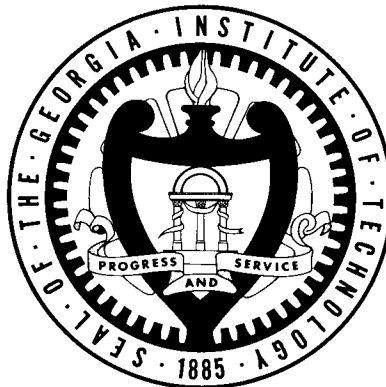




Georgia Institute **of Technology**

General Education Assessment Report: Communications Objective—Presentation Skills Academic Year 2003-04



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Assessment of Presentation Skills Learning Outcome in LCC 3401, AY 2003-2004

The Institute Undergraduate Curriculum Committee's Ad Hoc Subcommittee on General Education developed a set of nine general education objectives for all students earning a Georgia Tech baccalaureate degree. Specifically, the objectives call for:

- Technical, mathematical, and scientific competence
- An ability to communicate to and productively interact with others
- An awareness of culture and values in a diverse world
- An understanding of ethical issues surrounding one's personal and professional activities

The Communication Objective as defined by the IUCC and approved by the Faculty Assembly is stated as follows:

Georgia Tech students will be able to read a variety of documents critically, acquire and synthesize information, and shape a written or oral presentation that accommodates audience needs and shows a mastery of basic communications skills.

The specific assessable learning outcomes stemming from this objective are that students will be able to:

- 1. Locate the primary thesis in a written work and explain how it is supported by logical arguments.**
- 2. Produce effective writing that supports a given thesis using clear prose, logical organization, and standard spelling, punctuation, and grammar.**
- 3. Deliver a presentation that demonstrates effective core presentation skills, including focus, organization, and delivery.**
- 4. Conduct an effective information search that includes a variety of reference sources (e.g., indexes and library catalogs, bibliographies, and Internet searches).**

This report focuses on outcome 3: presentation skills. Other assessments planned in ENGL 1101 and ENGL 1102 will address outcome #2, while the Georgia Board of Regents addresses outcome #1 through its Regents examination. An assessment of outcome #4 is also under development.

Presentation skills were assessed in the Spring 2004 LCC 3401: Technical Communications course. LCC 3401 is a required course for the College of Computing as well as several schools in the College of Engineering. Many other students take the course as a free elective.¹

Students from several class sections were videotaped giving a short (3-5 minute) oral presentations using Microsoft PowerPoint software. Each student gave two presentations, one at the beginning of the semester (pre-instruction), and one at the end (post-instruction).

¹ In Spring 2004, two curricular approaches to LCC 3401 were used. Two sections of the course were part of an NSF funded grant to infuse workplace communication skills into technical communications. These sections comprised of students in the School of Industrial and Systems Engineering and the School of Electrical and Computer Engineering received input from working professionals in these fields. The other sections received the traditional classroom instruction. No statistically significant differences between the two approaches were found in student performance, so the data from the various sections were combined to ensure a more robust sample.

Each presentation was evaluated by three raters and scored on the basis of a grading rubric. The rubric assessed the focus of the student’s presentation (focus), the delivery of the presentation’s content (delivery), the organization of the presentation (organization), and the design of the presentation (design). Each aspect of the assignment was scored on a four-point ordinal scale:

- 1—Poor
- 2—Below average
- 3—Above average
- 4—Excellent

The results are presented in several ways. First, a mean score was calculated for each student based on the 3 raters’ individual scores for each part of the rubric. A test of significance was performed on the difference in means for the early semester samples and the late semester samples. To further illuminate the results, a distribution of score frequencies is presented from all of the raters.

In addition to these results, the assessment results were matched to student information in Banner. As with the other Georgia Tech reports on general education, an analysis of variance (ANOVA) was performed on the mean outcome scores (in this case, the late semester presentation). ANOVAs were performed based on gender, college, student level, final course grade, and admission index.² Groups of fewer than 10 students were either combined with other groups where appropriate or eliminated from the analysis.

A total of 90 students from five class sections were selected for the assessment. The number and percent of students whose performance over the course of the semester improved, declined, or remained unchanged is presented below.

Table 1

	<u>Focus</u>	<u>Delivery</u>	<u>Organization</u>	<u>Design</u>
Declined	4 (4.4%)	3 (3.3%)	3 (3.3%)	2 (2.2%)
Improved	73 (81.1%)	84 (93.3%)	74 (82.2%)	70 (77.8%)
Unchanged	13 (14.4%)	3 (3.3%)	13 (14.4%)	18 (20.0%)

Note: Percentages may not total 100 due to rounding

Paired-Sample Differences

The scores for each rater were combined to create an unweighted average for each component of the rubric. The pre-instruction and post-instruction averages are presented below. A matched-pairs t-test was performed to test the null hypothesis that there is no difference between the scores obtained by a student at the beginning of the semester and the end of the semester. The results demonstrate that this hypothesis can confidently be rejected for every component of the grading rubric.

² The Admission Index is the product of a regression equation that uses high school GPA and SAT Verbal and Math scores to predict first-year GPA at Georgia Tech. The Index was created by the University System of Georgia, and is used by the Office of Enrollment Services to assist with admissions decisions. To determine the quartile cut points, the Admissions Index for all undergraduate students enrolled at GT in Fall 2003 was used.

Table 2

	<u>Pre-instruction</u>	<u>Post-instruction</u>	<u>Difference</u>
Focus	2.40	2.91	0.51***
Delivery	2.24	2.87	0.63***
Organization	2.41	2.98	0.57***
Design	2.41	2.93	0.52***

***p<.0001

The following table presents the distribution of student performance scores from all of the raters. Due to the low numbers in several cells, chi-square tests of independence were not performed.

Table 3

	<u>Pre-instruction</u>				<u>Post-instruction</u>			
	<u>Poor</u>	<u>Below Average</u>	<u>Above Average</u>	<u>Excellent</u>	<u>Poor</u>	<u>Below Average</u>	<u>Above Average</u>	<u>Excellent</u>
Focus	22 (8.2%)	122 (45.2%)	122 (45.2%)	4 (1.5%)	1 (0.4%)	52 (19.3%)	186 (68.9%)	31 (11.5%)
Delivery	30 (11.1%)	147 (54.4%)	90 (33.3%)	3 (1.1%)	4 (1.5%)	59 (21.9%)	175 (64.8%)	32 (11.9%)
Organization	21 (7.9%)	121 (44.8%)	123 (45.6%)	5 (1.9%)	2 (0.7%)	46 (17.0%)	177 (65.6%)	45 (16.7%)
Design	16 (5.9%)	131 (48.5%)	118 (43.7%)	5 (1.9%)	2 (0.7%)	57 (21.1%)	168 (62.2%)	43 (15.9%)

Analysis of Variance Results

Analysis of variance was run on the late semester scores by several factors. When a significant F-statistic was obtained, appropriate post-hoc tests were conducted.³ Significant effects were found for gender in three areas of the rubric. In all cases, the mean for females was higher than that for males. Only the College of Computing and the College of Engineering had cell sizes large enough to test, and no significant differences were found between students of those two colleges.

Likewise, only juniors and seniors were represented in the student level factor. Seniors had a significantly higher mean score on the organization component of the presentation (3.02 for seniors, versus 2.82 for juniors). Admission index quartile and SAT Verbal quartile were not significant for any components of the rubric. Final course grade was significant for three of the rubric components; with students receiving A's receiving higher scores than students receiving lower grades. This finding lends validity to the assessment method as designed.

The gender effects on focus, delivery and organization scores (with females outscoring males) are interesting to note. One possible explanation is the disproportionate number of females in the sample that were seniors (81.8% of females were seniors, versus 64.7% of the males). An

³ Tukey's HSD or Games-Howell, depending on whether the homogeneity of variance assumption was upheld.

ANOVA was conducted on the data adding an interaction variable (gender*student level). The interaction variable was not significant in any of the cases (although it did approach significance on the delivery component at p=.07). Thus, it does not appear that the differential in performance between males and females can be explained by student level.

Table 4. ANOVA Results by Factors LCC 3401

<u>ANOVA Results</u>	<u>Gender</u>	<u>College</u>	<u>Student Level</u>	<u>Final Course Grade</u>	<u>Admission Index Quartile</u>	<u>SAT Verbal Quartile</u>
Focus	+	n.s.	n.s.	+++	n.s.	n.s.
Delivery	++	n.s.	n.s.	++	n.s.	n.s.
Organization	+	n.s.	+	+	n.s.	n.s.
Design	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

+F-statistic Pr<.05
 ++ F-statistic Pr<.01
 +++ F-statistic Pr<.001
 n.s. Not significant

Conclusion

The results from the presentation skills assessment in LCC 3401 clearly demonstrate an improvement in skills over the course of the semester. The positive relationship between the assessment results (in three of the four components of the grading rubric) and the final grade obtained in the course helps to validate the assessment method. From the results of this assessment there appears to be a differential between performance by males and females. This trend will be monitored in subsequent assessments of presentation skills.