GRE

RESEARCH REPORT

Identifying the Writing Tasks Important for Academic Success at the Undergraduate and Graduate Levels

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Abstract

The authors conducted a large-scale survey to confirm that the writing skills being assessed in the GRE® General Test can be linked to writing tasks that were judged to be important by graduate faculty from a variety of subject areas and across a wide range of institutions at both the graduate and undergraduate levels. The results obtained in this study provide an additional source of validity evidence for using the GRE Analytical Writing Assessment when making admission decisions for graduate school and are also useful in evaluating its relevance for use as an outcomes measure for upper-division undergraduates.

Key words: Validity, job analysis, analytical writing, graduate writing tasks

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Introduction

The GRE® Analytical Writing Assessment, introduced as a stand-alone measure in October 1999, was developed in response to the graduate community's interest in a performance-based assessment of critical reasoning and analytical writing. In October 2002, the analytical writing section became part of the GRE General Test and was administered to all GRE examinees. The GRE writing section assesses a test taker's ability to articulate and support complex ideas, analyze an argument, and sustain a focused and coherent discussion. It consists of two separately timed analytical writing tasks: *Present Your Perspective on an Issue* (hereafter referred to as the *Issue* task) and *Analyze an Argument* (hereafter referred to as the *Argument* task). Examinees demonstrate their analytical writing skills or abilities by responding to both tasks. Their responses are evaluated according to criteria published in the GRE scoring guides.

The developmental process for this examination included a number of steps: feedback from focus groups of faculty members representing a range of academic departments, extensive participation and guidance from a Writing Advisory Committee, guidance from the GRE Technical Advisory Committee, as well as a number of formal research studies (e.g., Powers, Burstein, Chodorow, Fowles, & Kukich, 2000; Powers & Fowles, 1997, 2000; Powers, Fowles, & Welsh, 1999; Schaeffer, Briel, & Fowles, 2001). These and other studies provided essential information about such topics as the comparative difficulty of the two types of tasks (*Issue* and *Argument*) used in the analytical writing section, scoring calibration among scorers and between scorers and faculty, and the impact that the inclusion of GRE writing scores might have on admission decisions. (See the GRE.org Web site for a complete list of GRE writing research reports.)

The study reported here should be viewed as part of the ongoing effort by the GRE Program to accumulate validity information on this new measure. Validation is a continuous process that involves accumulating evidence to provide support for the proposed score interpretations. The *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999), hereafter referred to as the *Standards*, describes five major sources of evidence that can be used to evaluate the appropriateness of a particular test score interpretation. One of these sources, evidence based on test content, is the main focus of the study described in this report.

According to the *Standards*, "evidence based on test content can include logical or empirical analyses of the adequacy with which the test content represents the content domain and the relevance of the content domain to the proposed interpretation of test scores. Evidence based on test content can also come from expert judgment of the relationship between parts of the test and the construct" (p. 11). Messick (1998) indicates that considerations of content relevance and representativeness clearly do and should influence the nature of score inferences. Messick also indicates that a key issue of the content aspect of construct validity is the specification of the boundaries of the construct domain to be assessed. According to Messick, these boundaries can be addressed by means of job analysis.

To facilitate a common understanding of the terminology used in this study and the interpretation of its results, the following terms are described below: *task*, *ability*, and *skill*. According to Gael (1983), "a task is an assigned piece or amount of work to be done, generally under a time limit" (p. 8). *Webster's Third New International Dictionary of the English Language* (2002) has a similar definition. It defines *task* as a specific piece or amount of work. *Webster's* (2002) defines *ability* as "the physical or mental power to perform, competence in doing" and *skill* as "a learned power of doing something competently." Throughout this report, a task will refer to an assignment to be performed. Two different levels of tasks are mentioned. One refers to the broad *Argument* and *Issue* tasks presented in the analytic writing section of the GRE General Test. The second refers to the more specific writing tasks that may be necessary to accomplish the broader writing tasks (e.g., develop a well-focused, well-supported discussion, using relevant reasons and examples). The terms skill and ability will be used interchangeably to refer to a test taker's capacity to perform a task.

This study used a series of steps involving the judgments of experts to define a domain of writing tasks thought to be important for competent academic performance across a range of subject areas. A large-scale job analysis survey was designed to provide supplemental evidence about the relevance and job-relatedness of the writing skills assessed in the analytical writing section of the General Test. Graduate faculty members from a variety of subject areas and across a wide range of institutions provided data about the importance of these writing tasks for competent performance in their courses. Those tasks verified as being important can be used as a job-related framework for evaluating the writing skills assessed in the GRE assessment. In addition, because the GRE Program has recently received requests from several institutions

regarding the possibility of using the analytical writing section as an outcomes measure for upper-division undergraduate students, this study also gathered data evaluating the importance of these tasks for upper-division undergraduates.

This study can be considered a job analysis of the writing tasks important for competent performance in the coursework required for upper-division college students and for entry-level graduate students at both the master's and doctoral levels. Standard 14.8 of the *Standards* (1999) states, "Evidence based on test content requires a thorough and explicit definition of the content domain of interest. For selection, classification, and promotion, the characterization of the domain should be based on job analysis" (p. 160). Standard 14.9 states, "When evidence of validity based on test content is a primary source of validity evidence in support of the use of a test in selection or promotion, a close link between test content and job content should be demonstrated" (p. 160). This study was conducted to provide evidence to support these standards.

Purposes of the Study

One purpose of this study was to gather data to verify that the skills currently measured in the GRE Analytical Writing Assessment are relevant for entry-level graduate students at both the master's and doctoral levels. The study was designed to augment the validity evidence available to support the use of the analytical writing section for admission into graduate school by documenting the content relevance and importance of the writing skills being assessed in that section of the examination.

A second purpose was to gather data that can be used to assess whether or not the analytical writing section is appropriate for use as an outcomes measure for upper-division undergraduate students in colleges and universities across the country.

Research Questions

This study was designed to answer the following six major research questions.

1. For entry-level graduate students, what writing task statements are judged to be important for competent academic performance *within each of six fields* of study (selected to reflect a range of disciplines)?

2. Also for entry-level graduate students, what is the *overlap* in writing task statements judged to be important for competent academic performance *across the six fields of study*?
3. For upper-division college students, what writing task statements are judged to be important for competent academic performance *within each of the six fields of study*?
4. Also for upper-division college students, what writing task statements are judged to be important for competent academic performance *across the six fields of study*?
5. For both undergraduate- and graduate-level students, what is the overlap in writing task statements judged to be important for competent academic performance?
6. Can the writing skills assessed in the analytical writing section of the GRE General Test be *linked* to writing tasks judged to be important for competent performance at the upper-division undergraduate, master's, and doctoral levels?

Method

Overview of Methodology

The process described below involved several different groups of experts in ways that reflect their expertise and experience. A steering committee consisting of two representatives from the ETS Research Division with expertise in research on writing, as well as two representatives from the GRE Program, provided overall advice on each of the major steps in the project. This guidance helped to ensure that the procedures employed were professionally sound and would provide data useful to the GRE Program. Test Development staff with expertise in teaching and assessing writing assisted in developing the initial list of writing task statements. Because the planned survey was to be administered to faculty members from a range of subject areas, the intent was to write these statements in language that would be clear and understandable to nonwriting specialists. Faculty members across a range of subjects who taught both undergraduate and graduate courses reviewed and critiqued drafts of the writing statements. In addition, a five-person advisory committee composed of experts in writing across the curriculum assisted project staff in describing the writing tasks important for competent academic performance. The names, titles, and institutional affiliations of committee members appear in Appendix A. The final task statements were placed in a scannable survey format, along with

importance rating scales, and administered to 1,512 faculty members at 33 colleges and universities in six fields of study at the undergraduate and graduate levels. Data analyses were conducted to identify tasks that faculty judged to be important at the undergraduate and graduate levels. These data provide support for using the analytic writing section in graduate school admissions and assist in evaluating the appropriateness of this examination for use as an outcomes measure for upper-division college students.

The Steering Committee

An ETS steering committee was established consisting of four members: two researchers experienced in conducting studies on writing and two senior GRE Program directors responsible for the writing assessment. The names and titles of the steering committee members are provided in Appendix B. Their role was to ensure that the research and development needs of the GRE program were reflected in each major step of this project and that the procedures used were professionally sound. Members of the steering committee reviewed the initial plan, provided feedback on the content and design of the survey instrument, and offered recommendations regarding the characteristics of schools to be included in the sample and the subject areas to be sampled.

Defining the Domain of Task Statements

Several steps were taken to define the writing tasks thought to be important for competent academic performance of upper-division college students and entry-level master's and doctoral students. Each of these is described below.

First draft of task statements. The first draft of writing task statements was developed based on a review of relevant literature associated with the writing across the curriculum movement, and other relevant sources. Task statements from previous needs analysis studies (Bridgeman & Carlson, 1983; Hale et al., 1996; Rosenfeld, Wilson, & Oltman, 2001) were reviewed and considered for possible inclusion in the initial draft. An additional review of the writing across the curriculum literature revealed several studies with writing task statements (Epstein, 1999; Kovacs, 1999; Rice, 1998; Wallner & Latosi-Wawin, 1999). ETS Test Development staff experienced in teaching and assessing writing played a major role in drafting the initial list of task statements. One focus was to ensure that the task statements were descriptive of the writing tasks and scoring framework being used in the analytic writing section.

This was done so that those particular tasks and skills could be evaluated by large numbers of undergraduate and graduate faculty members. The review of the literature was intended to identify important writing tasks that could be added to the list and considered for possible use in later versions of the analytic writing section. Fifty task statements were developed that were consistent with the analytical writing section or reflective of the literature associated with writing across the curriculum initiatives and that appear to be important for competent academic performance across a range of subjects.

Since these statements were to be sent to faculty members across a range of subject - matter areas, they needed to be expressed in language that was as clear and straightforward as possible. Thus it seemed important to involve many different groups of faculty in the review process. The first group came from the 2002 summer ETS Visiting Minority Faculty program. A total of 12 faculty members from 10 institutions across the country completed the draft survey in July 2002. Of that group, 7 participated in a group discussion explaining their impressions of the task statements. Based on input from these reviewers, as well as suggestions from members of the steering committee, a second draft of writing task statements was prepared.

Faculty review of second draft. Faculty members from 12 colleges and universities participated in a review of the second draft of the writing task statements. Six general academic areas representing a wide range of specific disciplines were selected for inclusion in this study: the natural sciences, physical sciences, engineering, social science, English, and education. These six areas were selected because they reflect a wide range of disciplines, include the fields with the highest number of earned doctorates in 2000 ("Earned doctorates," 2001), are the subject areas most represented by GRE test takers, and have been used in previous studies of the writing measure (Powers, Fowles, & Welsh, 1999; Schaeffer, Briel, & Fowles, 2001). Participants were selected from a geographically diverse range of colleges and universities in the United States that use the GRE. Other factors such as school size, whether the school was public or private, and whether the school was a master's or a research institution were also considered. Faculty from one Historically Black College and University (HBCU) and three Hispanic-Serving Institutions (HSI) participated in this review phase.

In initial phone conversations with writing center directors, it became evident that the most efficient way to facilitate a nationwide faculty review would be for ETS project staff to send invitations to faculty identified by the writing center director via e-mail. Writing center

directors in 12 institutions provided lists of faculty members across six academic areas. As a result, more than 50 college instructors were invited to review the writing task statements, transmitted via e-mail. They were asked:

- Are the tasks listed clear and understandable?
- Do they cover the scope of writing tasks you think are important for competent academic performance in your subject area?
- What other important tasks are missing?

Twenty-three of the 50 faculty reviewers (46%) completed their review of the writing statements. Their comments were reflected in the subsequent list of task statements.

External advisory committee review. Five faculty members experienced and knowledgeable in writing across the curriculum were selected to participate on the advisory committee. The committee had representation by gender, ethnicity, and geographic region. Their review was provided in two parts: First they reviewed the second draft of the writing task statements at the same time it was being reviewed by faculty from the 12 institutions. Based on input from the advisory committee and the cross-site faculty reviews, a third draft of the task statements was produced. The advisory committee then had an additional opportunity to review this new list of statements. Additional input by committee members, provided through individual telephone interviews, focused on the completeness of the list, the clarity of the statements, and their perceived relevance across a range of subject areas. The committee also reviewed and commented on the importance rating scale and the biographical information questions that were to be used to describe respondents to the survey instrument.

GRE Research Committee review. The GRE Research Committee also reviewed the task statements, project plans, and procedures. This committee believed that all of the task statements appeared to be important and recommended that several task statements be added that would be likely to obtain lower ratings as a way of verifying the accuracy of the ratings. As a result, project staff, with the assistance of test development staff, developed three task statements that were thought to be highly appropriate for English classes but much less so for those in the social and physical sciences.

The final survey instrument. The final survey instrument contained 39 task statements, three rating scales, and a background information section. A separate importance rating scale

was included for faculty teaching upper-division undergraduates, another for graduate faculty teaching entering master's-level students, and a third for faculty teaching entering doctoral-level students. A copy of the final survey is provided in Appendix C. An example of one of the three rating scales is provided in Figure 1. The other two rating scales were identical except for minor wording differences reflecting student level.

Importance Rating Scale

How important is it for entering master's level students in your department or program to be able to perform each task competently?

(0) Most students in my department or program do not need to perform this task.

(1) Slightly important

(2) Moderately important

(3) Important

(4) Very important

(5) Extremely important

Figure 1. **A rating scale from the final survey instrument.**

Faculty members were instructed to complete the survey for only those levels that they had taught.

Selecting Schools and Faculty to Participate in the Survey

Project staff worked closely with the steering committee to identify a pool of colleges and universities from which 33 institutions were asked to participate. Factors such as geographic diversity, size, use of the GRE assessment in the admission process, emphasis on writing in multiple disciplines, whether the school was public or private, or whether the school was a master's or a research institution were considered in the selection of the institutions to participate in the study. Every attempt was made to enlist HBCU and HSI institutions. Institutional characteristics as well as a contact person in the writing center or English department were identified through a review of the institution's Web site, supplemented by the Carnegie Foundation for the Advancement of Teaching (2000) listing of schools and listings of HBCU and

HSI institutions. Each contact received an e-mail letter explaining the purpose of the study and the involvement required of the participating schools. This letter was followed by a telephone call from a member of the ETS project staff to answer any questions and to ask if their institution would be willing to participate in this study. If the school was interested in participating, the initial contact person usually recommended a coordinator. In most cases, the coordinator was either a faculty member or a graduate student associated with the writing center. The process of recruiting the 33 schools was ongoing for several months.

The coordinators at institutions with both master's and doctoral programs were asked to identify 48 faculty members, 8 in each of the six areas, for participation in the study. The six areas agreed upon by the steering committee were English, education, psychology, natural sciences (biology), physical sciences, and engineering. Coordinators were asked to identify 4 faculty members who were currently teaching upper-division undergraduate courses and 4 who were teaching beginning graduate courses at the master's and doctoral levels from the departments selected in each of the six areas. Coordinators from the 3 four-year institutions were asked to distribute surveys to 24 faculty members (4 from each of the six subject areas). Separate rating scales on the survey allowed for independent ratings of the tasks for the undergraduate and graduate levels as appropriate. Procedures for selecting faculty were arranged with each coordinator in order to identify the steps that would be most efficient for their institution. Overall, surveys were sent to 1,512 faculty members (792 undergraduate and 720 graduate). Coordinators distributed surveys to the faculty, followed up to ensure completion of the surveys, and returned the completed surveys. A stipend of $500 was provided to each of the coordinators who distributed surveys to undergraduate and graduate faculty, and a stipend of $300 was provided to the three coordinators at the four-year institutions. These procedures were similar to those used in other studies, which yielded return rates ranging from 50% to 82% (Bridgeman & Carlson, 1983; Enright & Powers, 1986; Hale et al., 1996; Rosenfeld et al., 2001).

Producing and Administering the Survey Instrument

The final survey instrument was formatted as a scannable booklet and was printed and mailed to each coordinator by National Computer Systems (NCS). Packets containing a sample survey along with detailed directions were sent from ETS under separate cover to the coordinators at each college and university participating in this phase of the study. The coordinators distributed the survey along with a cover letter explaining the purpose of the project

to faculty members selected to participate in the study. Surveys were to be completed and returned to the coordinator. Coordinators were also responsible for tracking returns, following up with nonrespondents, and sending the completed surveys back to NCS for processing.

Confirming the Link Between GRE Writing Skills and Writing Task Statements

The GRE scoring guides used for the analytical writing tasks (*Issue* and *Argument*) have six levels (ETS, 2003). Each level describes the skills that are typically demonstrated in essays at each score level. For the purposes of this project, the two scoring guides were merged into a single document consisting of nine skills. Overlapping skills appeared only once, whereas distinctly different skills remained as separate entries. Because expertise in the evaluation of writing and use of the scoring rubrics were both very important, the writing experts were ETS assessment specialists. Five ETS writing assessment specialists with considerable experience working on a variety of non-GRE programs participated in the linking process. The five writing specialists met as a group and were first given an overview of the purposes of the project and a description of how the task statements were developed and administered. They were then given an opportunity to review sample GRE writing prompts, the scoring rubric, and the 39 task statements. They were given a rating form and asked to rate how important each of the nine skills (comprising the scoring rubrics for the *Issue* and *Argument* tasks) were for competent performance of each of the 39 task statements. A six-point importance rating scale was used ranging from 0 (*of no importance*) to 5 (*extremely important*).

The five writing assessment specialists independently rated the first seven task statements and then discussed their interpretation of the scoring rubrics. They were told to interpret the rubrics broadly and not limit their judgments of the tasks and writing skills reflected in the scoring rubrics to only an *Issue* or *Argument* context. The wording of the scoring rubrics was modified slightly to reflect this more generalized evaluation. The five assessment specialists then independently rated the remaining task statements. Appendix D contains the 39 task statements, the skills reflected in the scoring rubric, the importance rating scale, and the mean importance ratings describing how important each skill was judged to be for performing each of the 39 writing tasks. A mean rating of 4.0 (*very important*) was used as the standard for establishing a link between a skill and a task statement.

Analyzing Data

The analyses described below were designed to identify the writing task statements that were judged by faculty to be important for competent academic performance within and across subject areas at the undergraduate and graduate levels. Separate analyses were conducted at each of three levels (undergraduate, master's, and doctoral) for each of the six subject areas included in the study.

Means and standard deviations. Means and standard deviations were computed for each task statement at each of the three educational levels. The mean rating obtained from faculty members provided an indication of the importance of each task for competent academic performance. Project staff used an overall mean rating of 3.50 (across the six subject areas) at each of three educational levels (rounds to a rating of *very important*) as the cut-point to distinguish more important tasks from less important ones. In addition, a mean rating of 3.0 (*important*) was used as the cut-point for the within-level comparisons by subject area. Task statements with overall mean ratings equal to or greater than 3.50 and subject area ratings of at least 3.0 were classified as important, while tasks receiving ratings below those levels were classified as less important. We recognize that all judgmental standards may be subject to debate; however, our experience indicates that a value of 3.50 (a mean rating of *very important*) and a secondary standard of 3.0 (*important*) on the importance rating scale described earlier provides a solid foundation for supporting claims of job relatedness.

Correlation coefficients. Correlation coefficients were computed to evaluate the profile of task ratings within and across the three levels of education.

Results

Response Rate

Of the 33 schools that agreed to participate, 30 returned surveys for a 91% institution participation rate. Twenty-seven of the institutions had graduate programs and 3 were four-year institutions with only undergraduate students. Each of the 27 institutions with graduate programs distributed 48 surveys (8 across each of the six selected areas) and each of the four-year institutions distributed 24 surveys (4 across each of the six areas). Overall 1,368 surveys were distributed across the 30 participating schools. A total of 861 surveys were completed and returned (a 63% return rate). As noted earlier, studies using similar procedures had return rates

ranging from 50% to 82%. The return rate obtained in this study falls within the range obtained from studies using similar methods to distribute and return survey instruments.

Respondent Demographics

Two sets of demographic information will be provided. One set describes the participating schools and the other describes the faculty members who completed the survey instrument.

Schools. The 30 participating schools are listed below by geographic area. An asterisk designates the four-year institutions. Of these schools, 2 are HBCUs and 3 are HSIs. They are noted in italics. Twenty of the participating institutions are public institutions, and the remaining 10 are private. Among the public institutions, 18 are doctoral/research institutions and 2 offer graduate degrees at the master's level across the curriculum. Two institutions offer only baccalaureate degrees and both of these are private institutions. One of the master's-level-only institutions did not offer graduate degrees in all subject areas and was counted as a four-year school (receiving only 24 surveys to be distributed to faculty teaching at the undergraduate level).

Northeast	**South**
College of New Jersey*	Duke University
Georgetown University	George Mason University
Morgan State University	*Johnson C Smith College**
New York University	University of Alabama
Temple University	*University of Miami*
University of Connecticut	University of Mississippi
University of Maryland	University of North Carolina
University of Massachusetts	University of Tennessee
University of Pennsylvania	Virginia Polytechnic Institute
University of Pittsburgh	

Midwest	West
Saint Olaf College*	Brigham Young University
University of Cincinnati	Eastern Washington University
University of Denver	New Mexico State University
University of Kansas	*University of Arizona*
University of Tulsa	University of Montana
	University of North Dakota

Faculty. A table describing the background information of faculty members completing the survey, overall and by subject area, is provided in Appendix E. Respondents were well distributed across all six subject areas: 15% from education, 13% from engineering, 19% from English, 16% from life sciences, 16% physical sciences, 17% from psychology, and 5% who did not identify their subject area. When asked how important higher-level writing skills (e.g., analytical, interpretative, persuasive) were in course assignments, the mean rating across all respondents was 3.6. This rounds to a rating of *very important*. The mean ratings ranged from 2.8 (*important*) for life sciences to a mean rating of 4.7 (*extremely important*) for English. On average, the respondents from five of the six subject areas rated higher-level writing skills to be either *important* or *very important* for their course assignments. Respondents from English departments indicated that higher-level writing skills were extremely important. Appendix F contains an analysis of this question separately for respondents from HBCU and HSI institutions and from four-year institutions. The mean ratings were 4.3 for respondents from HBCU schools, 3.9 for respondents from HSI schools, and 4.3 for respondents from four-year schools. Each group of respondents indicated that higher-level writing skills were very important in their course assignments.

When asked to indicate the level of students they taught, 25% indicated they taught undergraduate students, 5% indicated they taught master's-level students, and 4% indicated they taught doctoral-level students. A majority of respondents left this question blank, indicating they did not teach students at only one level. Since respondents were told to rate only the levels of students they taught, the investigators assume that the respondents to this survey left this item blank because there was not an option for teaching students from all three levels. Based on the ratings, we conclude that approximately 67% taught students at all three levels.

Respondents had a range of teaching experience. Approximately 30% had taught 5 years or less, 19% had taught between 5 and 10 years, and 49% had taught for more than 10 years. Approximately 10% were adjunct professors, 28% were assistant professors, 31% were full professors, 57% were male, and 39% were female. The majority of respondents (78%) were White, 6% were African American, 6% were Asian American or Pacific Islander, 3% were Hispanic, and 1% were American Indian/Alaskan Native.

Master's Level

This section of the report describes the survey results obtained from faculty members who reported teaching master's-level students. Mean ratings, standard deviations, and standard errors for master's-level students, overall and for each of the subject areas, are presented in Appendix G.

Overall. Mean ratings range from 2.4 (*moderately important*) to 4.4 (*very important*). Table 1 presents the task statements judged to be most important across the six subject areas. Thirty-six of the 39 task statements (92%) were rated 3.0 or higher, indicating they were judged to be *important* or *very important* for entering master's-level students to be able to perform competently. The three tasks not rated as being *important* are presented in Table 2. These are the three task statements that were thought to be appropriate for English classes but less so for those in the social and physical sciences. The results confirmed that hypothesis.

Table 1

Master's-Level Tasks With Highest Overall Ratings

Task #	Task	Overall rating
24	Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)	4.5
27	Organize ideas and information coherently	4.4
35	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning	4.4
36	Avoid errors in mechanics (e.g., spelling and punctuation)	4.3
3	Abstract or summarize essential information (e.g., from speeches, observations, or texts)	4.2

Table 1 (continued)

Task #	Task	Overall rating
7	Analyze and synthesize information from multiple sources (includes comparison and contrast)	4.2
23	Integrate quoted and referenced material appropriately into the students' own text	4.2
26	Develop a well-focused, well-supported discussion, using relevant reasons and examples	4.2
28	Write clearly, with smooth transitions from one thought to the next	4.2
30	Write precisely and concisely, avoiding vague or empty phrases	4.2
34	Revise and edit text to improve its clarity, coherence, and correctness	4.2
38	Work independently to plan and compose text	4.2

Table 2

Master's-Level Tasks With Overall Ratings Below 3.0

Task #	Task	Overall rating
6	Analyze meanings in a piece of imaginative literature (e.g., a story or poem)	2.4
10	Write persuasively by appealing primarily to the reader's emotions, experiences, or ethical values	2.4
16	Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques	2.5

Education. Mean ratings ranged from 3.0 (*important*) for task #6 (Analyze meanings in a piece of imaginative literature) to 4.5 (rounds to a rating of *extremely important*) for task #24 (Credit sources appropriately). All 39 task statements were rated as being *important*, *very important*, or *extremely important*.

Engineering. Mean ratings ranged from 1.3 (*slightly important*) for task #6 (Analyze meanings in a piece imaginative literature) to 4.2 (*very important*) for task #19 (Present data and other information in a clear and logical manner, offering explanations that make the material

understandable to a particular audience). Thirty-two of the 39 task statements (82%) were rated 3.0 or higher. These statements were rated as being *important* or *very important*.

English. Mean ratings ranged from 2.4 (*moderately important*) for task # 22 (Use clear, efficient formats to organize information and guide the reader) to 4.8 (*extremely important*). There were six tasks with the highest rating: #23 (Integrate quoted and referenced material appropriately into the student's own text), #24 (Credit sources appropriately), #26 (Develop a well-focused, well-supported discussion, using relevant reasons and examples), #27 (Organize ideas and information coherently), #29 (Choose words effectively), and #35 (Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning). Thirty-eight of the 39 task statements (97%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

Life sciences. Mean ratings ranged from 1.5 (rounds to *moderately important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 4.5 (rounds to a rating of *extremely important*). There were four tasks with the highest rating: #1 (Describe observations), #19 (Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience), #24 (Credit sources appropriately), and #27 (Organize ideas and information coherently). Thirty-five of the 39 task statements (90%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

Physical sciences. Mean ratings ranged from 1.2 (*slightly important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 4.3 (*very important*). There were three tasks with the highest rating: #19 (Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience), #24 (Credit sources appropriately), and #27 (Organize ideas and information coherently). Thirty-four of the 39 task statements (87%) were rated 3.0 or higher. These statements were rated as being *important* or *very important*.

Psychology. Mean ratings ranged from 1.9 (rounds to *moderately important*) for task # 6 (Analyze meaning in a piece of imaginative literature) to 4.6 (rounds to a rating of *extremely important*) for task # 24 (Credit sources appropriately). Thirty-six of the 39 task statements (92%) were rated 3.0 or higher. These statements were rated as *important*, *very important*, or *extremely important*.

Intercorrelation of subject-area rating. The mean importance ratings obtained for each of the 39 task statements for each of the six subject areas were correlated. These results are provided in Table 3. They indicate that the profile of ratings is similar for five of the six subject areas. English is the one area that demonstrated a different profile of ratings. This finding is most likely related to the three task statements that were primarily geared toward English and likely to generate lower ratings by the other subject areas.

Table 3

Intercorrelation of Master's-Level Importance Ratings for Six Subject Areas

	Education	Engineering	English	Life sciences	Physical science	Psychology
Education	1.00	.81	.41	.87	.84	.92
Engineering		1.00	−.01	.97	.98	.94
English			1.00	.15	.08	.23
Life sciences				1.00	.97	.98
Physical science					1.00	.96
Psychology						1.00

Correlation of faculty ratings from minority and nonminority schools. The overall mean importance ratings for each of the 39 task statements for respondents from minority and nonminority schools were correlated. The correlation was .98, indicating that the profiles of ratings from minority and nonminority schools were very similar.

Doctoral Level

This section of the report describes the survey results obtained from faculty members who reported teaching doctoral-level students. Mean ratings, standard deviations, and standard errors overall and for each of the subject areas are presented in Appendix I.

Overall. Mean ratings ranged from 2.4 (*moderately important*) to 4.7 (*extremely important*). Table 4 presents the task statements judged to be most important across the six subject areas. Thirty-six of the 39 task statements (92%) were rated 3.0 or higher, indicating they were judged to be *important*, *very important*, or *extremely important*. The three tasks not rated as being *important* are presented in Table 5. These are the three task statements that were thought to

be appropriate for English classes but less so for those in the social and physical sciences. The results confirmed that hypothesis.

Table 4

Doctoral-Level Tasks With Highest Overall Average Ratings

Task #	Task	Overall rating
24	Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)	4.7
27	Organize ideas and information coherently	4.7
35	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning	4.6
3	Abstract or summarize essential information (e.g., from speeches, observations, or texts)	4.5
7	Analyze and synthesize information from multiple sources (includes comparison and contrast)	4.5
12	Examine the reasoning in a given argument and discuss its logical strengths and weaknesses (e.g., the legitimacy of claims, the soundness of assumptions, the sufficiency of support, or the distinction between correlation and causation)	4.5
14	Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions	4.5
19	Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text)	4.5
26	Develop a well-focused, well-supported discussion, using relevant reasons and examples	4.5
28	Choose words effectively	4.5
30	Write fluently, avoiding plodding or convoluted language	4.5
34	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning	4.5
36	Avoid errors in mechanics (e.g., spelling and punctuation)	4.5
38	Work independently to plan and compose text	4.5

Table 5

Doctoral-Level Tasks With Overall Ratings Below 3.0

Task #	Task	Overall rating
6	Analyze meanings in a piece of imaginative literature (e.g., a story or poem)	2.4
10	Write persuasively by appealing primarily to the reader's emotions, experiences, or ethical values	2.4
16	Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques	2.6

Education. Mean ratings ranged from 2.9 (rounds to a rating of *important*) for task #6 (Analyze meanings in a piece of imaginative literature) to 4.7 (rounds to a rating of *extremely important*). Three tasks had a rating of 4.7: task #24 (Credit sources appropriately), task # 27 (Organize ideas and information coherently), and task #35 (Uses grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning). Thirty-eight of 39 task statements (97%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

Engineering. Mean ratings ranged from 1.4 (*slightly important*) for task #6 (Analyze meanings in a piece imaginative literature) to 4.5 (rounds to a rating of *extremely important*) for task #19 (Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience). Thirty-six of the 39 task statements (92%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

English. Mean ratings ranged from 2.7 (rounds to a rating of *important*) for task #22 (Use clear, efficient formats to organize information and guide the reader) to 4.9 (*extremely important*). Seven tasks received a rating of 4.9: #9 (Write persuasively by constructing a well-reasoned argument to support or refute a position), #24 (Credit sources appropriately), #26 (Develop a well-focused, well-supported discussion, using relevant reasons and examples), #27 (Organize ideas and information coherently), #29 (Choose words effectively), #30 (Write precisely and concisely, avoiding vague or empty phrases), and #35 (Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt

meaning). Thirty-eight of 39 task statements (97%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

Life sciences. Mean ratings ranged from 1.3 (*slightly important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 4.8 (rounds to a rating of *extremely important*). There were four tasks with the highest rating: #1 (Describe observations), #3 (Abstract or summarize essential information), #24 (Credit sources appropriately), and #27 (Organize ideas and information coherently). Thirty-six of the 39 task statements (92%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

Physical sciences. Mean ratings ranged from 1.1 (*slightly important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 4.6 (rounds to a rating of *extremely important*). Six tasks received the highest rating: #8 (Predict consequences or outcomes by analyzing information, patterns, or processes), #14 (Interpret data within a relevant framework by applying the findings to new situations, asking insightful question, identifying the need for further information, or drawing conclusions), #19 (Present data and other information in a clear and logical manner offering explanations that make the material understandable to a particular audience), #21 (Use technical content-specific vocabulary accurately and appropriately for a particular purpose and audience), #24 (Credit sources appropriately), and #27 (Organize ideas and information coherently*)*. Thirty-three of the 39 task statements (85%) were rated 3.0 or higher. These statements were rated as being *important*, *very important,* or *extremely important*.

Psychology. Mean ratings ranged from 2.0 (*moderately important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 4.8 (rounds to a rating of *extremely important*). Three tasks received the highest rating: #12 (Examine the reasoning in a given argument and discuss its logical strengths and weaknesses), #19 (Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience), and task #24 (Credit sources appropriately). Thirty-six of the 39 task statements (92%) were rated 3.0 or higher. These statements were rated as *important*, *very important*, or *extremely important*.

Intercorrelation of subject-area ratings. The mean importance ratings obtained for each of the 39 task statements for each of the six subject areas were correlated. These results, provided in Table 6, indicated that the profile of ratings were similar for five of the six subject areas. English was the one area that demonstrated a different profile of ratings. This finding was most

likely related to the three task statements included that were primarily geared toward English and expected to generate lower ratings by other subject areas.

Table 6

Intercorrelation of Doctoral-Level Importance Ratings for Six Subject Areas

	Education	Engineering	English	Life sciences	Physical science	Psychology
Education	1.00	.89	.29	.94	.90	.96
Engineering		1.00	−.03	.97	.97	.96
English			1.00	.10	.04	.15
Life sciences				1.00	.97	.99
Physical science					1.00	.97
Psychology						1.00

Correlation of faculty ratings from minority and nonminority schools. The overall mean importance ratings for each of the 39 task statements for respondents from minority and nonminority schools were correlated. The correlation was .99, indicating that the profiles of ratings from minority and nonminority schools were very similar.

Correlation of faculty ratings for master's and doctoral levels. The overall mean importance ratings for the master's and doctoral levels for each of the 39 task statements were correlated. The correlation was .98, indicating that the profiles of ratings for the master's and doctoral levels were very similar.

Comparing Faculty Ratings of Importance at the Master's and Doctoral Levels

This section compares faculty ratings of the importance of entering master's- and doctoral-level students being able to perform each of the 39 tasks described in this study competently.

Overall ratings of importance. Over all six subject areas, 36 of 39 task statements (92%) were rated 3.0 or higher, indicating they were judged to be *important* or *very important* for entering master's-level students to be able to perform competently. At the doctoral level, the same 36 statements also received ratings of 3.0 or higher, indicating they were judged to be *important*, *very important*, or *extremely important* for competent performance in the same six subject areas. Compared to the master's level, mean ratings at the doctoral level were slightly higher for each of these 36 task statements. The correlation of mean ratings by faculty

responding at the master's and doctoral levels across all 39 tasks was .98, indicating that the profile of ratings was quite similar. The vast majority of task statements were judged to be important at both levels. The same three task statements received ratings below 3.0 at both the master's and doctoral levels; these were the task statements thought to be important for English classes but less so for classes in the social and physical sciences.

Ratings by subject area. At the master's level, the number of task statements receiving ratings of 3.0 or above ranged from 32 (82%) for engineering to 39 (100%) for education. At the doctoral level, the number of task statements receiving ratings of 3.0 or higher ranged from 33 (85%) for physical sciences to 38 of 39 (97%) for both education and English. A large majority of task statements were judged to be important for competent performance in each of the subject areas at each educational level. The intercorrelation of importance ratings across subject areas for each of the 39 tasks indicated that the profile of ratings was similar for five of the six subject areas. English was the one subject area that differed from the others. This occurred at both the master's and doctoral levels. The result of the three task statements is most likely to be more important for English than for the other subject areas.

Ratings from minority and nonminority schools. The correlation of overall mean importance ratings for each of the 39 task statements by faculty from minority and nonminority schools was .98 for the master's-level ratings and .99 at the doctoral level. This indicates that the profiles of ratings from faculty at minority and nonminority schools were very similar at each of the two educational levels. The absolute level of the mean ratings was also very similar.

Identifying the most important task statements. Thirty-six of the 39 task statements received overall mean ratings of 3.0 or higher at both the master's and doctoral levels. Some statements were rated as being *important*, others *very important*, and a few were rated to be *extremely important*. There was, however, a good deal of variability across the six subject areas. Not all 36 task statements were rated 3.0 or higher for each subject area. Since the analytical writing section of GRE is used to make admission decisions at both the master's and doctoral levels for a range of subject areas, it is useful to identify those tasks that are judged to be important both overall and separately for each of the six subject areas. To identify the subset of the most important tasks overall as well as those that were consistently rated as being important by subject area, project staff developed the following standard: A task statement was considered to be one of the most important task statements if it received an overall mean rating of 3.5 or

higher (rounds to a rating of *very important*) and received a rating of at least 3.0 (a rating of *important*) for each of the six subject areas at both the master's and doctoral levels. Twenty-nine of 39 task statements (74%) met this standard. These 29 tasks can be considered the core of important writing tasks at both the master's and doctoral levels. They are listed in Table 7.

Table 7

Core Tasks Important at Both the Master's and Doctoral Levels

Task #	Statement	Overall rating
1	Describe observations (e.g., of an event, behavior, place, object, or experiment).	4.1
2	Explain how to perform a procedure (e.g., for instructional materials or manuals).	3.8
3	Abstract or summarize essential information (e.g., from speeches, observations, or texts).	4.2
5	Explain an event or occurrence using such evidence as historical accounts, data, or research findings.	4.0
7	Analyze and synthesize information from multiple sources (includes comparison and contrast).	4.2
8	Predict consequences or outcomes by analyzing information, patterns, or processes.	3.8
9	Write persuasively by constructing a well-reasoned argument to support or refute a position.	4.1
11	Explore relationships among complex and possibly conflicting ideas.	4.0
12	Examine the reasoning in a given argument and discuss its logical strengths and weaknesses (e.g., the legitimacy of claims, the soundness of assumptions, the sufficiency of support, or the distinction between correlation and causation).	4.1
13	Identify problems in a proposed course of action or interpretation of events and propose solutions or alternative interpretations.	3.8
14	Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions.	4.0
18	Write appropriately for a generally well-informed and thoughtful audience (e.g., maintain an appropriate tone, provide sufficient context or other information for readers to understand the points being made).	4.0

(Table continues)

Table 7 (continued)

Task #	Statement	Overall rating
19	Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text).	4.1
21	Use technical, content-specific vocabulary accurately and appropriately for a particular purpose and audience.	4.0
23	Integrate quoted and referenced material appropriately into the students' own text.	4.2
24	Credit sources appropriately (e.g., use attribution, footnotes, or endnotes).	4.5
25	Clarify relationships among main and supporting ideas.	4.0
26	Develop a well-focused, well-supported discussion, using relevant reasons and examples.	4.2
27	Organize ideas and information coherently.	4.4
28	Write clearly, with smooth transitions from one thought to the next.	4.2
29	Choose words effectively.	4.1
30	Write precisely and concisely, avoiding vague or empty phrases.	4.2
31	Write fluently, avoiding plodding or convoluted language.	4.1
32	Vary sentence structure to communicate ideas effectively.	3.6
34	Revise and edit text to improve its clarity, coherence, and correctness.	4.2
35	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning.	4.4
36	Avoid errors in mechanics (e.g., spelling and punctuation).	4.3
37	Use word processing software to plan, create, and present text.	3.9
38	Work independently to plan and compose text.	4.2

Linking study. As described earlier, five ETS writing assessment specialists, who were not involved in the development or scoring of the analytical writing section of the GRE, were asked to rate the importance of each element in the GRE scoring rubrics for performing each of the 29 core writing tasks judged to be important by college faculty at both the master's and doctoral levels. A mean rating of 4.0 (*very important*) was used as the minimum criterion for establishing a linkage. Table 8 has an X in each cell for which there was a linkage. The actual mean ratings for each cell are presented in Appendix D. The results indicate that all of the skills

in the scoring rubric were judged to be important for successfully performing one or more of the core tasks. The skill "Presents an insightful position" had the fewest linkages. It had four linkages and was linked to 14% of the core tasks. The skill "Demonstrates control of language, including appropriate word choice and sentence variety" was linked to 21, or 72%, of the core task statements. The remaining skills were linked to from 24% to 59% of the core task statements.

It should be noted that there were not linkages to all 29 important tasks. Four tasks had no direct linkages: #23 (Integrate quoted and referenced material appropriately into the students' own text), #24 (Credit sources appropriately), #37 (Use word processing software to plan, create, and present text), and #38 (Work independently to plan and compose text). Although these four tasks are not assessed by the GRE scoring rubrics, two of the four (tasks #37 and #38) are related to the conditions under which the test is administered. The result that these tasks were rated as being important lends support for the procedures GRE uses in administering the analytical writing section.

Table 8

Master's- and Doctoral-Level Linkage of Scoring Rubric Components to Important Task Statements

Task statements	Scoring rubric components							
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
1. Describe observations (e.g., of an event, behavior, place, object, or experiment)		X	X			X	X	X	X
2. Explain how to perform a procedure (e.g., for instructional materials or manuals)		X	X			X	X	X	X
3. Abstract or summarize essential information (e.g., from speeches, observations, or texts)			X			X	X		
5. Explain an event or occurrence using such evidence as historical accounts, data, or research findings		X	X	X		X	X	X	X
7. Analyze and synthesize information from multiple sources (includes comparison and contrast)			X	X		X	X	X	X

(Table continues)

Table 8 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
8. Predict consequences or outcomes by analyzing information, patterns, or processes	X	X	X			X	X	X	
9. Write persuasively by constructing a well- reasoned argument to support or refute a position	X	X	X	X	X	X	X	X	X
11. Explore relationships among complex and possibly conflicting ideas		X	X	X	X	X	X		X
12. Examine the reasoning in a given argument and discuss its logical strengths and weaknesses (e.g., the legitimacy of claims, the soundness of assumptions, the sufficiency of support, or the distinction between correlation and causation)	X	X	X		X	X	X	X	X

(Table continues)

Table 8 (continued)

Task statements	Scoring rubric components									
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
13. Identify problems in a proposed course of action or interpretation of events and propose solutions or alternative interpretations	X	X	X			X	X	X	X
14. Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions			X			X	X		X
18. Write appropriately for a generally well-informed and thoughtful audience (e.g., maintain an appropriate tone, provide sufficient context or other information for readers to understand the points being made)				X	X			X	X

(Table continues)

Table 8 (continued)

Task statements	Scoring rubric components							
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
19. Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text)			X		X	X	X	X	X
21. Use technical, content-specific vocabulary accurately and appropriately for a particular purpose and audience				X					X
23. Integrate quoted and referenced material appropriately into the students' own text									
24. Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)									
25. Clarify relationships among main and supporting ideas			X			X	X	X	X

(Table continues)

Table 8 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
26. Develop a well-focused, well-supported discussion, using relevant reasons and examples		X	X			X	X	X	X
27. Organize ideas and information coherently			X						X
28. Write clearly, with smooth transitions from one thought to the next			X	X	X		X		X
29. Choose words effectively				X					X
30. Write precisely and concisely, avoiding vague or empty phrases				X					X
31. Write fluently, avoiding plodding or convoluted language				X					X
32. Vary sentence structure to communicate ideas effectively				X	X				X

Upper-Division Undergraduate Level

This section of the report describes the survey results obtained from faculty members who reported teaching upper-division undergraduate students. Mean ratings, standard deviations, standard errors, and percent zero responses overall and for each of the subject areas are presented in Appendix J.

Overall. Mean ratings ranged from 2.2 (*moderately important*) to 4.1 (*very important*). Table 9 presents the task statements judged to be most important across the six subject areas. Thirty-three of the 39 task statements (85%) were judged to be *important* or *very important* for upper-division undergraduate students to be able to perform competently. The six task statements with mean ratings below 3.0 are provided in Table 10. Three of these statements were the ones thought to be appropriate for English classes but less so for those in the social and physical sciences. The remaining three tasks have ratings very close to 3.0.

Table 9

Upper-Division Undergraduate Tasks With Highest Overall Average Ratings

Task #	Task	Overall rating
24	Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)	4.1
27	Organize ideas and information coherently	4.1
35	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning	4.1
36	Avoid errors in mechanics (e.g., spelling and punctuation)	4.0
34	Revise and edit text to improve its clarity, coherence, and correctness	3.9
30	Write precisely and concisely, avoiding vague or empty phrases	3.9

Table 10

Upper-Division Undergraduate Tasks With Overall Ratings Below 3.0

Task #	Task	Overall rating
6	Analyze meanings in a piece of imaginative literature (e.g., a story or poem)	2.2
10	Write persuasively by appealing primarily to the reader's emotions, experiences, or ethical values	2.2
16	Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques	2.2
20	Use analogy, metaphor, or comparison to define or explain technical or abstract concepts for a general audience	2.8
17	Use the conventions of a particular genre	2.9
3	Express ideas in original or novel ways to hold the reader's interest	2.9

Education. Mean ratings ranged from 2.9 (rounds to a rating of *important*) for task #16 (Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques) to 4.2 (*very important*). Three tasks had a rating of 4.2: #27 (Organize ideas and information coherently), task #35 (Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning), and task #36 (Avoid errors in mechanics). Thirty-eight of 39 task statements (97%) were rated 3.0 or higher. These statements were rated as being *important* or *very important*.

Engineering. Mean ratings ranged from 1.3 (*slightly important*) for task #6 (Analyze meanings in a piece imaginative literature) to 3.8 (rounds to a rating of *very important*). Two task statements had a rating of 3.8: #19 (Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience) and #35 (Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning). Twenty-eight of the 39 task statements (72%) were rated 3.0 or higher. These statements were rated as being *important* or *very important*.

English. Mean ratings ranged from 2.2 (*moderately important*) for task #22 (Use clear, efficient formats to organize information and guide the reader) to 4.6 (rounds to a

rating of *extremely important*). Four tasks received a rating of 4.6: #9 (Write persuasively by constructing a well-reasoned argument to support or refute a position), #24 (Credit sources appropriately), #26 (Develop a well-focused well-supported discussion, using relevant reasons and examples), and #27 (Organize ideas and information coherently). Thirty-three of 39 task statements (85%) were rated 3.0 or higher. These statements were rated as being *important*, *very important*, or *extremely important*.

Life sciences. Mean ratings ranged from 1.3 (*slightly important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 4.3 (*very important*) for task #24 (Credit sources appropriately). Thirty-two of the 39 task statements (82%) were rated 3.0 or higher. These statements were rated as being *important* or *very important*.

Physical sciences. Mean ratings ranged from 1.0 (*slightly important*) for task #6 (Analyze meaning in a piece of imaginative literature) to 3.9 (rounds to a rating of *very important*) for task #27 (Organize ideas and information coherently). Thirty of the 39 task statements (77%) were rated 3.0 or higher. These statements were rated as being *important* or *very important*.

Psychology. Mean ratings ranged from 1.7 (rounds to a rating of *moderately important*) for task #6 (Analyze meaning in a piece of imaginative literature) and task #16 (Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques). Three tasks received the highest rating of 4.1 (*very important*). These were #24 (Credit sources appropriately), #27 (Organize ideas and information coherently), and #35 (Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning). Thirty-three of the 39 task statements (85%) were rated 3.0 or higher. These statements were rated as *important* or *very important*.

Intercorrelation of subject-area ratings. The mean importance ratings obtained for each of the 39 task statements for each of the six subject areas were correlated. These results, provided in Table 11, indicated that the profiles of ratings were similar for five of the six subject areas. English was the one area with different profiles of ratings, which is most likely related to the three task statements included that were primarily geared toward English and expected to generate lower ratings by the other subject areas.

Table 11

Intercorrelation of Upper-Division Undergraduate-Level Importance Ratings for Six Subject Areas

	Education	Engineering	English	Life sciences	Physical science	Psychology
Education	1.00	.78	.38	.86	.81	.91
Engineering		1.00	−.12	.93	.95	.88
English			1.00	.12	.03	.25
Life sciences				1.00	.97	.98
Physical science					1.00	.94
Psychology						1.00

Correlation of faculty ratings from minority and nonminority schools. The overall mean importance ratings for each of the 39 task statements for respondents from minority and nonminority schools were correlated. The correlation was .99, indicating that the profiles of ratings from minority and nonminority schools were very similar.

Correlation of faculty ratings for upper-division undergraduate, master's, and doctoral levels. The overall mean importance ratings for upper-division undergraduate, master's, and doctoral levels for each of the 39 task statements were correlated. The correlation was .98 between upper-division undergraduate ratings and master's-level ratings, and .93 between upper-division undergraduate ratings and doctoral-level ratings. These results indicate that the profile of ratings for the upper-division undergraduate, master's, and doctoral levels were very similar. Although the level of the mean ratings was somewhat lower, the profiles of ratings were very similar.

Identifying the most important task statements. Thirty-three of the 39 task statements (85%) received overall mean ratings of 3.0 or higher by faculty rating the importance of these task statements for competent performance of upper-level undergraduates. Some statements were rated as being important and others as very important. There was, however, a good deal of variability across the six subject areas. Not all 33 task statements were rated 3.0 or higher for each subject area. The percentage of task statements rated 3.0 or higher ranged from 72% for engineering to 97% for

education. Since the analytical writing section of GRE assessment is designed to be appropriate for a wide range of subject areas, it is useful to identify those tasks that are judged to be important both overall and separately for each of the six subject areas.

To identify the subset of the most important tasks overall as well as those that were consistently rated as being *important* by subject area, project staff used the same standard that was applied at the master's and doctoral levels. A task statement was considered to be one of the core task statements if it received an overall mean rating of 3.5 or higher (rounds to a rating of *very important*) and received a rating of at least 3.0 (a rating of *important*) for each of the six subject areas. Twenty-two of 39 task statements (56%) met this standard, as compared to 29 for the master's and doctoral levels. All 22 tasks were included in the 29 tasks that met the standard at the master's and doctoral levels, reflecting a 76% overlap in core tasks for upper-division undergraduates and those at the master's and doctoral levels. The core tasks important for competent performance at the undergraduate level are listed below in Table 12.

Table 12

Core Tasks Important at the Upper-Division Undergraduate Level

Task #	Statement	Overall rating
1	Describe observations (e.g., of an event, behavior, place, object, or experiment)	3.8
3	Abstract or summarize essential information (e.g., from speeches, observations, or texts)	3.8
5	Explain an event or occurrence using such evidence as historical accounts, data, or research findings	3.6
7	Analyze and synthesize information from multiple sources (includes comparison and contrast)	3.8
9	Write persuasively by constructing a well-reasoned argument to support or refute a position	3.8
14	Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions	3.5

(Table continues)

Table 12 (continued)

Task #	Statement	Overall rating
18	Write appropriately for a generally well-informed and thoughtful audience (e.g., maintain an appropriate tone, provide sufficient context or other information for readers to understand the points being made)	3.6
19	Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text)	3.7
21	Use technical, content-specific vocabulary accurately and appropriately for a particular purpose and audience	3.5
23	Integrate quoted and referenced material appropriately into the students' own text	3.8
24	Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)	4.1
26	Develop a well-focused, well-supported discussion, using relevant reasons and examples	3.8
27	Organize ideas and information coherently	4.1
28	Write clearly, with smooth transitions from one thought to the next	3.8
29	Choose words effectively	3.8
30	Write precisely and concisely, avoiding vague or empty phrases	3.9
31	Write fluently, avoiding plodding or convoluted language	3.7
34	Revise and edit text to improve its clarity, coherence, and correctness	3.9
35	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning	4.1
36	Avoid errors in mechanics (e.g., spelling and punctuation)	4.0
37	Use word processing software to plan, create, and present text	3.6
38	Work independently to plan and compose text	3.8

Linking study. As described earlier, five ETS writing assessment specialists, not involved in the development or scoring of the analytical writing section of the GRE, were asked to rate the importance of each element in the GRE scoring rubrics for performing each of the 39 tasks included in the survey instrument. Table 12 contains the ratings for the 22 core writing tasks judged to be important by college faculty for upper-division undergraduates. The same standard, a mean rating of 4.0 (a rating of *very important*), was used as the minimum criterion for establishing a linkage. Table 13 has an X in each cell

for which there was a linkage. The mean ratings for all cells are presented in Appendix D. The results indicate that all of the scoring rubric skills were judged to be important for successfully performing one or more of the core tasks. The skill "Presents an insightful position" had the fewest linkages. It had one linkage and was linked to 5% of the core tasks. The skill "Demonstrates control of language, including appropriate word choice and sentence variety" was linked to 15 (or 68%) of the core task statements. The remaining skills were linked to from 14% to 55% of the core task statements. It should be noted that linkages were not established with 4 of the 22 important tasks. These were task numbers 23, 24, 37, and 38, which were described above.

Table 13

Upper-Division Undergraduate Linkages of Scoring Rubric Components to Important Task Statements

Task statements	Scoring rubric components									
	Presents an insightful position or the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
1. Describe observations (e.g., of an event, behavior, place, object, or experiment)			X	X		X	X	X	X
3. Abstract or summarize essential information (e.g., from speeches, observations, or texts)			X			X	X		
5. Explain an event or occurrence using such evidence as historical accounts, data, or research findings		X	X	X		X	X	X	X
7. Analyze and synthesize information from multiple sources (includes comparison and contrast)			X	X		X	X	X	X

(Table continues)

Table 13 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
9. Write persuasively by constructing a well-reasoned argument to support or refute a position	X	X	X	X	X	X	X	X	X
14. Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions			X			X	X		X
18. Write appropriately for a generally well-informed and thoughtful audience (e.g., maintain an appropriate tone, provide sufficient context or other information for readers to understand the points being made)				X	X			X	X

Table 13 (continued)

Task statements	Scoring rubric components											
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
19. Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text)			X		X	X	X	X	X
21. Use technical, content-specific vocabulary accurately and appropriately for a particular purpose and audience									X
23. Integrate quoted and referenced material appropriately into the students' own text									

(Table continues)

Table 13 (continued)

Task statements	Scoring rubric components									
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
24. Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)									
26. Develop a well-focused, well-supported discussion, using relevant reasons and examples		X	X			X	X	X	X
27. Organize ideas and information coherently			X				X		
28. Write clearly, with smooth transitions from one thought to the next			X	X	X		X		X
29. Choose words effectively				X					X
30. Write precisely and concisely, avoiding vague or empty phrases				X					X

(Table continues)

Table 13 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position on the issue	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the argument and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points of the critique	Demonstrates control of language, including appropriate word choice and sentence variety
31. Write fluently, avoiding plodding or convoluted language				X					X
34. Revise and edit text to improve its clarity, coherence, and correctness				X	X		X		X
35. Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning				X	X				X
36. Avoid errors in mechanics (e.g., spelling and punctuation)					X				
37. Use word processing software to plan, create, and present text									
38. Work independently to plan and compose text									

Discussion

The *Standards* state that "important validity evidence can be obtained from an analysis of the relationship between a test's content and the construct it is intended to measure" (p. 11). The *Standards* further state that test content refers, among other things, to themes, format of items, and procedures regarding test administration and scoring. For the purposes of this study, the scoring rubric represents the content of the test, and the task statements reflect an operational definition of the construct of the "writing job" of entering graduate students at both the master's and doctoral levels. Evidence based on test content can include logical or empirical analyses of the relevance of the content domain to the proposed interpretation of test scores. The study described in this report was designed to provide additional evidence of the content relevance of GRE analytical writing assessment. It does so by defining a domain of writing tasks important for competent performance across a range of academic areas and by demonstrating a linkage between the important writing tasks and the writing skills assessed in the scoring rubrics for the *Issue* and *Argument* tasks in the analytical writing assessment in the GRE General Test. The discussion is divided into two sections. One addresses the findings obtained for the master's and doctoral levels, and the second focuses on the findings obtained at the upper-division undergraduate level.

The Master's and Doctoral Levels

The analytical writing section of the GRE General Test was designed for use in admission decisions for candidates applying to graduate programs across a range of subject areas. Therefore, this study focused on defining a domain of writing tasks that were important for competent performance for candidates entering both master's or doctoral programs across a range of subject areas.

The Task Domain

The results indicated that faculty teaching in the master's and doctoral programs judged 36 of the 39 tasks (92%) to be important for competent performance at both the master's and doctoral levels. The correlation of mean importance ratings by faculty at the master's and doctoral levels was .98, indicating that the profiles of ratings were quite similar. The correlation of overall mean importance ratings by faculty at minority and nonminority schools was .98 for the master's level and .99 for the doctoral level, indicating that the profile of ratings for faculty

from minority and nonminority schools were very similar. The absolute level of ratings were also similar, with mean ratings at the doctoral level being slightly higher than those obtained at the master's level. Project staff identified a subset of 29 most important tasks by using a criterion or standard that required a task to have an overall mean rating of at least *very important* as well as a rating of at least *important* for each of the six subject areas. For a task to be included, it needed to meet this standard at both the master's and doctoral levels. These findings indicate that graduate-level faculty believed the writing domain defined by these tasks was important for competent performance at both the master's and doctoral levels.

Linking Study

The GRE analytical writing assessment uses two scoring rubrics, one for the "Present Your Perspective on an Issue" task and one for the "Analyze an Argument" task. Both rubrics were created by the GRE Writing Advisory Committee, an interdisciplinary group of faculty who teach at various types of institutions and come from diverse ethnic and cultural backgrounds. Working closely with ETS writing assessment specialists, the committee investigated a wide range of writing tasks and, after extensive pilot testing, determined that these two writing tasks and scoring criteria assessed skills considered important for success in many fields of graduate study.

Powers and Fowles (1997) discussed studies that provided support for these writing skills. In a 1993 study involving graduate deans and faculty, 80% of the respondents indicated they were either somewhat or very satisfied that the *Issue* task scoring criteria addressed the writing skills required of first-year graduate students. Furthermore, their perceptions of the quality of writing in GRE essays corresponded strongly with the scores assigned by trained GRE readers. Thus, criteria in the GRE *Issue* scoring guide, as well as the scores themselves, appear to reflect the values of GRE constituents. Although only the *Issue* topic was available in 1993, the results are also likely to be relevant to the *Argument* task, since there is considerable overlap between the *Issue* and *Argument* scoring guides.

In the current project, the linking study attempted to supplement the evidence presented in the studies cited above by demonstrating a linkage between the statements in level six (the highest level) of the scoring rubrics for the *Issue* and *Argument* tasks and the writing tasks judged to be important at both the master's and doctoral levels. As described earlier, five ETS writing assessment specialists not involved in the development or scoring of the GRE analytical writing assessment were asked to rate the importance of each element in the *Issue* and *Argument*

scoring rubrics to the performance of each of the writing tasks. The results of that linkage for the 29 tasks judged to be important at the master's and doctoral levels is provided in Table 8. A mean rating of 4.0 (*very important*) was used as the minimum criterion for establishing a linkage. The results indicated that each of the elements of the scoring rubrics was judged to be important for performing one or more of the 29 important writing tasks. The number of linkages for each scoring rubric statement to the task statements ranged from 4 (14% of the tasks) to 21 (72%) of the task statements.

As noted earlier, a direct linkage was not established for 4 of the 29 most important tasks. From a *Standards* perspective, it is not necessary that the analytical writing section of the GRE General Test assess every important task. The skills in the *Issue* and *Argument* rubrics were linked to 25 of 29 (or 86%) of the important task domain. While not assessed directly, 2 of the tasks (#37, "Use word processing software to plan, create, and present text," and #38, "Work independently to plan and compose text") do reflect how the test is administered. The test is administered on the computer and test takers respond independently using word processing software. Moreover, a 3rd task, "Credit sources appropriately," is not cited in the GRE scoring rubrics but is required for a valid GRE score. Essays that are determined to be "unusually similar" to other responses or to other sources, without attribution, are not considered valid responses. Since credit sources was the most highly rated task, assessment development staff may wish to consider incorporating a more direct assessment of this task into future versions of the analytical writing section.

Summary

The findings obtained in this study support the use of the analytical writing section of the GRE General Test in the admission process for candidates entering master's- or doctoral-level graduate programs. The study identified a set of 29 writing task statements that were judged to be important for competent performance across six subject areas. These judgments were made by more than 500 graduate faculty members from 27 institutions across the United States. This set of task statements can be said to describe the common important aspects of the writing job of entry-level graduate students. The linking study demonstrated the importance of each of the *Issue* and *Argument* scoring rubrics for successful completion of 25 of the 29 important writing tasks. These results provide evidence to support the content relevance of the scoring procedures and for

inferring that scores on the analytical writing section are related to entering graduate students' ability to perform important writing tasks required for their graduate study.

Upper-Division Undergraduates

The GRE Program has recently received requests from some undergraduate programs about the possible use of the analytical writing section of the GRE General Test, or some version of it, as an outcomes measure for upper-division undergraduate students. The *Standards* indicate that "the appropriateness of a given content domain is related to the specific inferences to be made from test scores. Thus, when considering an available test for a purpose other than that for which it was first developed, it is especially important to evaluate the appropriateness of the original content domain for the proposed new use." One purpose of this study was to gather data to determine if the use of the analytical writing measure as an outcomes measure at the upper-division undergraduate level was supportable. The findings are discussed below.

The Task Domain

The results indicated that 33 of the 39 task statements (85%) were judged by more than 700 faculty members to be important for upper-division undergraduate students to be able to perform competently. The correlation of mean importance ratings by faculty from minority and nonminority schools was .99, indicating that the profiles of ratings were very similar. The overall mean ratings for upper-division undergraduates were correlated with the mean ratings obtained at the master's and doctoral levels. The correlations were .98 and .93, respectively. Although the profile of ratings were similar to those obtained at the master's and doctoral levels, the absolute level of ratings was slightly lower. Project staff identified 22 tasks that formed the subset of most important tasks by using the same criterion or standard that was used at the graduate level. A task was required to have an overall mean rating of at least *very important* and a rating of at least *important* for each of the six subject areas. Twenty-two tasks met this standard, indicating that writing tasks were also judged to be important for competent performance for upper-division undergraduates. All 22 of these tasks were included in the set of 29 that met the same standard at the master's and doctoral levels. These findings indicate that a substantial portion of the task domain (76%) defined as being most important at the graduate levels was also judged to be important at the upper-division undergraduate level.

The Linking Study

The results of the linking study described above were analyzed separately for the 22 tasks that met the importance criterion for upper-division undergraduate students. Those results are presented in Table 13. The same standard (a mean rating of 4.0, *very important*) was used to establish a linkage. The results indicated that each element in the scoring rubrics was judged to be very important for performing one or more of the 22 task statements. The number of linkages for each scoring rubric statement ranged from 1 (5%) to 15 (68%) of the task statements. Linkages occurred for 18 of the 22 task statements (82%). The scoring rubrics for the *Issue* and *Argument* tasks were linked to a substantial portion of the writing task domain judged to be important for upper-division undergraduates. The tasks that did not link are described in an earlier section of this report.

Summary

The findings obtained in this portion of the study indicate that substantial portions of the writing task domain are similar for both the undergraduate and graduate levels. The study identified a set of 22 writing task statements that were judged to be important for competent performance at the upper-division undergraduate level by more than 700 graduate faculty members from 30 institutions across the United States. This set of task statements can be said to describe the common important elements of the writing job of students at the upper-division undergraduate level. The linking study demonstrated the importance of each element of the *Issue* and *Argument* scoring rubrics to the successful completion of the 22 tasks. It should be noted, however, that these scoring rubrics have not yet been reviewed and approved by undergraduate faculty for use at the upper-division undergraduate level. Additional data are necessary to fully support its use at the upper-division undergraduate level.

Summary and Conclusions

Summary

The primary purposes of this project were to:

1. Augment the validity evidence available to support the use of the analytical writing section of the GRE General Test for admission into graduate school at both the master's and doctoral levels by documenting the content relevance of the writing skills assessed in that section of the examination

2. Gather data that can be used to assess whether or not the analytical writing section is appropriate for use as an outcomes measure for upper-division undergraduate students in colleges and universities across the United States.

To accomplish these purposes, task statements were developed to define writing tasks that were important for competent performance across a range of subject areas. A survey instrument was developed that contained 36 task statements that were believed to be important across a range of academic areas. An additional 3 task statements were included as a check on the accuracy of the ratings; they were expected to be appropriate for English classes but less so for those in the social and physical sciences. The survey instrument contained 39 task statements, three rating scales, and a background information section. A separate importance rating scale was included for faculty teaching upper-division undergraduates, another for faculty teaching entering master's-level students, and a third for faculty teaching entering doctoral-level students. The survey instrument was administered in 30 colleges and universities across the United States in six subject areas: education, engineering, English, life sciences, physical sciences, and psychology. There were more than 800 respondents to the survey. After analyzing data by educational level and by subject area within each level, project staff identified task statements that were very important for competent performance at each educational level and were important within levels for each of the six subject areas. A linking study was conducted with writing assessment specialists to determine if the writing skills assessed in the scoring rubrics for the *Issue* and *Argument* tasks composing the analytical writing section of the GRE General Test could be linked to the important task statements.

As noted in the introduction to this report, the study was designed to answer six research questions. The answers to those questions can be summarized as follows:

- Thirty-six of the 39 writing task statements were judged to be *very important* for competent performance at the master's and doctoral levels. The only tasks that were not rated as being *very important* were the 3 writing tasks included as a reality check. That is, they were expected to be much more relevant for English classes than for the social and physical sciences. Of the 36 tasks judged to be *very important*, 29 (81%) were judged to be important by each of the six subject areas at both the master's and doctoral levels.

- Thirty-three of the 39 task statements were judged to be *very important* for competent performance for upper-division undergraduates. Of these 33 tasks, 22 (56%) were judged to be *important* by each of the six subject areas at the upper-division undergraduate level. All 22 task statements were included within the 29 task statements judged to be *important* at the graduate levels discussed above.
- A linking study established a direct connection between each skill assessed as part of the GRE *Issue* and *Argument* scoring rubrics and one or more of the writing tasks identified as important at both the graduate and upper-division undergraduate levels.

Conclusions

Overall, this study provides supplemental validity evidence to support the use of the GRE analytical writing section of the General Test in the admission process to master's and doctoral programs. It also provides preliminary data to support its use as a possible outcomes measure for upper-division undergraduate students because there was substantial overlap in the performance domain of important writing tasks at the graduate and upper-division undergraduate levels. In addition, the writing skills evaluated in the GRE scoring rubrics for the *Issue* and *Argument* writing tasks were all linked to one or more writing task statements judged to be *important* at the upper-division undergraduate level. However, additional data are necessary to fully support its use at the upper-division undergraduate level. Specific conclusions are listed below.

1. Writing was judged by graduate faculty to be *important* for competent performance in a wide variety of academic areas at the master's and doctoral levels. The results were similar for both minority and nonminority schools.
2. The results support the use of the analytical writing section of the GRE General Test in the admissions process for candidates entering master's- or doctoral-level graduate programs. The study identified a set of 29 writing task statements that were judged by more than 500 graduate faculty members from 27 institutions to be *important* for competent performance both within and across six varied subject areas. This set of task statements can be said to describe common important aspects of the writing job of students at the graduate level. The study also demonstrated the importance of each of the writing skills listed in the scoring rubrics of the *Issue* and *Argument* tasks for successful

completion of 86% of the writing tasks in the important writing domain identified in this study. These results provide evidence to support the content relevance of the GRE scoring criteria and provide support for inferring that GRE analytical writing scores are related to entering graduate students' ability to perform the writing tasks important for their graduate study.

3. Writing was judged by undergraduate faculty to be *important* for competent performance in a variety of subject areas for upper-division undergraduate level students. This was true at both minority and nonminority schools.

4. Substantial portions of the writing task domain defined in this study were *important* for both the undergraduate and graduate levels. However, the way in which the GRE assesses that domain has not yet been reviewed and approved by undergraduate faculty. To be consistent with the *Standards,* this activity should occur before the GRE analytical writing assessment could be used as an outcomes measure for upper-division level undergraduates.

A set of 22 writing task statements were judged to be *important* for competent performance at the upper-division undergraduate level by more than 700 faculty members from 30 institutions across the United States. This set of task statements can be said to describe the common important aspects of the writing job of students at the upper-division undergraduate level. All 22 important writing task statements were included within the 29 writing task statements judged to be important at the master's and doctoral level, indicating a substantial overlap (76%) in the writing task domain.

The linking study demonstrated the importance of each writing skill in the scoring rubrics of the GRE *Issue* and *Argument* tasks for successful completion of 18 of the 22 (82%) writing tasks identified as being important at the upper-division undergraduate level. While the task domain has substantial overlap with the important task domain identified at the graduate levels, and although the writing skills assessed in the *Issue* and *Argument* scoring rubrics all link to one or more tasks judged to be *important* at the upper-division undergraduate level, the scoring rubrics have not yet been reviewed or approved for use at that level by undergraduate faculty. Project staff members believe that in order to be responsive to the *Standards,* undergraduate faculty should review and approve as appropriate the GRE directions, the *Issue* and *Argument*

tasks and scoring guides, and the sample responses. If the results were positive, they would provide support for inferring that scores on the analytical writing section are related to upper-division undergraduate-level students' ability to perform the important writing tasks required at their level. If the scoring rubrics were changed, an additional linking study would need to be conducted to demonstrate the content relevance of the revised scoring rubrics.

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List of Appendixes

Appendix A
Advisory Committee Members

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Jacqueline Briel
Program Administrator

Donald Powers
Principal Research Scientist

Kathleen O'Neill
Program Administrator

Appendix C

Survey Instrument

Inventory of College Level Writing and Thinking Tasks

The writing and thinking task statements in this inventory are based on a review of the literature and input from college writing experts. This inventory has been mailed to a large sample of experienced college faculty in the fields of English, psychology, education, life sciences, physical sciences, and engineering. Each task statement is followed by three rating scales: one for upper-level undergraduate students, one for master-level graduate students, and one for doctoral-level students. Please rate each statement according to the level or levels of students you have taught or are currently teaching. This inventory should take approximately 15 minutes to complete.

It is important that you rate each statement so that comparisons among the various writing tasks will most accurately represent the views of faculty across the six disciplines being surveyed. The brief biographical section at the end will only be used to describe the survey respondents and for group level analysis.

Rating Scales

Upper-Level Undergraduate Students: Please use the following rating scale to indicate how important it is for upper level undergraduate students in your department or major to be able to perform each task competently.

(0) Most students in my department or program do not need to perform this task
(1) Slightly important
(2) Moderately important
(3) Important
(4) Very important
(5) Extremely important

Master's Level Graduate Students: Please use the following rating scale to indicate how important it is for entering Master's level students in your department or program to be able to perform each task competently.

(0) Most students in my department or program do not need to perform this task
(1) Slightly important
(2) Moderately important
(3) Important
(4) Very important
(5) Extremely important

Doctoral Level Graduate Students: Please use the following rating scale to indicate how important it is for entering Doctoral level students in your department or program to be able to perform each task competently.

(0) Most students in my department or program do not need to perform this task
(1) Slightly important
(2) Moderately important
(3) Important
(4) Very important
(5) Extremely important

MARKING INSTRUCTIONS

- **Use a No. 2 pencil only.**
- **Make solid marks that fill the response completely.**
- **Make no stray marks on this form.**

CORRECT: ● **INCORRECT:** ⊘ ⊗ ◒ ⬭

Please rate the degree to which you feel that it is important that students be able to:

	Upper level undergraduate students	Entering Master's level students	Entering Doctoral level students
1. Describe observations (e.g. of an event, behavior, place, object, or experiment	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
2. Explain how to perform a procedure (e.g., for instructional materials or manuals)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
3. Abstract or summarize essential information (e.g., from speeches, observations, or texts)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
4. Express personal views regarding topics, situations, or issues	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
5. Explain an event or occurrence using such evidence as historical accounts, data, or research findings	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
6. Analyze meanings in a piece of imaginative literature (e.g., a story or poem)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
7. Analyze and synthesize information from multiple sources (includes comparison and contrast)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
8. Predict consequences or outcomes by analyzing information, patterns, or processes	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
9. Write persuasively by constructing a well-reasoned argument to support or refute a position	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
10. Write persuasively by appealing primarily to the reader's emotions, experiences, or ethical values	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
11. Explore relationships among complex and possibly conflicting ideas	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
12. Examine the reasoning in a given argument and discuss its logical strengths and weaknesses (e.g., the legitimacy of claims, the soundness of assumptions, the sufficiency of support, or the distinction between correlation and causation)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
13. Identify problems in a proposed course of action or interpretation of events and propose solutions or alternative interpretations	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
14. Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
15. Classify information according to categories or hierarchies (e.g. in outlines or organizational charts)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
16. Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
17. Use the conventions of a particular genre (e.g., a proposal, poem, or abstract)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5

	Upper level undergraduate students	Entering Master's level students	Entering Doctoral level students
18. Write appropriately for a generally well-informed and thoughtful audience (e.g., maintain an appropriate tone, provide sufficent context or other information for readers to understand the points being made)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
19. Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
20. Use analogy, metaphor, or comparison to define or explain technical or abstract concepts for a general audience	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
21. Use technical, content-specific vocabulary accurately and appropriately for a particular purpose and audience	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
22. Use clear, efficient formats (e.g., flow charts, bullet points, headings) to organize information and guide the reader (includes document design)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
23. Integrate quoted and referenced material appropriately into the students' own text	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
24. Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
25. Clarify relationships among main and supporting ideas	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
26. Develop a well-focused, well-supported discussion, using relevant reasons and examples	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
27. Organize ideas and information coherently	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
28. Write clearly, with smooth transitions from one thought to the next	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
29. Choose words effectively	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
30. Write precisely and concisely, avoiding vague or empty phrases	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
31. Write fluently, avoiding plodding or convoluted language	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
32. Vary sentence structure to communicate ideas effectively	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
33. Express ideas in original or novel ways to hold the reader's interest	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
34. Revise and edit text to improve its clarity, coherence, and correctness	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
35. Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
36. Avoid errors in mechanics (e.g., spelling and punctuation)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
37. Use word processing software to plan, create, and present text	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
38. Work independently to plan and compose text	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
39. Work collaboratively to plan and compose text	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5

Background Information

This section will gather information that will be used to describe study participants. In addition, some questions may be used for group level data analyses.

40. What college or university do you represent?

_____

41. What is your department or program area?

Ⓐ Education Ⓑ Engineering Ⓒ English Ⓓ Life sciences Ⓔ Physical sciences Ⓕ Psychology

42. How important are higher-level writing skills (e.g., analytical, interpretative, persuasive) in your course assignments?

Ⓐ Not important Ⓑ Slightly important Ⓒ Moderately important Ⓓ Important Ⓔ Very important Ⓕ Extremely important

43. What level of students do you teach? (Please mark all that apply)

Ⓐ Undergraduates Ⓑ Master's level Ⓒ Doctoral level

44. How long have you been teaching at the college or university level?

Ⓐ Less than one year Ⓑ One to three years Ⓒ Between three and five years Ⓓ Between five and 10 years Ⓔ More than 10 years

45. What academic title best describes your current position?

Ⓐ Adjunct Ⓑ Assistant professor Ⓒ Associate professor Ⓓ Full professor

46. What is your gender?

Ⓐ Female Ⓑ Male

47. Which of the following best describes your race/ethnicity?

Ⓐ American Indian/Alaskan Native Ⓑ Asian or Pacific Islander Ⓒ Hispanic Ⓓ African American (non-Hispanic) Ⓔ White (non-Hispanic)

Appendix D

Linkages of Scoring Rubric Components to Important Task Statements

Table D1

Task Statements

Task #	Task statement
1	Describe observations (e.g., of an event, behavior, place, object, or experiment)
2	Explain how to perform a procedure (e.g., for instructional materials or manuals)
3	Abstract or summarize essential information (e.g., from speeches, observations, or texts)
4	Express personal views regarding topics, situations, or issues
5	Explain an event or occurrence using such evidence as historical accounts, data, or research findings
6	Analyze meanings in a piece of imaginative literature (e.g., a story or poem)
7	Analyze and synthesize information from multiple sources (includes comparison and contrast)
8	Predict consequences or outcomes by analyzing information, patterns, or processes
9	Write persuasively by constructing a well-reasoned argument to support or refute a position
10	Write persuasively by appealing primarily to the reader's emotions, experiences, or ethical values
11	Explore relationships among complex and possibly conflicting ideas
12	Examine the reasoning in a given argument and discuss its logical strengths and weaknesses (e.g., the legitimacy of claims, the soundness of assumptions, the sufficiency of support, or the distinction between correlation and causation)

Table D1 (continued)

Task #	Task statement
13	Identify problems in a proposed course of action or interpretation of events and propose solutions or alternative interpretations
14	Interpret data within a relevant framework by applying the findings to new situations, asking insightful questions, identifying the need for further information, or drawing conclusions
15	Classify information according to categories or hierarchies (e.g., in outlines or organizational charts)
16	Describe and evaluate the effectiveness of a writer's rhetorical strategies and techniques
17	Use the conventions of a particular genre (e.g., a proposal, poem, or abstract)
18	Write appropriately for a generally well-informed and thoughtful audience (e.g., maintain an appropriate tone, provide sufficient context or other information for readers to understand the points being made)
19	Present data and other information in a clear and logical manner, offering explanations that make the material understandable to a particular audience (includes tables and charts as well as text)
20	Use analogy, metaphor, or comparison to define or explain technical or abstract concepts for a general audience
21	Use technical, content-specific vocabulary accurately and appropriately for a particular purpose and audience
22	Use clear, efficient formats (e.g., flow charts, bullet points, headings) to organize information and guide the reader (includes document design)
23	Integrate quoted and referenced material appropriately into the students' own text
24	Credit sources appropriately (e.g., use attribution, footnotes, or endnotes)
25	Clarify relationships among main and supporting ideas
26	Develop a well-focused, well-supported discussion, using relevant reasons and examples
27	Organize ideas and information coherently

Table D1 (continued)

Task #	Task statement
28	Write clearly, with smooth transitions from one thought to the next
29	Chose words effectively
30	Write precisely and concisely, avoiding vague or empty phrases
31	Write fluently, avoiding plodding or convoluted language
32	Vary sentence structure to communicate ideas effectively
33	Express ideas in original or novel ways to hold the reader's interest
34	Revise and edit text to improve its clarity, coherence, and correctness
35	Use grammar and syntax that follow the rules of standard written English, avoiding errors that distract the reader or disrupt meaning
36	Avoid errors in mechanics (e.g., spelling and punctuation)
37	Use word processing software to plan, create, and present text
38	Work independently to plan and compose text
39	Work collaboratively to plan and compose text

Table D2

Linkages of Scoring Rubric Components to Important Task Statements for GRE Users

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
1	0.20	0.40	3.20	3.00	3.20	0.00	2.00	0.20	3.40
2	0.00	1.20	2.80	4.20	4.00	0.00	3.40	0.00	3.80
3	0.00	0.00	2.00	4.20	4.00	1.20	3.40	0.00	3.60
4	4.60	4.60	4.40	4.00	4.00	0.60	4.20	2.40	4.00
5	3.40	4.40	4.60	4.00	4.00	0.20	4.00	0.00	4.00
6	3.40	3.80	4.40	4.40	4.00	4.00	4.20	4.20	4.00
7	3.20	3.20	3.80	4.00	3.80	3.60	3.80	2.60	3.80
8	3.40	3.20	2.60	2.40	1.80	2.80	2.80	1.40	2.60
9	4.80	5.00	4.60	4.00	3.40	4.00	4.40	4.60	4.00
10	2.80	3.80	2.40	3.20	2.60	1.20	3.40	1.40	3.40

(Table continues)

Table D2 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
11	2.80	3.00	4.20	3.40	1.40	4.00	4.40	1.80	2.40
12	3.20	3.60	3.20	3.00	2.00	5.00	4.40	3.00	2.00
13	4.20	3.00	2.80	2.60	1.00	4.40	3.40	3.40	1.40
14	3.00	2.20	3.20	2.60	1.00	4.00	2.60	2.40	1.40
15	0.60	0.80	2.20	2.20	0.80	2.20	2.00	1.00	1.00
16	2.00	3.20	2.60	3.80	1.80	3.00	3.40	3.40	2.40
17	0.60	0.40	0.40	2.00	2.00	0.20	0.80	0.20	1.80
18	4.20	4.20	3.00	4.20	3.80	1.20	4.00	1.80	3.80
19	1.20	3.40	3.80	3.20	3.40	2.00	4.40	1.80	4.60
20	1.00	1.60	1.40	2.80	2.20	0.80	2.40	1.00	2.60
21	0.20	0.20	0.20	2.60	2.20	0.20	1.40	0.60	4.00
22	0.20	0.40	1.00	2.00	1.00	0.20	2.40	1.20	1.00

(T bl i)

Table D2 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
23	0.20	1.00	1.40	2.20	1.80	0.40	0.80	1.60	1.60
24	0.00	0.00	0.00	0.00	1.40	0.00	0.00	1.20	0.00
25	2.00	2.20	3.80	3.80	2.20	3.00	3.20	3.40	3.00
26	3.40	4.60	4.80	3.80	2.60	2.40	4.40	3.40	3.20
27	1.60	1.40	4.20	2.40	0.80	2.20	4.00	1.40	1.60
28	0.20	0.20	2.60	3.00	2.40	0.20	4.80	1.00	4.20
29	0.20	0.60	0.60	3.60	3.00	0.40	1.40	1.20	5.00
30	0.40	0.40	1.60	4.60	2.80	0.40	3.00	1.20	4.80
31	0.40	0.40	0.60	4.40	3.40	0.20	3.00	1.20	4.80
32	1.00	1.20	0.40	3.60	2.80	0.80	1.80	1.20	4.80
33	1.40	2.40	1.80	2.80	2.40	0.20	2.40	1.20	3.00
34	0.60	0.20	0.60	3.20	4.40	0.40	3.80	0.80	4.20

Table D2 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
35	1.00	0.80	0.20	4.20	5.00	0.20	1.60	1.00	4.60
36	0.00	0.00	0.00	1.20	5.00	0.20	1.20	0.80	3.40
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
38	1.00	1.00	0.20	1.20	0.60	0.80	1.40	1.00	1.20
39	0.20	0.20	0.20	1.20	0.60	0.20	0.80	1.00	1.00

Note. See Table D1 for descriptions of the task statements. Rating scale: How important is this skill to performing each task competently? (0) Of no importance. (1) Slightly important. (2) Moderately important. (3) Important. (4) Very important. (5) Extremely important.

Table D3

Linkages of Scoring Rubric Components to Important Task Statements for Non-GRE Users

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
1	0.20	1.20	4.00	4.00	3.20	4.40	4.40	4.40	4.20
2	0.40	1.20	4.80	4.00	3.20	4.40	4.80	4.60	4.20
3	0.80	1.20	4.40	3.40	3.20	4.80	4.20	3.00	3.80
4	3.60	4.40	4.20	4.40	3.40	3.40	4.60	4.80	4.60
5	3.40	4.60	4.60	4.20	3.80	5.00	4.80	5.00	4.40
6	4.20	4.60	4.60	4.40	3.80	4.80	4.80	4.80	4.40
7	3.00	3.20	5.00	4.20	3.20	5.00	5.00	4.80	4.40
8	4.00	4.20	4.40	3.20	3.20	4.40	4.40	4.00	*3.80*
9	5.00	5.00	4.80	4.40	4.80	4.20	5.00	5.00	4.60
10	3.60	4.40	3.60	4.20	4.00	3.00	4.40	4.80	4.60

(Table continues)

Table D3 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
11	3.20	4.40	4.60	4.20	4.20	4.80	4.80	4.80	4.20
12	4.00	4.60	4.60	3.80	4.00	5.00	4.80	5.00	4.40
13	4.80	4.20	4.40	3.80	3.80	4.60	4.60	5.00	4.00
14	3.60	3.20	4.40	3.20	3.00	4.60	4.60	3.80	4.00
15	1.40	0.60	3.40	1.80	2.00	4.40	2.60	2.60	2.60
16	3.20	4.60	4.40	3.80	4.40	4.60	4.40	4.40	4.20
17	1.00	1.00	2.60	2.20	3.60	1.60	2.60	1.80	3.40
18	2.80	3.80	3.60	4.20	4.20	3.00	3.80	4.20	4.40
19	2.00	3.40	4.80	3.60	4.20	4.20	4.80	4.40	4.00
20	2.20	4.00	3.80	4.00	3.40	2.60	3.40	3.20	4.00
21	1.00	2.20	2.40	4.20	3.60	1.80	1.60	2.00	4.80
22	0.60	2.00	2.60	2.00	2.80	3.00	3.00	2.20	2.20

Table D3 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
23	1.20	3.00	1.60	3.00	3.80	1.80	2.20	2.80	3.00
24	0.20	1.80	0.40	0.20	3.40	0.60	1.60	2.00	1.40
25	2.60	3.40	4.40	3.80	3.20	4.80	4.60	4.60	4.20
26	3.80		5.00	3.80	3.80	4.60	4.80	5.00	4.20
27	2.00	3.00	5.00	3.20	3.00	3.40	5.00	3.40	3.20
28	1.60	1.80	5.00	4.20	4.00	2.20	5.00	2.20	4.00
29	1.40	2.40	2.00	5.00	2.80	1.00	1.80	1.60	5.00
30	1.40	2.00	3.20	4.80	3.80	1.80	3.00	1.80	4.80
31	1.20	1.60	2.80	5.00	3.20	1.00	2.40	1.80	5.00
32	1.00	1.00	1.60	4.80	4.00	0.80	1.60	1.00	5.00
33	3.20	3.20	2.40	4.60	3.40	2.00	2.80	3.80	4.40
34	1.20	1.40	3.60	4.40	5.00	3.00	4.40	3.40	4.60

Table D3 (continued)

Task statements	Scoring rubric components								
	Presents an insightful position	Develops the position with compelling reasons and/or persuasive e examples	Sustains a well-focused, well-organized analysis, connecting ideas logically	Expresses ideas fluently and precisely, using effective vocabulary and sentence variety	Demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	Clearly identified important features of the subject and analyzes them insightfully	Develops ideas cogently, organizes them logically, and connects them with clear transitions	Effectively supports the main points	Demonstrates control of language, including appropriate word choice and sentence variety
35	1.00	1.00	1.20	4.20	5.00	0.60	1.80	1.00	4.60
36	0.60	1.00	0.80	3.00	5.00	0.40	0.80	0.60	3.40
37	0.00	0.60	0.60	0.60	0.60	0.20	0.60	0.60	0.60
38	1.80	1.20	1.20	1.40	2.20	1.00	1.60	1.00	1.20
39	1.80	1.20	1.20	1.40	1.60	1.00	1.60	1.00	1.20

Note. See Table D1 for task statements. Rating scale: How important is this skill to performing each task competently? (0) Of no importance. (1) Slightly important. (2) Moderately important. (3) Important. (4) Very important. (5) Extremely important.

Appendix E

Background Information of Respondents, Overall and by Department

	Background information	Overall		Education		Engineering		English		Life sciences		Physical sciences		Psychology		Missing	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
1	What is your dept. or program area?	**861**	**100**	**130**	15.1	**112**	13.0	**163**	18.9	**137**	15.9	**134**	15.6	**144**	16.7	**41**	4.8
a	Education	130	15.1														
b	Engineering	112	13.0														
c	English	163	18.9														
d	Life sciences	137	15.9														
e	Physical sciences	134	15.6														
f	Psychology	144	16.7														
	Missing	41	4.8														
2	How important are higher-level writing skills?	**861**	100	**130**	100	**112**	100	**163**	100	**137**	100	**134**	100	**144**	100	**41**	100
	Mean Importance rating:	**3.6**		**4.1**		**3.0**		**4.7**		**3.3**		**2.8**		**3.7**		**2.1**	
a	Not important	13	1.5	0	0.0	3	2.7	0	0.0	2	1.5	6	4.5	2	1.4	0	0.0
b	Slightly important	48	5.6	0	0.0	11	9.8	0	0.0	10	7.3	23	17.2	4	2.8	0	0.0
c	Moderately important	90	10.5	5	3.8	21	18.8	0	0.0	26	19.0	19	14.2	18	12.5	1	2.4

(Table continues)

Table E (continued)

	Background information	Overall		Education		Engineering		English		Life sciences		Physical sciences		Psychology		Missing	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
d	Important	156	18.1	20	15.4	32	28.6	6	3.7	26	19.0	38	28.4	31	21.5	3	7.3
e	Very important	262	30.4	57	43.8	33	29.5	31	19.0	50	36.5	36	26.9	47	32.6	8	19.5
f	Extremely important	269	31.2	48	36.9	10	8.9	126	77.3	23	16.8	12	9.0	41	28.5	9	22.0
	Missing	23	2.7	0	0.0	2	1.8	0	0.0	0	0.0	0	0.0	1	0.7	20	48.8
	What level of students do you teach?	**861**	100	**130**	100	**112**	100	**163**	100	**137**	100	**134**	100	**144**	100	**41**	100
a	Undergraduates	215	25.0	21	16.2	26	23.2	50	30.7	33	24.1	44	32.8	38	26.4	3	7.3
b	Master's level	40	4.6	7	5.4	6	5.4	1	0.6	9	6.6	9	6.7	5	3.5	3	7.3
c	Doctoral level	30	3.5	14	10.8	4	3.6	3	1.8	2	1.5	3	2.2	3	2.1	1	2.4
	Missing	576	66.9	88	67.7	76	67.9	109	66.9	93	67.9	78	58.2	98	68.1	34	82.9
4	How long have you been teaching at the college or university?	**861**	100	**130**	100	**112**	100	**163**	100	**137**	100	**134**	100	**144**	100	**41**	100
a	Less than one year	22	2.6	4	3.1	2	1.8	3	1.8	5	3.6	4	3.0	4	2.8	0	0.0
b	One to three years	101	11.7	14	10.8	18	16.1	16	9.8	21	15.3	9	6.7	19	13.2	4	9.8
c	Between three and five years	131	15.2	15	11.5	21	18.8	18	11.0	26	19.0	17	12.7	31	21.5	3	7.3
d	Between five and 10 years	163	18.9	33	25.4	29	25.9	22	13.5	28	20.4	24	17.9	24	16.7	3	7.3

(Table continues)

Table E (continued)

	Background information	Overall		Education		Engineering		English		Life sciences		Physical sciences		Psychology		Missing	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
e	More than 10 years	424	49.2	64	49.2	41	36.6	104	63.8	57	41.6	79	59.0	66	45.8	13	31.7
	Missing	20	2.3	0	0.0	1	0.9	0	0.0	0	0.0	1	0.7	0	0.0	18	43.9
	What academic title best describes your current position?	**861**	100	**130**	100	**451**	24.8	**658**	24.8	**551**	24.9	**537**	25.0	**576**	25.0	**183**	22.4
a	Adjunct	88	10.2	11	8.5	7	1.6	25	3.8	14	2.5	12	2.2	18	3.1	1	0.5
b	Assistant Professor	237	27.5	42	32.3	36	8.0	36	5.5	51	9.3	24	4.5	40	6.9	8	4.4
c	Associate Professor	233	27.1	40	30.8	36	8.0	51	7.8	27	4.9	38	7.1	38	6.6	3	1.6
d	Full Professor	269	31.2	35	26.9	30	6.7	45	6.8	42	7.6	59	11.0	48	8.3	10	5.5
	Missing	34	3.9	2	1.5	3	0.7	6	0.9	3	0.5	1	0.2	0	0.0	19	10.4
	What is your gender?	**861**	100	**130**	100	**112**	100	**163**	100	**137**	100	**134**	100	**144**	100	**41**	100
a	Female	339	39.4	76	58.5	23	20.5	85	52.1	54	39.4	28	20.9	63	43.8	10	24.4
b	Male	493	57.3	54	41.5	86	76.8	75	46.0	81	59.1	105	78.4	81	56.3	11	26.8
	Missing	29	3.4	0	0.0	3	2.7	3	1.8	2	1.5	1	0.7	0	0.0	20	48.8

(Table continues)

Table E (continued)

	Background information	Overall		Education		Engineering		English		Life sciences		Physical sciences		Psychology		Missing	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
7	Which of the following best describes your race/ethnicity?	**861**	100	**130**	100	**112**	100	**163**	100	**137**	100	**134**	100	**144**	100	**41**	100
a	American Indian/Alaskan Native	6	0.7	2	1.5	0	0.0	1	0.6	0	0.0	2	1.5	1	0.7	0	0.0
b	Asian American or Pacific Islander	53	6.2	1	0.8	21	18.8	8	4.9	5	3.6	11	8.2	4	2.8	3	7.3
c	Hispanic	27	3.1	7	5.4	3	2.7	3	1.8	5	3.6	4	3.0	4	2.8	1	2.4
d	African American (non-Hispanic)	48	5.6	10	7.7	6	5.4	16	9.8	4	2.9	2	1.5	10	6.9	0	0.0
e	White (non-Hispanic)	673	78.2	107	82.3	78	69.6	128	78.5	115	83.9	108	80.6	121	84.0	16	39.0
	Missing	54	6.3	3	2.3	4	3.6	7	4.3	8	5.8	7	5.2	4	2.8	21	51.2

Appendix F

Mean Importance Ratings on Bio Data Question 2 For HBCU, HSI, and Four-Year Institutions

	Background Information	Total minority serving schools		HBCUs		HSIs		4-yr schools	
		N	%	N	%	N	%	N	%
2.	How important are higher-level writing skills?	**151**	100	**28**	18.5	**123**	81.5	**48**	100
	Mean importance rating:	4.0		4.3		3.9		4.3	
a	Not important	0	0.0	0	0.0	0	0.0	0	0.0
b	Slightly important	7	4.6	0	0.0	7	5.7	0	0.0
c	Moderately important	6	4.0	0	0.0	6	4.9	1	2.1
d	Important	31	20.5	8	28.6	23	18.7	8	16.7
e	Very important	44	29.1	5	17.9	39	31.7	17	35.4
f	Extremely important	62	41.1	15	53.6	47	38.2	22	45.8
	Missing	1	0.7	0	0.0	1	0.8	0	0.0

Appendix G

Mean Ratings, Standard Deviations, and Standard Errors for Master's-Level Students, Overall and by Department

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	M SD = 1.1			M SD = 1.0			M SD =1.2			M SD = 1.0			M SD = 1.0			M SD = 1.1			M SD =0.9		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD
1	632	4.1	1.2	99	4.0	1.1	86	4.0	1.1	123	3.8	1.5	101	4.5	0.8	94	4.2	1.3	102	4.4	0.7
2	633	3.8	1.3	99	3.8	1.1	86	4.0	1.1	123	3.0	1.8	101	4.1	1.0	97	4.1	1.1	101	4.1	0.9
3	630	4.2	0.9	100	4.2	0.9	86	3.8	1.1	122	4.4	0.9	99	4.4	0.9	95	4.0	0.9	101	4.3	0.7
4	631	3.5	1.3	100	4.1	0.9	86	2.9	1.3	121	4.0	1.2	99	3.4	1.3	94	2.6	1.5	104	3.7	1.0
5	624	4.0	1.1	99	4.0	0.9	84	3.7	1.3	121	4.2	1.2	98	4.3	0.8	94	3.7	1.3	102	4.2	1.0
6	629	2.4	1.9	99	3.0	1.5	86	1.3	1.6	122	4.6	0.8	98	1.5	1.6	95	1.2	1.6	102	1.9	1.7
7	625	4.2	0.9	99	4.3	0.8	85	3.8	1.1	123	4.6	0.7	98	4.3	0.9	92	4.0	0.9	101	4.3	0.9
8	625	3.8	1.3	97	4.0	1.0	84	3.9	1.1	122	3.0	1.8	97	4.2	0.9	95	4.2	0.9	103	4.1	0.8
9	626	4.1	1.0	99	4.3	0.8	86	3.5	1.2	120	4.8	0.4	98	4.0	1.1	94	3.8	1.0	102	4.1	0.9
10	634	2.4	1.7	100	3.1	1.3	85	1.8	1.5	122	3.5	1.5	100	1.8	1.6	95	1.6	1.7	105	2.2	1.4
11	628	4.0	1.1	98	4.1	0.9	86	3.0	1.4	122	4.7	0.6	99	3.8	1.0	94	3.7	1.2	102	4.1	0.8
12	632	4.1	0.9	99	4.0	0.9	86	3.5	1.1	124	4.5	0.7	100	4.2	0.9	94	4.0	0.9	102	4.3	0.7
13	627	3.8	1.1	98	3.9	0.9	85	3.7	1.2	123	3.6	1.4	99	3.9	1.0	94	3.9	0.9	101	4.0	0.8
14	625	4.0	1.0	98	3.9	0.9	86	3.8	1.1	121	3.8	1.4	97	4.3	0.9	94	4.1	0.8	102	4.1	0.8

(Table continues)

Appendix G (continued)

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	M SD = 1.1			M SD = 1.0			M SD =1.2			M SD = 1.0			M SD = 1.0			M SD = 1.1			M SD =0.9		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD
15	628	3.4	1.3	99	3.7	1.1	86	3.4	1.2	122	3.0	1.6	98	3.5	1.1	94	3.3	1.2	102	3.5	1.2
16	622	2.5	1.8	99	3.1	1.3	85	1.7	1.5	120	4.5	0.8	97	1.8	1.6	93	1.5	1.7	101	2.0	1.4
17	621	3.3	1.5	97	3.4	1.2	86	2.7	1.4	118	4.3	0.9	97	3.3	1.4	94	2.6	1.7	102	3.1	1.4
18		4.0	1.0	98	4.0	1.0	86	3.7	1.2	125	4.6	0.7	98	4.0	1.0	93	3.7	1.1	102	3.9	0.9
19	632	4.1	1.0	98	4.0	0.9	86	4.2	1.1	124	3.7	1.4	99	4.5	0.7	95	4.3	0.8	103	4.3	0.8
20	628	3.2	1.3	99	3.4	1.2	86	2.8	1.3	122	3.7	1.3	97	2.9	1.3	95	3.0	1.3	102	3.1	1.2
21	627	4.0	1.0	98	3.8	1.0	86	4.0	1.1	125	3.8	1.3	97	4.2	0.8	93	4.2	0.9	102	4.0	0.8
22	627	3.4	1.3	97	3.8	1.0	86	3.8	1.2	123	2.4	1.8	97	3.7	1.0	95	3.6	1.1	102	3.7	1.0
23	630	4.2	1.0	99	4.2	0.9	86	3.8	1.3	122	4.8	0.5	98	4.2	1.0	94	3.8	1.3	104	4.2	0.9
24	629	4.5	0.8	99	4.5	0.8	86	4.0	1.1	123	4.8	0.5	98	4.5	0.8	93	4.3	1.0	103	4.6	0.7
25	631	4.0	1.0	99	4.2	1.0	85	3.3	1.2	125	4.6	0.6	98	3.8	1.1	95	3.6	1.1	102	4.1	0.8
26	627	4.2	0.9	99	4.2	0.9	86	3.6	1.2	123	4.8	0.4	97	4.1	0.8	94	3.9	0.9	101	4.2	0.7
27	627	4.4	0.8	99	4.4	0.8	86	4.1	1.0	122	4.8	0.4	97	4.5	0.8	94	4.3	0.7	102	4.4	0.7
28	627	4.2	0.9	97	4.3	0.9	86	3.8	1.1	123	4.7	0.6	97	4.0	1.0	95	3.9	0.8	102	4.2	0.8
29	626	4.1	1.0	98	4.2	0.9	85	3.4	1.1	123	4.8	0.4	97	4.0	0.9	94	3.8	0.9	102	4.1	0.9
30	628	4.2	0.9	98	4.3	0.8	85	3.8	1.1	124	4.7	0.6	97	4.2	0.9	95	4.1	0.9	102	4.2	0.9

(Table continues)

Appendix G (continued)

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	M SD = 1.1			M SD = 1.0			M SD =1.2			M SD = 1.0			M SD = 1.0			M SD = 1.1			M SD =0.9		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD
31	624	4.1	1.0	98	4.2	0.8	85	3.5	1.1	122	4.6	0.6	97	4.0	0.9	93	3.7	1.1	102	4.1	0.9
32	626		1.2	98	3.9	0.9	86	3.0	1.2	123	4.4	0.7		3.3	1.2	93	3.0	1.3	102	3.4	1.1
33	628	3.3	1.3	97	3.7	1.1	86	2.7	1.2	123	4.1	0.9	98	2.9	1.1	94	2.7	1.5	103	3.1	1.1
34	626	4.2	0.9	98	4.3	0.9	85	3.7	1.2	123		0.6	97	4.2	0.9	94	4.1	1.0	102	4.2	0.8
35	624	4.4	0.9	98	4.4	0.9	86	4.0	1.1	121	4.8	0.5	96	4.4	0.8	94	4.1	1.0	102	4.4	0.8
36	623	4.3	0.9	97	4.4	0.9	86	3.8		121	4.7	0.7	97	4.2	0.9	94	4.1	1.0	101		0.8
37	624	3.9	1.2	98	4.1	1.1	86	3.8	1.2	122	3.7	1.5	97	4.0	1.0	94	3.9	1.1	101	4.0	1.0
38	626	4.2	0.9	98	4.3	0.9		3.9	1.1	122	4.6	0.6	97	4.2	0.9	94	4.1	0.9	102	4.1	0.7
39	625	3.4	1.3	97	4.0	1.0	86	3.3	1.3	121	3.0	1.7	97	3.5	1.2	94	3.4	1.4	103	3.4	1.1

Note. See Table D1 for an explanation of each task statement.

Appendix H

Mean Ratings, Standard Deviations, and Standard Errors for Doctoral-Level Students, Overall and by Department

Table H1

Mean Ratings for Minority-Serving Institutions and Nonminority Institutions at the Doctoral Level

Task statements	Overall			Total minority			Total nonminority		
	Mean SD = 1.1			Mean SD = 1.1			Mean SD = 1.1		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
1	573	4.4	1.1	71	4.6	0.9	502	4.4	1.2
2	570	4.2	1.3	71	4.3	1.2	499	4.2	1.3
3	568	4.5	0.8	70	4.6	0.8	498	4.5	0.8
4	570	3.7	1.4	72	3.7	1.4	498	3.7	1.4
5	563	4.4	1.1	65	4.6	0.9	498	4.4	1.1
6	564	2.4	2.0	70	2.3	2.1	494	2.4	2.0
7	565	4.5	0.8	66	4.6	0.8	499	4.5	0.8
8	564	4.3	1.2	70	4.3	1.1	494	4.3	1.2
9	564	4.4	1.0	70	4.6	1.0	494	4.4	0.9
10	570	2.4	1.8	72	2.5	1.8	498	2.4	1.8
11	568	4.3	1.1	70	4.4	1.0	498	4.3	1.1
12	569	4.5	0.9	70	4.6	0.8	499	4.5	0.9
13	569	4.2	1.0	69	4.2	1.1	500	4.3	1.0
14	569	4.5	0.9	69	4.6	0.9	500	4.5	0.9
15	565	3.7	1.3	69	3.7	1.3	496	3.7	1.3
16	566	2.6	1.9	72	2.4	2.0	494	2.6	1.9
17	564	3.6	1.5	70	3.6	1.6	494	3.6	1.5
18	568	4.4	1.0	71	4.4	1.0	497	4.3	1.0
19	569	4.5	0.9	70	4.7	0.8	499	4.5	0.9
20	566	3.4	1.4	68	3.4	1.5	498	3.5	1.4
21	569	4.4	1.0	70	4.5	0.9	499	4.4	1.0
22	562	3.8	1.4	68	3.8	1.4	494	3.8	1.4
23	564	4.4	1.0	69	4.5	0.9	495	4.4	1.0
24	566	4.7	0.7	69	4.7	0.8	497	4.7	0.7

Table H1 (continued)

Task statements	Overall			Total minority			Total nonminority		
	Mean SD = 1.1			Mean SD = 1.1			Mean SD = 1.1		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
25	568	4.3	1.0	70	4.2	1.1	498	4.3	1.0
26	562	4.5	0.8	68	4.6	0.8	494	4.5	0.8
27	564	4.7	0.7	70	4.7	0.7	494	4.7	0.7
28	568	4.5	0.8	71	4.5	0.9	497	4.5	0.8
29	564	4.3	0.9	70	4.3	1.0	494	4.3	0.9
30	566	4.5	0.8	70	4.5	0.9	496	4.5	0.7
31	564	4.3	0.9	70	4.3	0.9	494	4.4	0.9
32	565	3.8	1.2	70	3.8	1.3	495	3.8	1.2
33	565	3.5	1.4	70	3.5	1.4	495	3.5	1.4
34	565	4.5	0.8	70	4.5	1.0	495	4.5	0.8
35	559	4.6	0.8	67	4.6	0.9	492	4.6	0.8
36	564	4.5	0.9	69	4.4	1.0	495	4.5	0.9
37	565	4.1	1.2	68	4.2	1.2	497	4.1	1.2
38	567	4.5	0.8	71	4.5	0.9	496	4.5	0.8
39	566	3.7	1.4	70	3.7	1.5	496	3.7	1.4

Table H2

Mean Ratings for Minority-Serving Institutions and Nonnminority Institutions at the Master's Level

Task statements	Overall			Total minority			Total nonminority		
	Mean SD = 1.1			Mean SD = 1.1			Mean SD = 1.1		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
1	632	4.1	1.2	89	4.3	0.9	543	4.1	1.2
2	633	3.8	1.3	90	3.9	1.2	543	3.8	1.3
3	630	4.2	0.9	89	4.3	0.9	541	4.2	0.9
4	631	3.5	1.3	90	3.6	1.3	541	3.5	1.3
5	624	4.0	1.1	84	4.3	1.0	540	4.0	1.1
6	629	2.4	1.9	88	2.6	2.0	541	2.3	1.9
7	625	4.2	0.9	85	4.4	0.9	540	4.2	0.9
8	625	3.8	1.3	89	4.1	1.1	536	3.8	1.3

Table H2 (continued)

Task statements	Overall			Total minority			Total nonminority		
	Mean SD = 1.1			Mean SD = 1.1			Mean SD = 1.1		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
9	626	4.1	1.0	86	4.4	1.0	540	4.1	1.0
10	634	2.4	1.7	93	2.6	1.8	541	2.3	1.6
11	628	4.0	1.1	87	4.2	1.0	541	3.9	1.1
12	632	4.1	0.9	89	4.2	0.9	543	4.1	0.9
13	627	3.8	1.1	87	3.9	1.1	540	3.8	1.1
14	625	4.0	1.0	87	4.2	1.0	538	4.0	1.1
15	628	3.4	1.3	89	3.6	1.3	539	3.3	1.3
16	622	2.5	1.8	86	2.7	1.9	536	2.5	1.8
17	621	3.3	1.5	86	3.4	1.5	535	3.3	1.5
18	628	4.0	1.0	88	4.1	1.0	540	4.0	1.0
19	632	4.1	1.0	89	4.3	0.9	543	4.1	1.0
20	628	3.2	1.3	86	3.3	1.4	542	3.1	1.3
21	627	4.0	1.0	89	4.1	1.1	538	4.0	1.0
22	627	3.4	1.3	88	3.7	1.4	539	3.4	1.3
23	630	4.2	1.0	88	4.4	0.9	542	4.2	1.1
24	629	4.5	0.8	87	4.6	0.9	542	4.5	0.8
25	631	4.0	1.0	89	4.1	1.2	542	4.0	1.0
26	627	4.2	0.9	87	4.4	0.8	540	4.2	0.9
27	627	4.4	0.8	87	4.6	0.7	540	4.4	0.8
28	627	4.2	0.9	87	4.3	0.9	540	4.2	0.9
29	626	4.1	1.0	88	4.2	1.0	538	4.1	1.0
30	628	4.2	0.9	88	4.4	0.9	540	4.2	0.9
31	624	4.1	1.0	87	4.2	0.9	537	4.1	1.0
32	626	3.6	1.2	87	3.8	1.2	539	3.5	1.2
33	628	3.3	1.3	88	3.6	1.3	540	3.2	1.3
34	626	4.2	0.9	87	4.3	1.0	539	4.2	0.9
35	624	4.4	0.9	87	4.4	0.9	537	4.4	0.9
36	623	4.3	0.9	87	4.4	0.9	536	4.3	0.9
37	624	3.9	1.2	85	4.1	1.1	539	3.9	1.2
38	626	4.2	0.9	86	4.3	0.9	540	4.2	0.9
39	625	3.4	1.3	86	3.7	1.3	539	3.4	1.3

Table H3

Mean Ratings for Minority-Serving Institutions and Nonminority Institutions at the Undergraduate Level

Task statements	Overall			Total minority			Total nonminority		
	Mean SD = 1.2			Mean SD = 1.1			Mean SD = 1.2		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
1	746	3.8	1.2	115	4.1	1.0	631	3.7	1.2
2	748	3.3	1.4	116	3.6	1.2	632	3.3	1.4
3	741	3.8	1.0	111	4.1	1.0	630	3.7	1.1
4	740	3.1	1.4	112	3.5	1.2	628	3.1	1.4
5	736	3.6	1.2	109	4.0	1.0	627	3.5	1.2
6	734	2.2	1.9	110	2.7	1.9	624	2.2	
7	738	3.8	1.1	111	4.1	1.0	627	3.7	1.1
8	735	3.4	1.3	111	3.7		624	3.4	1.3
9	737	3.8	1.1	109	4.1	0.9	628	3.7	1.1
10	743	2.2	1.6	114	2.6	1.7	629	2.1	1.6
11	736	3.5	1.2	108	3.8	1.1	628	3.5	1.2
12	744		1.1	114	3.9	1.0		3.6	1.1
13	739	3.4	1.1	112	3.6	1.1	627	3.3	1.1
14	745	3.5	1.1	114	4.0	1.0	631	3.5	1.1
15	740	3.1	1.3	112	3.3	1.3	628	3.0	1.3
16	736	2.2	1.7	110	2.7	1.8	626	2.1	1.7
17	736	2.9	1.5	110	3.2	1.5	626	2.8	1.5
18	746	3.6	1.2	115	4.0	1.0	631	3.6	1.2
19	740	3.7	1.1	111	4.0	1.1	629	3.6	1.1
20	738	2.8	1.3	110	3.2	1.4		2.7	1.3
21	741	3.5	1.1	112	3.8	1.1	629	3.4	1.1
22	741	3.0	1.4	111	3.4	1.4	630	3.0	1.4
23	741	3.8	1.2	111	4.1	1.0	630	3.7	1.3
24	738	4.1	1.1	109		1.0		4.1	1.1
25	743	3.6	1.2	113	3.9	1.2	630	3.5	1.1

Table H3 (continued)

Task statements	Overall			Total minority			Total nonminority		
	Mean SD = 1.2			Mean SD = 1.1			Mean SD = 1.2		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
26	739	3.8	1.1	112	4.1	0.9	627	3.7	1.1
27	738	4.1	1.0	110	4.5	0.7	628	4.1	1.0
28	743	3.8	1.1	113	4.0	0.9	630	3.8	1.1
29	740	3.8	1.1	111	4.0	1.0	629	3.7	1.1
30	745	3.9	1.1	114	4.2	1.0	631	3.8	1.1
31	738	3.7	1.1	112	4.0	1.0	626	3.7	1.1
32	738	3.2	1.3	111	3.5	1.2	627	3.1	1.3
33	737	2.9	1.4	111	3.3	1.4	626	2.8	1.3
34	740	3.9	1.1	110	4.1	1.1	630	3.8	1.1
35	740	4.1	1.0	111	4.4	0.9	629	4.1	1.0
36	740	4.0	1.1	111	4.3	0.9	629	4.0	1.1
37	742	3.6	1.3	112	3.7	1.3	630	3.5	1.3
38	741	3.8	1.1	112	4.1	0.9	629	3.8	1.1
39	737	3.1	1.4	109	3.4	1.4	628	3.0	1.4

Appendix I

Mean Ratings for Doctoral-Level Students, Overall and by Department

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	Mean SD = 1.1			Mean SD = 1.0			Mean SD = 1.2			Mean SD = 0.9			Mean SD = 0.9			Mean SD = 1.1			Mean SD = 0.9		
	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD
1	573	4.4	1.1	97	4.3	1.1	80	4.3	1.1	104	3.9	1.6	87	4.8	0.4	87	4.4	1.3	100	4.7	0.6
2	570	4.2	1.3	97		1.1		4.3	1.1		3.4		87	4.6	0.7	86	4.4	1.1	100	4.6	0.7
3	568	4.5	0.8	96	4.6	0.8	80	4.2	1.2	103	4.6	0.8	86	4.8	0.5	86	4.3	0.8	99	4.7	0.6
4	570	3.7	1.4	96	4.3	1.0	80	3.3	1.4	102	4.1	1.3	87	3.7	1.3	87	2.7	1.6	100	3.9	1.1
5	563	4.4	1.1	95	4.5	0.8	78	4.0	1.3	101	4.5	1.1	87	4.6	0.7	87	4.1	1.4	98	4.5	0.9
6	564	2.4	2.0	94	2.9	1.7	79	1.4	1.6	103	4.8	0.5		1.3	1.6	87	1.1	1.6	97	2.0	1.8
7	565	4.5	0.8	95	4.7	0.7	80	4.1	1.1	103	4.8	0.7	87	4.6	0.7	85	4.3	0.9	97	4.6	0.8
8	564	4.3	1.2		4.5	0.9	78	4.3	1.1	102	3.2	1.8	87	4.6	0.5	87	4.6	0.7	97	4.6	0.8
9	564	4.4	1.0	95	4.6	0.8	79	3.9	1.2	102	4.9	0.3	86	4.4	1.1	87	4.1	1.1	97	4.6	0.8
10	570	2.4	1.8	96	3.2	1.5	80	1.9	1.6	104	3.6	1.5	86	1.8	1.7	88	1.5	1.7	98	2.3	1.6
11	568	4.3	1.1	96	4.6	0.8	80	3.4	1.5	104	4.9	0.4	86	4.3	0.9	87	4.1	1.2	97	4.6	0.7
12	569	4.5	0.9	96	4.6	0.7	80	4.0	1.3	103	4.8	0.5	86	4.7	0.6	88	4.3	1.0	98	4.8	0.5
13	569	4.2	1.0	96	4.4	0.9	80	4.1	1.1	104	4.0	1.4	86	4.5	0.7	87	4.3	0.8	98	4.4	0.8
14	569	4.5	0.9	96	4.5	0.8	80	4.3	1.1	104	4.3	1.2	86	4.7	0.6	87	4.6	0.7	98	4.7	0.6
15	565	3.7	1.3	94	4.0	1.2	80	3.6	1.4	102	3.4	1.6	86	3.7	1.1	87	3.5	1.2	98	3.7	1.2
16	566	2.6	1.9	94	3.3	1.6	80	1.8	1.6	101	4.8	0.4	85	1.9	1.7	89	1.4	1.6	99	2.2	1.6

Appendix I (continued)

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	Mean SD = 1.1			Mean SD = 1.0			Mean SD = 1.2			Mean SD = 0.9			Mean SD = 0.9			Mean SD = 1.1			Mean SD = 0.9		
	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD
17	564	3.6	1.5	93	3.8	1.3	80	3.2	1.5	102	4.6	0.8	85	3.7	1.4	87	2.7	1.8	99	3.6	1.5
18	568	4.4	1.0	96	4.4	0.9	80	4.0	1.1	105	4.8	0.7	86	4.3	1.0	86	4.0	1.1	98	4.4	0.9
19	569	4.5	0.9	95	4.5	0.8	80	4.5	1.0	104	4.1	1.4	86	4.7	0.5	88	4.6	0.7	98	4.8	0.5
20	566	3.4	1.4	95	3.7	1.2	80	3.2	1.4	102	3.9	1.4	86	3.1	1.4	87	3.3	1.4	98	3.4	1.3
21	569	4.4	1.0	95	4.3	0.9	80	4.3	1.0	104	4.2	1.4	87	4.6	0.6	87	4.6	0.7	98	4.5	0.7
22	562	3.8	1.4	94	4.1	1.0	79	4.1	1.1	103	2.7	1.9	85	4.0	1.1	86	4.0	1.0	97	4.1	1.0
23	564	4.4	1.0	95	4.6	0.8	80	4.0	1.4	102	4.8	0.5	86	4.5	1.0	86	4.0	1.3	98	4.5	0.8
24	566	4.7	0.7	95	4.7	0.7	80	4.3	1.1	104	4.9	0.4	85	4.8	0.5	86	4.6	0.8	98	4.8	0.7
25	568	4.3	1.0	95	4.5	0.9	79	3.7	1.2	105	4.8	0.5	86	4.1	1.1	87	3.8	1.0	98	4.4	0.8
26	562	4.5	0.8	94	4.5	0.8	80	4.0	1.1	102	4.9	0.3	85	4.6	0.6	86	4.3	0.9	97	4.6	0.7
27	564	4.7	0.7	93	4.7	0.7	80	4.3	1.0	102	4.9	0.4	85	4.8	0.4	87	4.6	0.7	99	4.7	0.5
28	568	4.5	0.8	95	4.6	0.8	79	4.0	1.1	105	4.8	0.5	85	4.4	0.8	88	4.2	0.8	98	4.6	0.7
29	564	4.3	0.9	95	4.5	0.9	79	3.7	1.1	103	4.9	0.3	85	4.3	0.8	86	3.9	1.0	98	4.4	0.7
30	566	4.5	0.8	95	4.5	0.8	79	4.1	1.1	104	4.9	0.4	85	4.6	0.7	87	4.4	0.8	98	4.6	0.7
31	564	4.3	0.9	96	4.5	0.8	79	3.8	1.2	104	4.8	0.5	84	4.3	0.8	85	4.0	1.1	98	4.4	0.8
32	565	3.8	1.2	94	4.2	1.0	80	3.3	1.2	104	4.7	0.6	85	3.5	1.3	86	3.1	1.4	98	3.7	1.2
33	565	3.5	1.4	94	4.0	1.1	80	3.0	1.3	104	4.4	0.9	85	3.1	1.2	86	2.8	1.6	98	3.3	1.3
34	565	4.5	0.8	95	4.6	0.8	78	4.1	1.1	104	4.9	0.4	85	4.6	0.7	88	4.4	0.9	97	4.6	0.6

Appendix I (continued)

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	Mean SD = 1.1			Mean SD = 1.0			Mean SD = 1.2			Mean SD = 0.9			Mean SD = 0.9			Mean SD = 1.1			Mean SD = 0.9		
	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD
35	559	4.6	0.8	94	4.7	0.8	79	4.3	1.1	101	4.9	0.4	85	4.6	0.7	85	4.4	0.9	97	4.7	0.6
36	564	4.5	0.9	94	4.5	0.8	80	4.1	1.2	103	4.8	0.6	85	4.4	0.8	87	4.3	1.0	97	4.5	0.8
37	565	4.1	1.2	95	4.3	1.1	80	4.1	1.2	103	3.9	1.5	85	4.2	0.9	87	4.1	1.2	97	4.2	1.0
38	567	4.5	0.8	95	4.4	0.9	80	4.3	1.0	103	4.8	0.5	85	4.6	0.7	88	4.4	0.8	99	4.6	0.7
39	566	3.7	1.4	95	4.2	1.0	80	3.6	1.4	103	3.2	1.7	85	4.0	1.2	86	3.6	1.3	99	3.9	1.2

Note. See Table D1 for a description of each task statement.

Appendix J

Mean Ratings for Upper-Division Undergraduate Students, Overall and by Department

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	Mean SD = 1.2			Mean SD = 1.0			Mean SD = 1.2			Mean SD = 1.0			Mean SD = 1.1			Mean SD =1.3			Mean SD =1.1		
	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD
1	746	3.8	1.2	99	3.9	0.9	97	3.6	1.1	148	3.6	1.4	123	4.1	0.9	121	3.8	1.4	129	3.8	1.1
2	748	3.3	1.4		3.7	1.1	97	3.5	1.1	151	2.7	1.7	122	3.6	1.1	120	3.5	1.3	131	3.3	1.2
3	741	3.8	1.0	99	3.9	0.9	97	3.3	1.0	147	4.2	0.9	121	3.9	1.1	117	3.5	1.1	131	3.8	1.0
4	740	3.1	1.4		3.8	1.0	96	2.6	1.3	147	3.9	1.1	122	3.0	1.3	117	2.1	1.4	131	3.3	1.2
5	736	3.6	1.2	99	3.6	0.9	94	3.2	1.2	146	3.8	1.2	120	3.7	1.1	117	3.4	1.4	131	3.6	1.1
6	734	2.2	1.9		3.1	1.2		1.3	1.5	145	4.5	0.8	119	1.3	1.5	119	1.0		129	1.7	1.6
7	738	3.8	1.1	97	3.9	0.8	96	3.2	1.0	147	4.2	1.0	121	3.8	1.0	118	3.4	1.2	130	3.8	1.1
8	735	3.4	1.3	97	3.6	0.9	93	3.4	1.0	147	2.7	1.6	120	3.7	1.1	118	3.7	1.1	131	3.6	1.0
9	737	3.8	1.1	98	3.9	0.8	96	3.2	1.1	144	4.6	0.6	122	3.6	1.1	118	3.4	1.2	130	3.6	1.0
10	743	2.2	1.6	97	3.0	1.1	96	1.6	1.4	148	3.5	1.4	123	1.7	1.4	119	1.2	1.4	132	2.0	1.4
11	736	3.5	1.2	98	3.7	0.8	96	2.5	1.3	146	4.4	0.7	122	3.4	1.0	115	3.1	1.4	130	3.5	1.1
12	744	3.6	1.1	98	3.6	1.0	96	2.9	1.1	148	4.1	1.0	123	3.6	1.1	118	3.5	1.2	132	3.7	1.0
13	739	3.4	1.1	97	3.6	0.9	95	3.3	1.1	147	3.3	1.4	122	3.5	1.1	118	3.2	1.1	131	3.4	1.0
14	745	3.5	1.1	98	3.6	1.0	96	3.4	1.1	150	3.4	1.4	123	3.7	1.0	118	3.6	1.1	131	3.6	1.0
15	740	3.1	1.3	98	3.5	1.0	96	3.0	1.2	146	2.7	1.5	122	3.3	1.2	118	3.0	1.2	131	3.0	1.3
16	736	2.2	1.7	97	2.9	1.0	94	1.4	1.4	145	4.2	0.9	122	1.5	1.5	119	1.1	1.4	130	1.7	1.4
17	736	2.9	1.5	97	3.2	1.1	95	2.3	1.4	144	4.0	1.0	122	2.7	1.5	117	2.2	1.5	132	2.7	1.4

(Table continues)

Appendix J (continued)

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	Mean SD = 1.2			Mean SD = 1.0			Mean SD = 1.2			Mean SD = 1.0			Mean SD = 1.1			Mean SD =1.3			Mean SD =1.1		
	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD
18	746	3.6	1.2	100	3.8	1.0	97	3.2	1.1	151	4.4	0.8	121	3.6	1.2	118	3.1	1.3	131		1.0
19	740	3.7	1.1	98	3.7	1.0	96	3.8	0.9	148	3.4	1.5	120	3.9	1.0	118	3.7	1.1	131	3.7	1.0
20	738	2.8	1.3	97	3.2	1.0	96	2.4	1.3	148	3.5	1.3	120	2.5	1.3	118	2.4	1.4	130	2.5	1.3
21	741	3.5	1.1	99	3.5	1.0	97	3.6	1.0	147	3.4	1.3	121	3.7	1.0	118	3.6	1.2	130	3.3	1.1
22	741	3.0	1.4	98	3.5	1.1	97	3.6	1.2	150	2.2	1.6	120	3.2	1.2	117	3.1	1.2	130	3.1	1.2
23	741	3.8	1.2	98	3.8	1.0	96	3.3	1.3	148	4.5	0.7	120	3.8	1.2	119	3.2	1.5	131	3.8	1.2
24	738	4.1	1.1	99	4.1	1.0	95	3.6	1.3	147	4.6	0.8	121	4.3	1.0	116	3.8	1.4	131	4.1	1.0
25	743	3.6	1.2	99	3.9	0.9	95	2.9	1.1	148	4.4	0.8	123	3.4	1.2	118	3.1	1.2	131	3.7	1.0
26	739	3.8	1.1	98	3.9	1.0	96	3.1	1.0	147	4.6	0.7	121	3.7	1.0	118	3.3	1.2	130	3.7	1.0
27	738	4.1	1.0	98	4.2	0.9	95	3.7	1.0	147	4.6	0.6	120	4.2	0.9	118	3.9	1.1	131	4.1	0.9
28	743	3.8	1.1	99	4.1	1.0	96	3.2	1.1	150	4.5		120	3.6	1.1	118	3.5	1.1	131	3.7	1.0
29	740	3.8	1.1	100	4.0	1.0	96	3.0	1.1	148	4.5	0.7	120	3.7	1.0	117	3.3	1.2	131	3.7	1.0
30	745	3.9	1.1	99	4.0	1.0	96	3.3	1.1	149	4.5	0.8	122	3.8	1.1	118	3.6	1.2	132	3.8	1.1
31	738	3.7	1.1	98	3.9	1.0	95	3.2	1.1	148	4.4	0.8	121	3.7	1.1	117	3.2	1.2	130	3.6	1.0
32	738	3.2	1.3	99	3.6	1.0	96	2.7	1.1	149	4.1	0.9	119	2.9	1.3	117	2.5	1.3	130	3.1	1.1
33	737	2.9	1.4	98	3.4	1.2	95	2.3	1.3	148	3.8	1.1	119	2.6	1.2	117	2.1	1.5	131	2.7	1.1
34	740	3.9	1.1	99	4.0	1.0	95	3.3	1.2	148	4.5	0.7	120	3.8	1.1	118	3.6	1.2	131	3.7	1.1
35	740	4.1	1.0	98	4.2	0.9	96	3.8	1.1	149	4.5	0.7	119	4.1	1.1	118	3.8	1.2	131	4.1	0.9
36	740	4.0	1.1	99	4.2	0.9	96	3.6	1.1	147	4.4	0.8	121	4.0	1.1	118	3.6	1.3	130	4.0	1.0

Appendix J (continued)

Task statements	Overall			Education			Engineering			English			Life Sciences			Physical Sciences			Psychology		
	Mean SD = 1.2			Mean SD = 1.0			Mean SD = 1.2			Mean SD = 1.0			Mean SD = 1.1			Mean SD =1.3			Mean SD =1.1		
	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD
37	742	3.6	1.3	99	3.9	1.2	96	3.6	1.2	149	3.3	1.5	121	3.6	1.1	118	3.4	1.4	130	3.6	1.1
38	741	3.8	1.1	99	3.9	1.0	97	3.4	1.1	147	4.3	0.9	121	3.9	1.0	118	3.6	1.2	130	3.7	1.1
39	737	3.1	1.4	99	3.8	1.1	95	3.1	1.2	146	3.0	1.5	120	3.0	1.3	118	2.8	1.5	130	3.0	1.3

Note. See Table D1 for a description of each task statement.

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