date: 2020-10-1
Speech: Informative
Score: 54
Time: meets time limit
Visual Aid: not required (0)
Outline:

- Thesis sentence labeled: yes (1)
- Complete sentences in outline (1)
- Recognizable organizational structure: yes (1)
- Accurate use of outline notation: yes (1)
- Bibliography: yes (1)

Comments: Fascinating topic choice! You have a good understanding of your subject, which adds to our interest. I look forward to learning more from you about this important area.

Invention

- The topic was narrowed and connected to the audience and assignment. (4)
- Your thesis statement was clear, identifiable, and well suited to the audience. (4)
- Overall, the main points were clear and cogent. (4)
- The speech provided several cited materials appropriate to the audience and purpose. (4)
- Audience adaptation was effective, with points of connection with the audience (4)

Organization

- The speech's introduction was clear and complete, effectively gaining audience interest. (4)
- The speech used a logical organizational pattern and showed appropriate development with clear transitions. Points were clearly expressed. (4)
- The speech's conclusion provided a good summary, complete with a final statement and sense of closure. (4)

- Overall, your oral style was clear and appropriate for this topic and audience. https://www.wheaton.edu/academics/programs/communication/welcome/speech-center/communicate-through-oral-style/ (3)

Delivery

- Extemporaneous delivery is required for this assignment. "Extemp" speeches are idea- rather than word-centered messages that are conversational in tone. This speech seemed "read" or "memorized, rather than conversational. This problem can occur when the speech has been written out or scripted. The solution for this problem starts with the preparation of your speech outline. https://www.wheaton.edu/academics/programs/communication/welcome/speech-center/develop-an-appropriate delivery/ (1)
- You were reasonably effective in conveying vocal energy through changes in vocal pitch, rate, ad force. View the speech to identify where your voice may occasionally be too slow or too rapid in your delivery, limited in pitch changes, or lacking in forcefulness. https://www.wheaton.edu/academics/programs/communication/welcome/speech-center/crete-vocal-energy/ (3)
- The speaker's delivery uses articulation, grammar, and pronunciation appropriately to the audience and occasion. (4)
- Good eye contact is the best way to create a strong connection with your audience. In this presentation, eye contact was intermittent and indirect, creating a loose connection with your listeners. Watch your speech to see where your eye contact is projected, and for how long that eye contact is sustained and balanced between individuals in your audience. https://www.wheaton.edu/academics/programs/communication/welcome/speech-center/establish-eye-contact/ (2)
- You were poised and controlled overall, with purposeful movements and gestures. (4)