

# A Communication Assessment Study of United States and International Graduate Students

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## Abstract

*Perceptions of the level of difficulty of technical communication skills, level of proficiency of language art areas, and level of importance of technical communication courses were studied. Three samples completed the questionnaire: United States graduate students, international graduate students, and faculty members in the College of Agriculture, Forestry, and Home Economics.*

*The results indicate that student groups have similar perceptions of their technical communication skills and needs. Basically, student groups perceive they are skilled in technical communication and language areas, but perceive that enrollment in technical communication courses would help develop more competencies in these areas. Faculty members perceive that both groups of students are not skilled in technical communication and language art areas. Specific results for the various target groups are reported and discussed in this article.*

Developing competencies in communication skill areas has been discussed at a number of National Association of Colleges and Teachers of Agriculture conferences. Competencies in communication skill areas also are of concern to faculty members from the Colleges of Agriculture, Forestry and Home Economics at the University of Minnesota, St. Paul Campus. Technical communication skills are essential for the success of graduate students in academic classes and future professional activities requiring communication competencies.

A review of literature indicates that no studies have been published concerning the perceptions of United States students' technical communication skills. Research, however, has been published concerning faculty and international students' perceptions of communication skills of international students (1, 2, 5, 6). The collective results of these studies indicate that international students have difficulty in oral presentations, discussions, conversations, interpersonal communication, writing, library work, and reading technical journals, therefore, more course work in writing and speaking areas is needed.

In this study, United States graduate students and international graduate students rated (1) their technical communication skills in writing, speaking, audiovisual,

and research areas; (2) their perceived level of proficiency in language art areas; and (3) the perceived level of importance of technical communication courses taught in the Departments of Rhetoric and Agricultural Journalism. Faculty members rated United States and international students on these same variables.

## Reasons For The Study

The technical communication assessment study was completed for three reasons. First, no research was found on United States graduate students to determine their perceptions of their communication skills and needs. Second, past communication assessment research with international students reveals that they need to develop skills in a variety of communication areas. This study was designed to enable the researchers to identify the specific areas. Third, on our campus, faculty members from various disciplines have indicated that both United States and international students need to improve their writing and speaking skills. For these reasons the Laboratory for Research in Scientific Communication designed a questionnaire to assess perceptions of communication needs of United States and international students.\*

## Plan of The Questionnaire

The Technical Communication Questionnaire (TCQ) was designed to measure United States students' and foreign students' perceptions of their technical communication skills, language art proficiencies, and importance of technical communication courses. Faculty members rated both groups of students on the same points. Each group rated the level of difficulty (from very easy to very difficult) of various technical communication skills, level of proficiency (from very proficient to very unproficient) in language art areas, and level of importance (from very important to very unimportant) of technical communication courses.

Several demographic variables also were gathered for each group. For student groups, academic degree, discipline, age, sex, and citizenship were acquired. Faculty members indicated their academic disciplines, academic rank, and sex. An examination of the data indicated wide diversity on the various independent measures for both student and faculty groups. As a result, student and faculty members were grouped into three academic clusters: Applied Social Science, Animal and Food Technology, and Plant and Soil Technology.

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**TABLE 1. Number and Percentage of Respondents in Academic Cluster Groups.**

Groups	U.S. Students		International Students		Faculty	
	No.	%	No.	%	No.	%
Applied Social Science	26	47	38	17	22	23
Animal and Food Technology	14	26	67	30	33	34
Plant and Soil Technology	15	28	123	53	42	43
<b>TOTAL</b>	<b>55</b>	<b>100</b>	<b>228</b>	<b>100</b>	<b>97</b>	<b>100</b>

**Research Questions**

1. What are United States students', international students', and faculty members' perceptions of graduate students' technical communication skills?
2. Do student and faculty members from different academic cluster groups (Applied Social Science, Animal and Food Technology, and Plant and Soil Technology) have different perceptions of technical communication skills?
3. Do students and faculty members from different academic cluster groups (Applied Social Science, Animal and Food Technology, and Plant and Soil Technology) have different perceptions of level of proficiency in language art areas?
4. What are United States students', international students', and faculty members' perceptions of the importance of technical communication courses?

**TABLE 2. Percent of Student and Faculty Groups Rating Technical Communication Competencies As Easy or Very Easy.**

Competencies	Student Rankings		Faculty Rankings	
	U.S. Stud.	International Students	U.S. Stud.	International Students
<b>WRITING</b>				
Writing for publication	22	22	33	9
Writing research proposals	25	35	37	9
Putting ideas in writing	50	47	48	10
Organizing material for presentation	70	65	51	25
<b>ORAL</b>				
Making audience understand ideas	49	36	41	12
Getting feedback	52	42	45	14
Answering questions	61	60	54	28
Presenting information orally	64	56	58	15
Listening comprehension	68	65	70	24
Discussion	70	66	62	27
Asking questions to gain information	71	62	64	27
<b>AUDIOVISUAL</b>				
Developing AV materials	54	38	29	5
Presenting data	66	65	56	13
<b>RESEARCH</b>				
Using computer/terminal	47	46	36	18
Analyzing data	56	53	65	35
Collecting data	81	71	68	28
Using library resources	82	86	63	36
Using collegiate dictionary	97	82	63	51

**Results and Discussion**

The TCQ was sent to all 408 United States graduate students, 132 international graduate students, and 301 faculty members from the Colleges of Agriculture, Forestry, and Home Economics. The results of the study are based on responses of 288, (57 percent) of United States graduate students, 55 (42 percent) of international graduate students, and 97 (32 percent) of faculty members. Overall, 45 percent of respondents completed and returned the questionnaire. Table 1 provides the distribution of respondents by academic cluster groups.

The results of the questionnaire are reported in Tables 2 through 7. Each value is the percentage of respondents who answered the items as very easy or easy, very proficient or proficient, and very important or important.

United States and international students perceive that they have approximately the same level of difficulty in various communication skills (Table 2). Faculty members, however, perceive that United States students are considerably more skilled than international students. For example, faculty members perceive that approximately 90 percent of foreign students have difficulty

**TABLE 3. Percent of Students from Academic Cluster Groups Rating Composite Technical Communication Competencies as Easy or Very Easy.**

Competency Areas	App. & Soc. Science		Animal & Food Tech.		Plant and Soil Sci.		Averages	
	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %
Writing	44	45	26	39	38	41	36	42
Oral	70	59	60	53	58	51	63	54
Audiovisual	63	46	60	48	61	53	61	49
Research	70	67	73	69	76	72	73	69

**TABLE 4. Percent of Faculty from Academic Cluster Groups Rating Composite Technical Communication Competencies as Easy or Very Easy.**

Competency Areas	App. & Soc. Science		Animal and Food Tech.		Plant and Soil Sci.		Averages	
	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %
Writing	23	17	39	12	38	12	33	14
Oral	64	57	49	9	57	20	57	27
Audiovisual	82	52	76	12	76	17	78	27
Research	59	37	61	42	65	43	62	41

**TABLE 5. Percent of Students from Academic Cluster Groups Rating Language Art Areas as Proficient or Very Proficient.**

Language Art Areas	App. & Soc. Science		Animal and Food Tech.		Plant and Soil Sci.		Averages	
	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %
Writing	89	68	78	60	79	58	82	62
Listening	79	75	62	69	63	71	68	72
Speaking	82	63	74	58	76	55	77	58
Reading	54	72	50	69	51	70	52	70

in putting ideas into writing, writing research proposals, and writing for publication. In addition, approximately 75 percent of foreign students have difficulty in oral, audiovisual, and most research skill areas. Approximately 65 percent of United States students also have difficulty in the writing area, but a majority of students perceive they are skilled in oral, audiovisual, and research areas.

Limited differences occurred between student groups with academic cluster categories in rating perceptions of overall competencies in various technical communication areas (Table 3). The students indicate that they are most skilled in research and least skilled in writing. Faculty members also rated United States students as most skilled in research and least skilled in writing (Table 4). There is much variability in the ratings for international students. Faculty members of the Applied Social Science group rated students most skilled in oral areas and least skilled in writing areas, whereas the other faculty cluster groups rated students more skilled in research than writing. Overall, the results indicate that a majority of students from other academic cluster groups are least skilled in writing, but United States students are considerably more skilled in other technical communication areas than international students.

Participants also rated level of proficiency in language art areas. A majority of students from all academic cluster groups perceive they are proficient in all language art areas. United States students indicate they are most proficient in writing and least proficient in reading, whereas international students indicate they are most proficient in listening and least proficient in speaking (Table 5).

The results, reported in Table 6, indicate that faculty members from all groups perceive that both United States and international students are most proficient in reading and least proficient in writing. The results for the writing and speaking areas are similar to those reported in Table 4. Overall, international students from the Applied Social Science group are perceived as more proficient in all language art areas than students from other academic cluster groups. The composite percentages indicate that more than 80 percent of international students and approximately 60 percent of United States students are not proficient in writing. Faculty members perceive that a majority of United States students are proficient in other language art areas, whereas between 60 and 80 percent of international students are not proficient in these areas.

In Table 7, the level of importance of technical communication courses is presented. Students and faculty members rated the level of importance of the various courses to improve technical communication skill of students. The findings indicate similar percentages between student groups and faculty groups.

Student and faculty members indicate that courses in scientific and technical writing, report and thesis

**TABLE 6. Percent of Faculty from Academic Cluster Groups Rating Language Art Areas as Proficient or Very Proficient.**

Language Art Areas	App. & Soc. Science		Animal and Food Tech.		Plant and Soil Sci.		Average	
	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %	U.S. %	Intl. %
Writing	44	17	36	6	35	9	38	11
Listening	62	31	58	27	50	25	57	28
Speaking	72	18	58	10	56	9	62	12
Reading	76	41	70	36	74	36	73	38

writing, writing for publication, scientific and technical presentations, public speaking, statistical analysis, and research methodology are important for graduate students.

An interpretation of the results indicates that members of the student groups perceive that they need to develop technical communication competencies. Faculty perceptions indicate that United States students need the most instruction in writing and that international students need much instruction in all technical communication and language art areas.

Recent research by Pytlik (4) and Pavelich (3) indicates that more attention should be given to technical communication problems of international students. Specifically, homework should focus on various writing communication variables such as sentence structure, spelling, and punctuation.

At present the technical communication courses offered in the Department of Rhetoric and Agricultural Journalism should help students increase communication competencies. Additional courses should be designed to maximize graduate students' communication

**TABLE 7. Percent of Student and Faculty Groups Rating Technical Communication Courses as Important or Very Important.**

Courses	Student Rankings		Faculty Rankings	
	U.S. Stud. %	Intl. Stud. %	U.S. Stud. %	Intl. Stud. %
<b>WRITING</b>				
Developing technical vocabulary	65	70	90	92
Writing for publication	79	82	95	95
Report/thesis writing	85	87	98	98
Scientific/technical writing	91	96	99	99
<b>ORAL</b>				
Interviewing techniques	41	42	41	38
Interdisciplinary seminar	44	58	49	45
Discussion method	46	66	81	81
Departmental seminar	72	76	76	74
Public Speaking	83	92	92	91
Scientific/technical presentations	88	66	95	95
<b>AUDIOVISUAL</b>				
Transfer of technology	30	62	54	49
Dissemination & utilization of information	60	65	85	76
Scientific/technical graphics	64	72	77	81
<b>RESEARCH</b>				
Using a computer/terminal	77	83	86	86
Research methodology	84	79	88	88
Statistical analysis	91	87	92	95

success in the classroom and increase the probability of success in future professions. Finally, future research should focus on measuring the technical communication competencies of United States and international graduate students by using standardized tests.

### Bibliography

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## AN UNDERGRADUTE COURSE

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### Behavior and Management of Domestic Animals

Ted Friend, Gisela Dellmeier, and Charles Long

Animal Science curricula were originally designed for students having considerable experience with different species of livestock, students from the diversified family farm. However, in recent years the background of students has changed dramatically with the specialization of farming and the influx of students from non-farm backgrounds. Even students from rural backgrounds usually have experience with only one or two species. The present trend toward confinement and more intensive management is further reducing experiences which give students an understanding of the ethogram (behavioral repertoire) of a species. Paradoxically, the trend toward larger herds or flocks, increased confinement, and more intensive management requires an increased knowledge of behavior to avoid costly problems. The traditional curriculum offers students little exposure to the behavior of domestic animals. As G.C. Anderson (1974) observed,

*"the pragmatic aspects of behavior are an integral part of classic and contemporary production and management courses. This treatment cannot, however, provide an understanding of the basis of behavior and accordingly imposes a constraint on a student's ability to anticipate and solve problems. More importantly, the integrative potential in the study of behavior is largely denied."*

The reduction of animals to a series of biochemical reactions, which the immense growth of knowledge during the last century has made possible, must be balanced with a holistic consideration of the individual or group and the interactions of individuals or groups

with one another and their environment. We must ensure that students have a realistic perception of livestock and poultry. "For most practical purposes, one or two sheep are not 'sheep'." (Kilgour, 1972).

Rising costs of land, labor, building materials, and energy demand the consideration of behavioral variables to avoid costly mistakes in facility design. Animal science students must be taught how behavioral variables affect production and to consider these variables in the planning of facilities, management systems, and experimental designs. Concurring with McBride (1973), we must design the farm to fit the animal if production is to be optimized and stress minimized.

Sixty-five percent of the students taking Animal Science courses at Texas A&M (based on survey data of students taking animal nutrition, courtesy of Dr. Howard Hesby) consider veterinary medicine as a career goal. Veterinarians as well as animal scientists must have a good working knowledge of the behavior of the domestic species. For many students accepted into veterinary school in their junior year, their only exposure to livestock may be an introductory Animal Science course. Since upper level production courses are limited to single species, they cannot give students an appreciation for the similarities and differences among the domestic species which are relevant to their handling and management.

Federal and state guidelines for the care, housing, shipment, and slaughter or euthanasia of laboratory and farm animals are increasingly becoming a necessary consideration. The efficiency of American agriculture, which enables so many people to be fed by so few, also allows a large proportion of the population to remain relatively ignorant of food production. It is vital that more people with an understanding of livestock behavior participate actively in any legislative decisions regarding farm

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\* The scientific study of animal behavior. It also implies the animal is being studied in its "natural" habitat (i.e. farm) and its behavior will be related to how the animal functions in its environment.