

Writing for the Future

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English



Abstract

The purpose of this study is to ask whether graduate students who have finished their undergraduate study at Boise State University (BSU) feel they were adequately prepared to meet research writing challenges at the graduate level. Professors have also raised questions about the level of preparedness incoming graduate students should have. With BSU set to implement a new approach to learning writing across the curriculum, this study may aid in defining at-risk areas in research writing, identified by both graduate students and faculty. Surveys were given to graduate students who had completed their undergraduate degree at BSU as well as to faculty teaching graduate courses. The purpose of the survey is to get students to self-assess their level of preparedness and identify specific areas of research deficiency. The survey given to the faculty was much the same but with an emphasis on evaluating the writing of incoming graduate students in general. Follow-up interviews enabled a more in-depth exploration of topics covered in the surveys. Data from the surveys were analyzed and correlated with the outcomes of the new Communication in the Discipline (CID) courses to identify possible areas of writing need and to determine whether the new CID courses might fill those needs. I hypothesize that there will be areas in which both students and professors want improvement in the undergraduate teaching of research writing and that the CID course outcomes can specifically address some of the identified areas of need. This research project has the potential to identify areas of current need, as well as to provide a base from which follow-up research may evaluate the ongoing success of the Boise State CID courses from the student's perspective.

Introduction/Background

In the progression of learning, each successive step is built upon prior learning. When the steps come too far apart, it becomes difficult for the student to transition and fully grasp the new material. This results in an incomplete and unstable foundation for future steps to be built upon. The transition from undergraduate to graduate research writing appears to be one such area where the transition step may be too great and causing undue difficulty. This is not to imply that the undergraduate research writing experience should come up to the difficult standards of the graduate level; many students enter the job market instead of pursuing graduate studies. However, for students who chose graduate studies, there may be unnecessary difficulty in the transition from undergraduate to graduate level research writing.

There may be those among us who don't believe the transition to graduate level research writing is too difficult; however, first year graduate school attrition rates contradict this belief. Others may ask exactly how undergraduate education in writing is lacking or what, if anything, can be done about it. To answer these and so many more questions, we need an understanding of the "gap," along with its constituent elements, that separates undergraduate research writing from the graduate counterpart.

In article after article, book after book, authors (who are often graduate faculty) bemoan the preparedness of incoming graduate students and the apparent lack of research writing skills. Certainly they acknowledge that there is a gap, but they generally fail to illuminate it in detailed or useful ways. Also, few authors offer solutions. The gap appears to be comprised of a dynamic set of elements which are under-addressed at the undergraduate level, yet are critical to success at the graduate level. In this context, I propose to answer the question of what actually constitutes the gap in research writing between the undergraduate and graduate levels.

In addition to looking at the transition from undergraduate to graduate level research writing, an opportunity has presented itself of some long-term value to Boise State University. The university is in the process of implementing a new approach to better prepare students for future study or employment specific to their chosen discipline. In the fall of 2012, Boise State restructured the degree requirements to include, among other courses, Communication in the Discipline (CID) courses. These are writing courses "[f]ocused on written and oral

communication as they are practiced within the discipline,” and will be taught by those respective departments (Boise State University, Communication in the Disciplines). This reinforces the University Learning Outcomes (ULO) one and two, which are written and oral communication, respectively (Boise State University, University Learning Outcomes). The classes propose to instruct students in the language, research, documentation, and writing formats of specific disciplines. The courses are fully supported, with instruction and additional resources for both students and instructors, including tutorial services for students through the writing center. All courses are approved and supported by a subcommittee of the Communications and University Writing Across the Curriculum Director (Boise State University, Communication in the Disciplines). The timing of this study is such that if a correlation can be made between the transition from the undergraduate to graduate research writing and the projected outcomes of the CID courses, it will provide a baseline from which further study can assess the value of the CID courses from the student’s perspective. While the school already tracks the success of individual courses through student and department evaluations, a research project involving a correlation of research writing transition and CID course outcomes could provide a different way of gauging the success of the CID courses. It could incorporate data from graduate students and faculty who have firsthand knowledge of the transition between undergraduate and graduate level research writing and how elements taught in the CID courses would influence the transitional gap. By looking at the CID courses from this perspective, this research could provide a current look at what graduate students and faculty feel are critical skills in research writing, as well as substantiate a longer-term look at the success of the CID courses.

Literature Review

There are few studies specific to research writing at the graduate level, and fewer still on the transition of research writing from the undergraduate to the graduate level. It is widely acknowledged that there is a need for improving research writing skill at the graduate level, and professors and mentors alike often lament the lack of preparation of incoming graduate students. Some institutions offer seminars or writing center help to students struggling to transition to the higher standards of graduate school writing (Switzer and Purdue, 2011; Rose and McClafferty, 2001), yet others rely on mentors to help students individually through research writing and dissertations. Lavelle and Bushrow (2007) break down graduate writing by the approach or strategy students’ use, and form a rubric correlating the approach to its relative success. But where do these incoming graduate students learn these approaches?

A study by Singleton-Jackson and Lumsden (2009) suggest that there is no significant difference in the overall writing skill of high school seniors and incoming graduate students. As tempting as it is to draw a connection and subsequently deduce that the writing approaches used at the beginning of graduate school were developed before exiting high school, this assumption may not be all that accurate. To make that assumption is to therefore question the responsibility of high schools to somehow prepare students for graduate level research writing. As ludicrous as it may seem to ask this question, perhaps the answer to another question is yet more extreme: How could those new graduate students pass through 4–5 years of college (undergraduate) and not have improved their writing ability? Because it is critical to center new learning upon previous learning foundations, the responsibility for graduate school preparation must squarely rest on the foundation of the undergraduate, not the high school. It is, therefore, within the undergraduate experience that we would expect a refining of writing approaches, proficiency, and diversity rather than trying to instruct high school students in collegiate writing theory.

The cause for variation and, apparently all too often, failure to advance student writing skill during the undergraduate experience, is often blamed on the inadequate writing skill of incoming freshmen. Peter Pappalardo suggests that in 2006 and 2007, as many as 46% of incoming freshmen in the entire California State University system needed to be remediated in English based on writing samples. He claims other states have similar rates of remediation in core courses, with almost one in three students taking classes below college level. This problem is, undoubtedly, as expansive in its effects as it is expensive in its solution, and certainly takes time during the undergraduate experience. Yet, it seems an all too convenient excuse to blame the incoming preparedness of students. Difficulties lie in passing the problem on; the problem must be addressed during the undergraduate years.

College students on the whole are bright. With sufficient motivation, writing deficiencies students enter with can be overcome and they can exit the undergraduate experience with the necessary writing foundation that will aid them in transitioning to the labor market or to graduate studies. Kellogg and Whiteford (2009) assert that practice is at the heart of learning advanced writing skills when coupled with instruction in writing theory. Without practice, the theory is meaningless. The National Commission on Writing agrees with Kellogg and Whiteford in a 2006 report which recommended that educators double the amount of time students spend writing, and do it across

the curriculum. While it may not be practical financially or logistically to incorporate double the amount of time spent writing, it certainly indicates at least one possible cause of writing deficiency at the undergraduate level.

If increasing writing practice is the key in acquiring advanced writing skills, proper direction in that writing is probably assumed. After all, what good would doubling the writing practice do, if there was little more in the way of additional instruction or theory?

At the heart of this study is the preparedness an undergraduate writing experience (specific to research writing) provides a student who is continuing on to graduate studies. If the preparedness is poor, success at the graduate level comes into jeopardy. Because graduate level research writing differs significantly from undergraduate writing requirements, objective identification and quantification of at-risk research writing elements is key to understanding the transition to, and success of, research writing at the graduate level.

Methods and Definitions

In an attempt to answer the question as to whether first year graduate students feel prepared for the rigors of graduate level research writing, it is important to define the various aspects of the question. The first definition required is of the term “gap.” The gap is a direct reference not only to the differences between undergraduate and graduate level research writing, but also to the context and understanding that one progresses to the other. There is interdependence between the two, and while the undergraduate may lead to the graduate, the graduate is dependent on the undergraduate. Not all undergraduates go on to graduate studies, but all graduate students must have passed through an undergraduate experience. This relationship, as viewed from the graduate side, illuminates the undergraduate research writing experience as *the* foundation of what is expected at the graduate level. Proficiency in research writing skills is expected upon completing graduate school. Time constraints in fulfilling all graduate requirements, therefore, necessitate a given starting point or proficiency level a student must enter graduate school with in order to successfully continue research writing skill acquisition. If the proficiency level obtained by the end of the undergraduate experience does not match the starting levels desired by the graduate institution, there exists a gap. Defining the gap in this way is not to imply that there should not be a gap, but that as the gap becomes larger, the ratio of students able to bridge the gap diminishes. The gap should also be viewed as dynamic with respect to individual students, the undergraduate institution, the graduate institution, the department in which the student is working, and even extenuating circumstances such as English as a second language. The scope of this definition is, therefore, broad and inclusive of the dynamic as a whole rather than exclusive or intensely focused. For this reason, the gap should be understood as across the curriculum, despite a given discipline’s or department’s ability to keep the gap narrow for its own ongoing students.

Another term of note is “at-risk.” At-risk is used to classify elements from the original comparative analysis which were deemed critical to successful research writing at the graduate level but may be under-addressed, or not addressed at all, during the undergraduate experience. This term is useful in my correlation of study findings with the outcomes of the Communication in the Discipline course at Boise State University, which began in the fall of 2012.

The Communication in the Discipline (CID) course mentioned above is actually a general term for a series of courses which began in the fall of 2012 at Boise State University. Part of an aggressive new approach designed to immerse students in their respective disciplines, the CID courses are focused on written and oral communication specific to the discipline. Though writing intensive, they are taught by respective departments and not the English Department. This allows an immersion by the student in the language, writing format, readings, and citation of their respective fields. This new course is required of all undergraduate students in catalog year 2012-2013 and forward. While some departments already had a course similar to this in place, others did not, and in any event courses were not available or required across the curriculum. The CID is a sophomore level course, and it was not intended as a graduate prep course or as a single course responsible for teaching research writing skills. It is a course designed to prepare students for later undergraduate courses requiring senior or capstone projects. While the capstone projects certainly involve research writing growth, they are the practical application of research writing skills acquired during CID courses. Thus, while some may rightfully challenge the applicability of analyzing the CID course as a means of graduate research preparation, I maintain that the CID course may well represent the highest level of formal research writing instruction many students will receive as an undergraduate, and is therefore worthy of scrutiny.

To define the gap, an original comparative analysis of research writing of both the undergraduate and graduate levels was conducted through the reading of journal articles, informal interviews with Boise State University faculty, and personal experience. Separate lists of research writing elements were compiled for each level of education, compared, and the differences noted. The individual elements were then separated into two categories:

elements in general and at “risk elements.” It can be assumed, for the purposes of this study, that general elements (see listing in “results” section) are those necessary to success at both the undergraduate and graduate levels of research writing, and that a student meets at least a bare minimum of proficiency in these areas, by the completion of the bachelor’s degree, so as to minimize a part of the transitional gap. The at-risk elements, on the other hand, are elements critical to success at the graduate level, yet are under-addressed (or not addressed at all) at the undergraduate level, which directly affects the success ratio of incoming graduate students (see listing in “results” section). These elements affect students in all disciplines generally and therefore were examined in a broad sense rather than scrutinizing a single field or demographic of students, which might favor or minimize specific research writing elements.

A mixed-method approach was used to collect data. After the original comparative analysis of undergraduate and graduate research writing, internet-based surveys were administered to obtain quantitative data. Follow-up interviews were also conducted which provided qualitative data. The survey was administered through Qualtrics, and a basic analysis of the results was done using the same software.

The quantitative data was collected through an internet-based survey using Qualtrics, and given to both graduate students and graduate faculty. Each question was designed to gather specific information regarding what they felt were the most important research writing elements of both graduate and undergraduate levels, or to elicit information on a specific at-risk element. The questions provided to the graduate students were framed in such a way so as to discover their opinion on the differences between what was needed to be successful in undergraduate research writing, and what additional elements or proficiencies were needed for successful research writing at the graduate level. Questions posed to the faculty covered the same basic elements, yet were worded to allow observation of graduate students as a group rather than individuals. This combination allows the perspective of an individual experience in connection to the generalization of many graduate students as they experience the gap.

In addition to quantitative data, qualitative data was collected via follow-up interviews with a limited number of volunteer participants recruited from the on-line survey. The participants had the option of doing the interview via email or in person; all but one chose to respond through email. The interview questions were designed to explore the gap in greater depth, in the hope of understanding why the gap is harder for some students to transition than others. They deal with many of the same at-risk elements as the survey, but allow for additional information and experiences of the interviewees to be considered. This additional data not only provides a larger picture of the gap, but also of contributing factors. By exploring what characteristics change the width of the gap, and the subsequent difficulty in bridging it, it informs the later assessment of the CID courses as well as provides valuable data, which graduate prep courses can incorporate into their curriculum.

Results

Comparative analysis

As noted before, an original comparative analysis of research writing of both the undergraduate and graduate levels was conducted through the reading of journal articles, informal interviews with Boise State University faculty, and personal experience. Separate lists of research writing elements were compiled for each level of education, compared, and the differences noted. Though the writing elements cover the breadth of research writing elements, the four main groupings which emerge are writing and organization; citation; collaboration; and argument and discipline.

Undergraduate research writing elements.

1. Writing and Organization
 - a. Five paragraph (+) format
 - b. Writing and revision skills (basic)
 - c. Grammar and composition skill (basic)
2. Citation
 - a. Finding relevant citation sources
 - b. Citation source evaluation: quality (basic)
 - c. In-text citation, work cited page, evaluation of sources for relevance (basic)
 - d. How to incorporate relevant sources in-text

3. Collaboration
 - a. Knowledge of and how to work with project support personnel (other researchers, librarians, mentors, instructors [at a basic level])
 - b. Group project or research skills (basic)
4. Argument and Discipline
 - a. Forming relevant thesis statements
 - b. Understanding and using discipline theory (basic)
 - c. Constructing and supporting a reasoned argument

Graduate research writing elements.

1. Writing and Organization
 - a. Five paragraph (+) format
 - b. Writing and revision skills (advanced)
 - c. Grammar and composition skill (advanced)
 - d. Organizing and completing literature reviews (advanced)
2. Citation
 - a. Finding relevant citation sources
 - b. Citation source evaluation: quality (advanced)
 - c. How to incorporate relevant sources in-text
 - d. Discipline specific citation (in-text and end)
 - e. Work cited page
 - f. Annotated bibliography
 - g. Evaluation of sources for relevance (advanced)
 - h. Source organizational software (such as End Note Web)
3. Collaboration
 - a. Knowledge of and how to work with project support personnel (other researchers, librarians, mentors, instructors [at an advanced level])
 - b. Group project or research skills (advanced)
 - c. Faculty mentor navigation
 - d. Presentation and publication
4. Argument and Discipline
 - a. Forming relevant thesis statements
 - b. Understanding and using discipline theory (advanced)
 - c. Constructing and supporting a reasoned argument
 - d. Interest and individual effort in the subject and/or research project
 - a. Discipline specific format (as seen in academic journals)
 - b. Framing a viable research question (includes narrowing)
 - c. Original data collection procedures (includes IRB, research training certifications, institutional permissions, and departmental navigation)
 - d. Data evaluation (includes evaluation software like Qualtrics or SPSS)
 - e. Reading or familiarity in discipline

Elements found to be in common.

1. Writing and Organization
 - a. Five paragraph (+) format
 - b. Writing and revision skill*
 - c. Grammar and composition skill*
2. Citation
 - a. In-text citation
 - b. Work cited page
 - c. How to incorporate relevant sources in-text*
 - d. Finding relevant citation sources*
3. Collaboration
 - a. Group project or research skills*

4. Argument and Discipline
 - a. Constructing and supporting a reasoned argument
 - b. Forming relevant thesis statements

Elements noted by the asterisk (*) are elements which are used at both levels with an expected growth in difficulty as students advance to the graduate level. These elements, while progressive with respect to proficiency, change little in their fundamental approaches and are therefore classified as “elements in common.”

At-risk elements

At-risk elements are deemed critical to successful research writing at the graduate level, which may be under-addressed, or not addressed at all, during the undergraduate experience.

1. Writing and Organization
 - a. Organizing and completing literature reviews (advanced)
 - b. Advanced writing and revision skills
2. Citation
 - a. Discipline specific citation
 - b. Finding and evaluating quality sources (advanced)
 - c. Evaluation of sources for relevance (advanced)
 - d. Source organizational software (such as End Note Web)
3. Collaboration
 - a. Knowledge of and how to utilize project support personnel (other researchers, librarians, mentors, instructors [advanced])
 - b. Faculty mentor and networking navigation
 - c. Presentation and publication
4. Argument and Discipline
 - a. Organization, formatting, and communication of ideas in larger more substantial papers specific to discipline
 - b. Reading or familiarity with discipline
 - c. Motivation and interest in subject or research topic
 - d. Research design (project design to obtain relevant data)
 - e. Understanding and using discipline theory (advanced)
 - f. Framing a viable research question (includes narrowing)
 - g. Original data collection procedures (includes IRB, research training certifications, institutional permissions, and departmental navigation)
 - h. Data evaluation (includes evaluation software like Qualtrics or SPSS)

Surveys

The following section presents the data collected via internet-based surveys and is divided between the graduate student and graduate faculty responses. The participant totals are graduate students $n = 217$, graduate faculty $n = 111$. The answers maintain the same organizational groupings used in the original comparative analysis.

Student survey

Demographics.

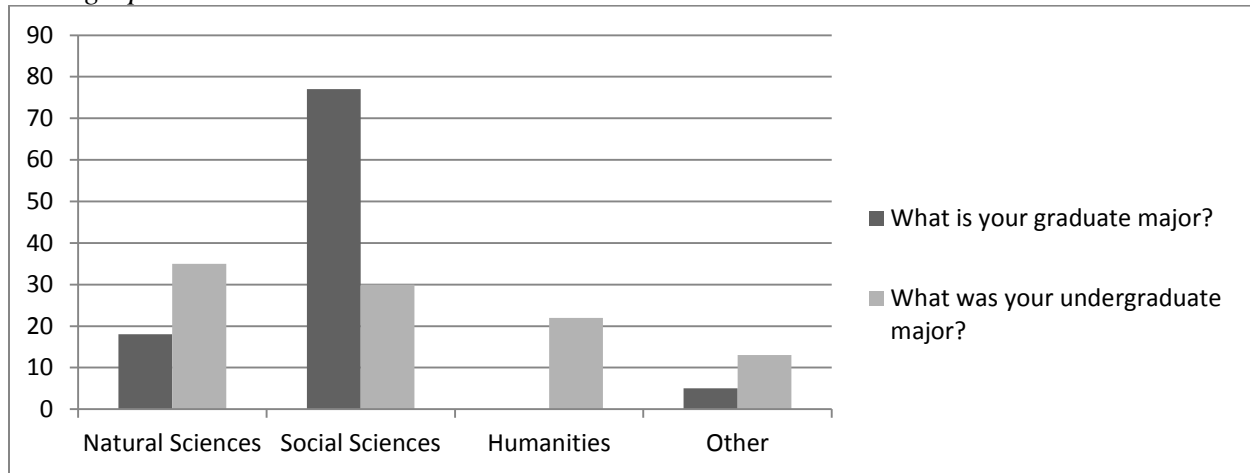


Figure 1: Demographics of students by major.

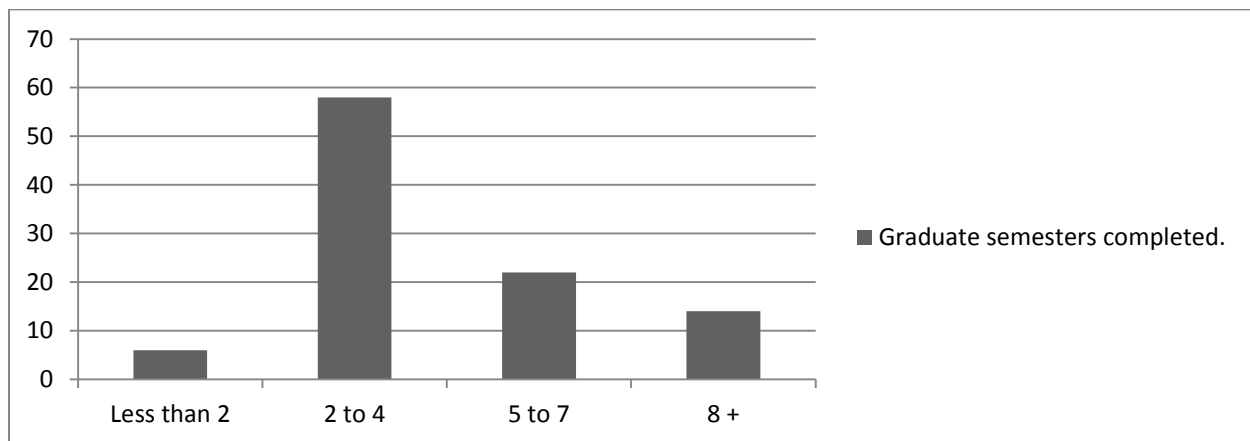


Figure 2: Number of graduate semesters completed.

You can see from figure 1 and figure 2, most of the students are in their second year of graduate studies and a majority of graduate majors are in the social sciences. Of note is the distribution between the undergraduate and graduate majors.

Writing and organization.

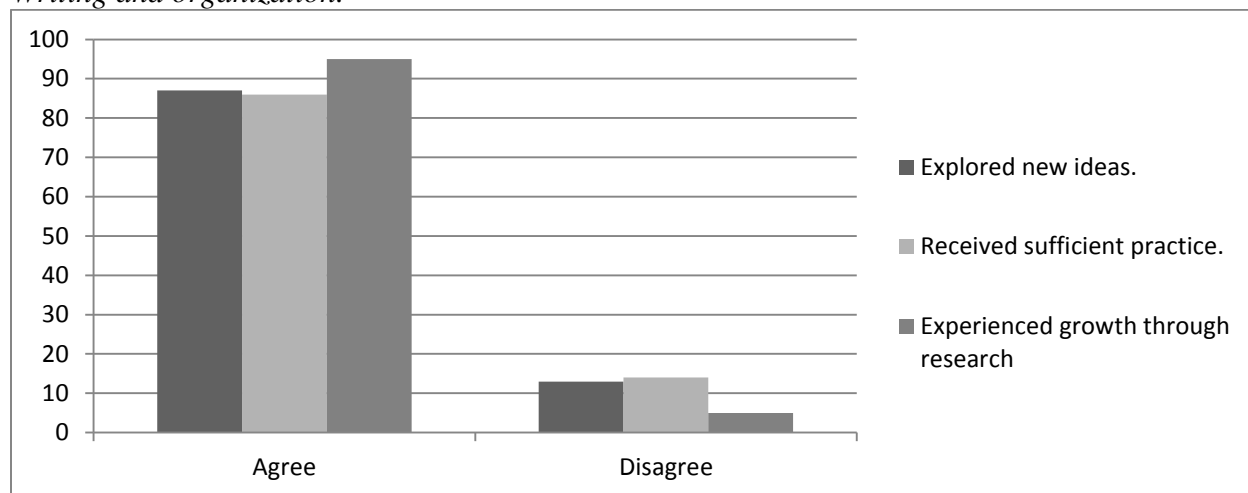


Figure 3: Undergraduate research writing and organization experience.

As seen in figure 3, students overwhelmingly agreed that during their undergraduate years they were able to explore new ideas through the research model presented, received sufficient practice with that model to become proficient in it, and experienced growth through the research aspect of the experience. Despite agreeing that the undergraduate research writing experience produced growth through exploration and practice, when asked what elements of research writing they acquired during the undergraduate years that helped them at the graduate level, only about 27% of answers reflected writing and organization as skills developed sufficiently to help at the graduate level. As one student put the difference in research styles, “Undergraduate level writing assignments are more omnibus in nature, requiring a broad survey of a topic. Graduate level writing is more focused on a single aspect of a topic.” This difference was reflected by the 49% of students who cited writing and organization as important skills they wished they would have learned better to aid research writing at the graduate level. One student got very specific with an area of research writing they felt was lacking, “I would have liked more direct instruction on framing the writing process.” When students were also asked if they would have taken a writing intensive course like a CID course, 82% of students indicated they would have taken such a course voluntarily. In light of these comments, it is no surprise that 71% of students felt that taking a course like the CID courses would better prepare students for research writing at the graduate level, and in response to whether a course like this should be required, one student said, “Two of them!!!!”

Citation.

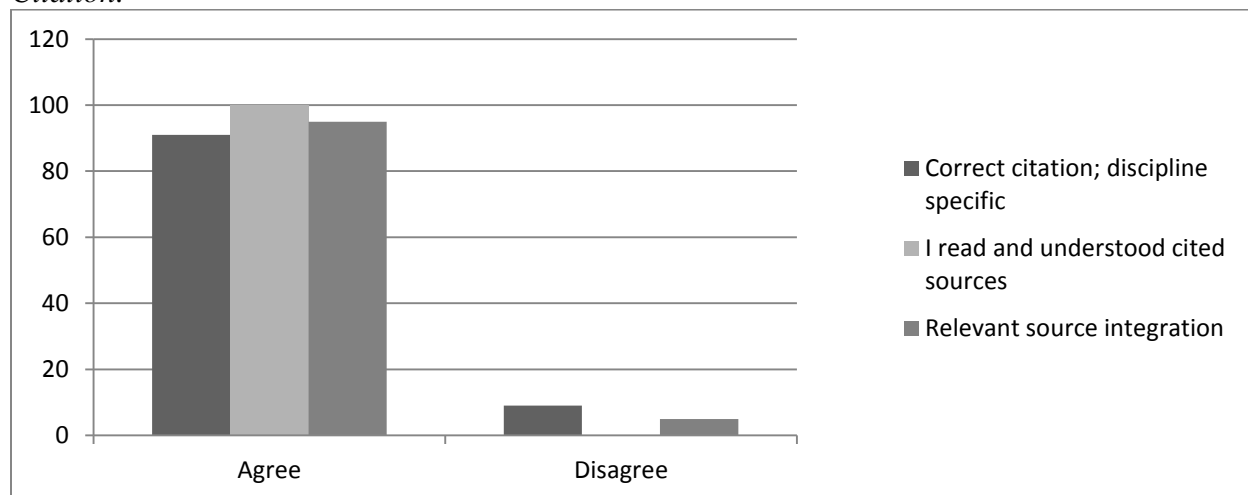


Figure 4: Citation

As seen in figure 4, students felt strongly that during their undergraduate years they learned to read, understand, integrate, and cite sources correctly and specific to their discipline. They echoed this as 44% of students said this was one of the most important skills acquired at the undergraduate level which helped in graduate level research writing. Only 21% of students felt relevant source integration and discipline specific citation was a skill they wished, to some degree, they had learned better in the undergraduate years. One such student's desire was to learn, "the importance of not just citing research but connecting it to current and trending research."

Collaboration.

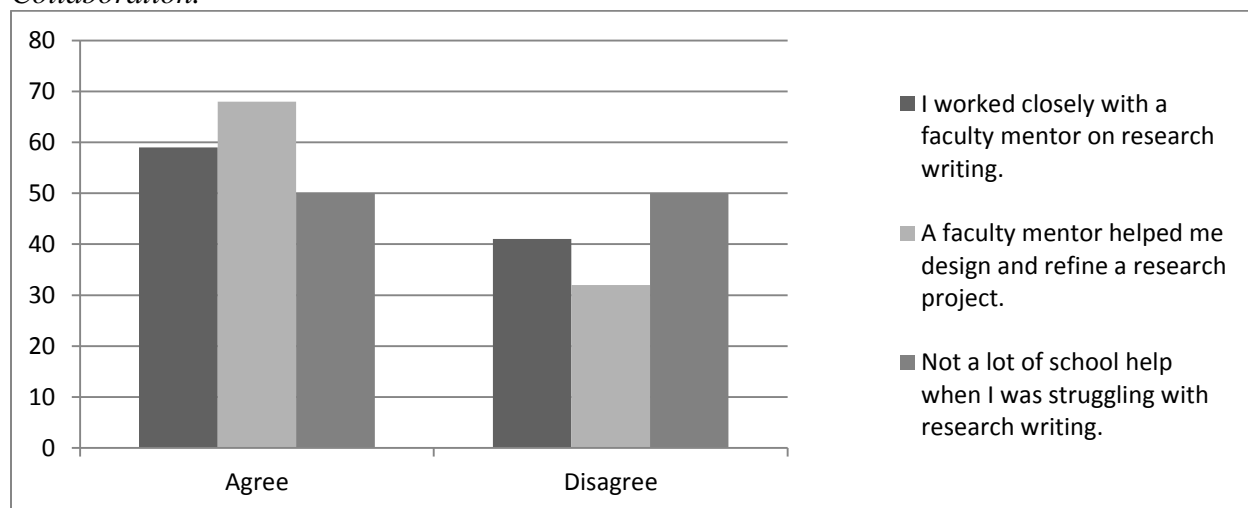


Figure 5: Faculty mentors and help resources.

In figure 5, we see that while some students were able to work with a faculty mentor on designing, refining, and writing a research project, there was a large percentage of students who did not have that experience. There is a split between students with faculty mentorship experience (and whatever degree that mentorship experience involved) and those who do not. Students are evenly split between those feeling there was not a lot of help available when they were struggling with research writing and those who felt there was. When asked what research elements were acquired during the undergraduate years which were helpful at the graduate level, only 3% indicated faculty mentorship or faculty networking. This is well below the 8% of answers indicating students did not learn much of what they wanted/needed to be successful in graduate level research writing. Further indication that faculty mentorship and networking were not viewed as critical skills needed at the graduate level are manifest in the mere 5% of students indicating such when asked what elements they wished they would have acquired at the undergraduate level in preparation for graduate level research writing. Of the students acknowledging mentorship and networking as critical, they desired "discipline hints," and "future direction."

Argument and discipline.

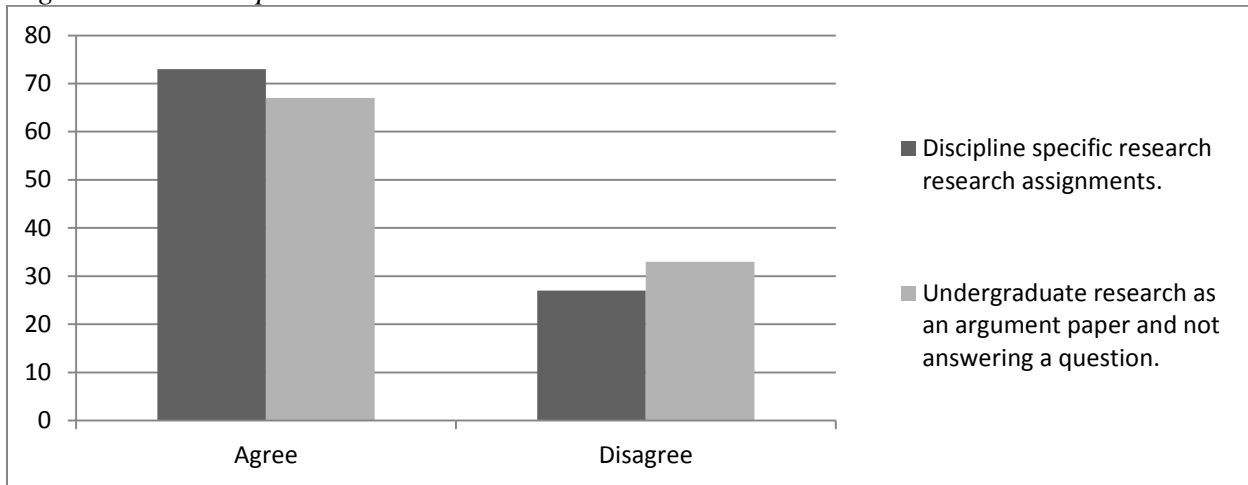


Figure 6: Argument and discipline specific research.

Figure 6 indicates that 73% of students felt they were presented with a discipline specific research model, which they were able to use successfully in graduate level research writing. Of note on this question is that though the percentage indicating agreement is high, the majority of that number answered only “slightly agree” to this particular question. Also of interest is that all 33% of students only slightly disagreed to the statement that, as undergraduates, their research papers comprised simply coming up with a thesis and using outside sources to prove the thesis correct. When students were asked what research elements they acquired at the undergraduate level that helped them at the graduate level, argument and discipline elements comprised only 21% of responses, and similarly, 25% of responses when asked what they wished they would have learned better to help with research writing at the graduate level. Though several students indicated a need for more discipline specific experience, one student summarized it in this way, “In my undergraduate years it was mainly linked to researching based on others' work, rather than conducting interviews, etc. As a result, I was much more competent in reading and analyzing multiple sources, but I was pretty unfamiliar with conducting first hand research of generating data through interviews, observations, etc.”

Faculty survey

Demographics.

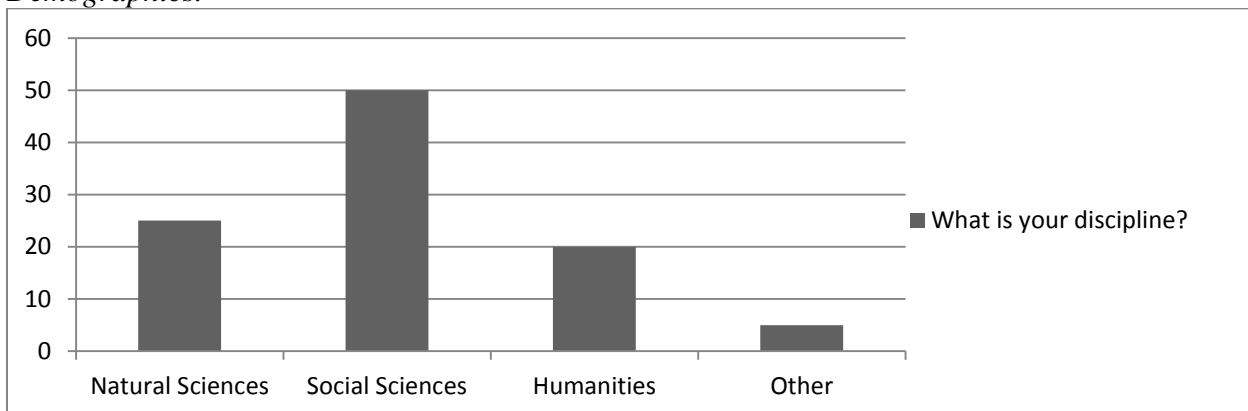


Figure 7: Faculty demographics by discipline.

The demographics in figure 7 indicate that faculty participants were represented across the curriculum, though most came from the social sciences.

Writing and organization.

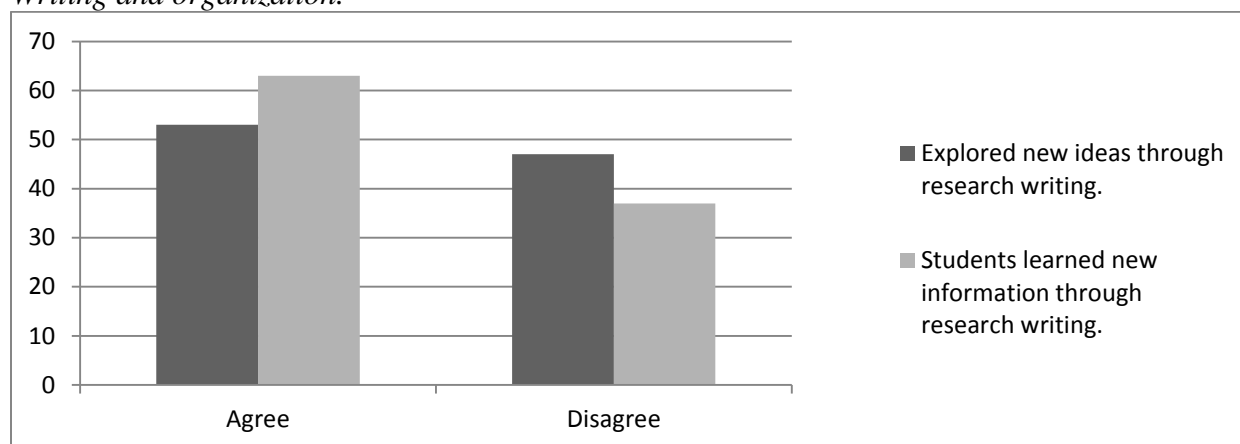


Figure 8: Students explored and learned from new ideas in undergraduate research writing.

In figure 8, we see a relatively even split in faculty opinion as to whether undergraduate students are able to explore new ideas and learn new information through research writing assignments. Faculty agreeing that undergraduate students learned new information in research writing assignments was 63%, as opposed to the 53% indicating agreement that undergraduate students were able to explore new ideas through research writing assignments.

When faculty were also asked what elements of research writing students learned as undergraduates that helped them at the graduate level, writing and organization skills were the top responses with 43%. However, while indicating writing and organizational skills as elements acquired prior to graduate school, the majority of responses qualify the level of writing and organization as basic or minimum levels. This qualifying of answers may be why 48% of faculty responses chose the category of writing and organization as skills they wish undergraduates were more proficient at in preparation for graduate level research writing. One faculty member clearly elaborated on the need for better writing and organization skills by desiring the following, “Grammar, usage, and punctuation rules. Students seem almost oblivious to how and when to use punctuation, to correct usage and verb tense, and to clean grammatical construction. Students also lack research writing skills. For example, many students write technical reports in a creative writing style. They use first person continually and try to be humorous or clever. They also lack an understanding of laying out a report in a logical, organized sequence.”

Faculty also affirmed (90%) that a course, such as the CID course, would significantly alter the transition from undergraduate level research writing to the graduate level for the better. Of those not in agreement, 6% chose “unknown” and cited qualifications such as, “that would depend on how the class was formatted, what the learning objectives were, and how students performed in the course.” Only 69% of faculty said they would, or possibly would, make such a course required. Reservations held about making such a course required at the undergraduate level were centered in two areas: reducing the credits required for graduation from 128 to 120 and requiring another discipline specific course would mean 12 fewer elective credits, and the concern that requiring such a formal academic writing course would not serve students in more application oriented disciplines or students not continuing to graduate studies.

Citation.

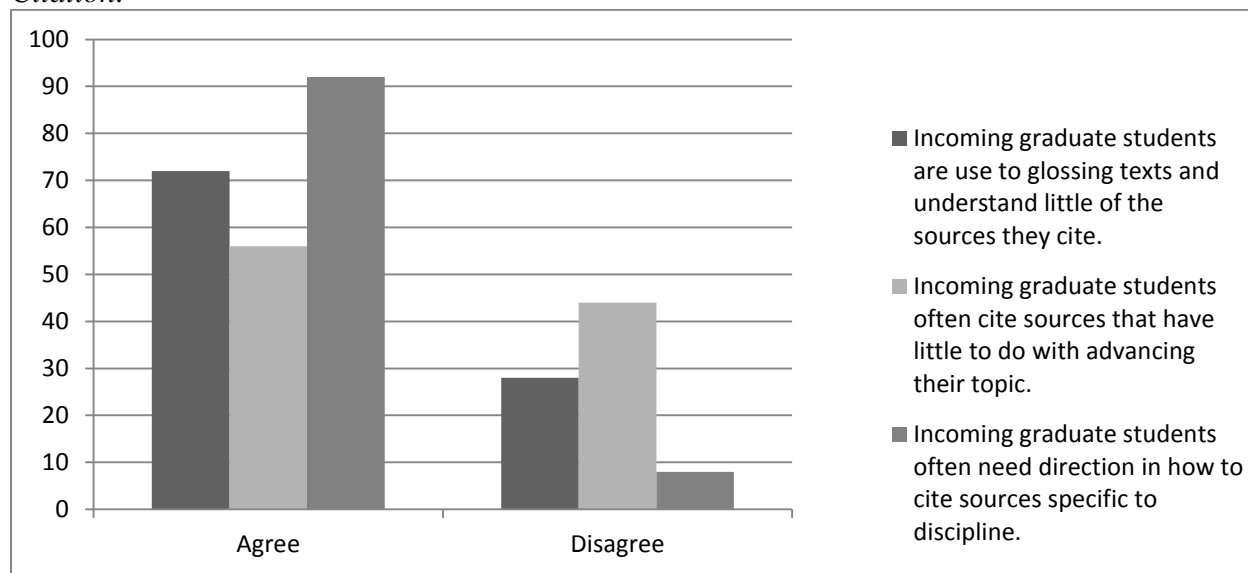


Figure 9: Faculty perspective on undergraduate citation.

Faculty views diverge significantly from students' in the area of citation. Faculty felt that incoming graduate students struggle with reading, comprehension, evaluating, integrating, and discipline specific citation. Responses total 72% for faculty believing students are used to glossing texts and understand little of the sources they cite, 56% for those believing incoming students often cite sources that have little to do with advancing their topic, and 92% for those indicating incoming students often need help citing sources specific to their discipline at the graduate level. One respondent, when asked what three things they wished students would have learned at the undergraduate level to help them with graduate level research writing, said "Not in any order: correct citations, using citations to support their argument, determining good sources from questionable sources." Of all answers given to this same question, 18% were in the area of citation.

When asked what are the most important research writing elements desired of incoming graduate students that they did not acquire sufficiently at the undergraduate level, 22% of responses indicated some aspect of source citation. The largest portion of responses was in the area of evaluation and meaningful integration of sources. One respondent wished incoming students knew "how to critically assess research sources rather than simply finding and citing them."

Collaboration.

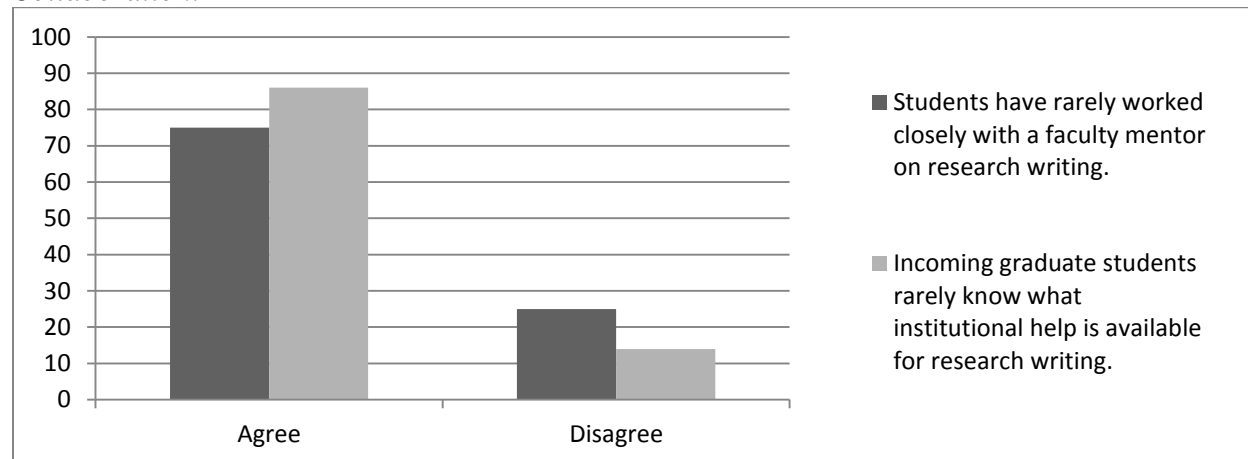


Figure 10: Collaboration and institutional help.

Faculty felt that students were not too familiar to the close mentor relationships common at the graduate level (75%), and 86% felt incoming graduate students were unsure of what institutional help was available to them when struggling with research writing. Not a single participant responded that collaboration (including mentors, departmental networking, and institutional navigation) was an element acquired sufficiently to aid in graduate level research writing. Additionally, only 2% of faculty indicated anything in the area of collaboration as among the most important skills they desired incoming graduate students would have learned during the undergraduate years to help them at the graduate level.

Argument and discipline.

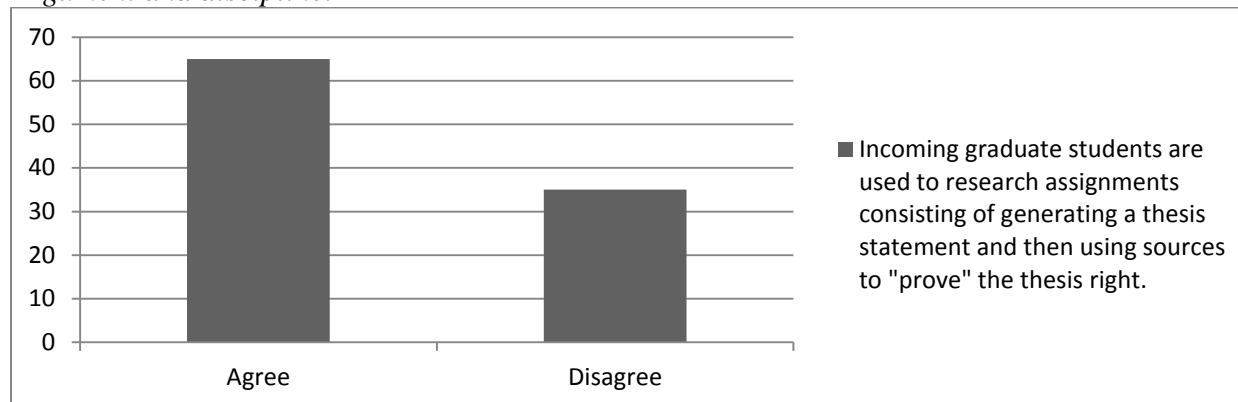


Figure 11: Argument as the primary form of undergraduate research.

Faculty who thought undergraduate research writing consisted primarily of argument style essays (assignments are primarily a thesis statement, and outside sources are used only to support the thesis—no original data is collected through a carefully designed experiment/study) represented 65% of responses. A lack of knowledge and experience in diverse or discipline specific research was further illuminated by the mere 9% of answers relating to what research writing elements incoming graduate students learned as undergraduates that helped them at the graduate level. However, the number of responses rose to 28% when they were asked what were the most important things faculty wished incoming graduate students would have learned during the undergraduate years to aid them in transitioning to graduate level research writing.

Interviews

The interview questions were in areas consistent with the surveys but probed deeper into factors contributing to the success or failure in acquiring specific skills at the undergraduate level which would aid the transition to graduate level research writing. Total interviews: students $n = 2$, faculty $n = 1$. The interview questions can be found in faculty and student versions in appendix C and appendix D.

Writing and organization. In this portion of the interview there were expressions of either a lack of more advanced writing skill, or a lack of confidence in the skills that were acquired during the undergraduate experience. There was a clear consensus that there is a difference between what is acceptable at the undergraduate level and what is expected at the graduate level. One respondent believed the greatest help needed by incoming graduate students was in writing, but allowed that different disciplines prepare students differently. They also noted that many students change their graduate major from what their undergraduate major was, so it affects the style of writing and discipline specific preparation that undergraduates might wish to go through. When asked how long it takes to come up to speed with graduate level research writing expectations, another participant responded, “That depends on many factors: cognitive development, work ethic, desire to learn, goals (such as deep understanding vs. just enough to get by and get a degree), plans to apply to career outside of the program vs. just getting a degree, willingness to seek help and access resources/services available, attention span in courses, focus in class.” They went on to say that despite the discipline or the student’s future goals with the degree, “All students should be able to read critically, analyze, and synthesize. They should also be able to effectively communicate ideas in writing and speech.”

Citation. Citation was addressed by participants less as a skill, and more as a matter of attention to detail and an indication of personal excellence in writing. In one example, a participant mentioned a change in majors from the undergraduate to the graduate and therefore needed to change the citation style he used. He said, “I used MLA for undergrad and then needed to switch to APA for graduate because of the English—Education shift. However, since I knew how to access a handbook, it was fairly easy to familiarize myself with APA. It was more about knowing how to use the resource than knowing the specific style.” It was acknowledged that citation styles change with time, but spending the time to cite properly gives credibility to the writing and builds the knowledge base and background of the student.

Extended time between an undergraduate and graduate education was commented on as having an effect on the confidence of the student to cite properly, especially if there have been changes to the citation style or even a change in majors.

Collaboration. Collaboration at the undergraduate level was mentioned only a few ways, such as help for students wishing to take advantage of professor help, usually via email or office hours, when struggling with research writing. The other mention of collaboration was in peer reviewing of work in a writing class or group projects for others. Collaboration seemed to be viewed as less important until the graduate level. One student relates, “As a graduate student at BSU, one of the professors in the first course for the core classes took us to the library to meet Margie Ruppel. She familiarized us with the library site that is set up specifically for educational majors at the graduate level. We had a chance to utilize the resources and ask her questions while we were there. That was a key resource for accessing articles throughout my doctoral program.” There was no other mention of mentor relationships, departmental navigation, or professional networking.

Argument and discipline. The elements comprising argument and discipline go hand in hand with the elements of writing and organization. It seems the only distinction is the thought from the action, for instance, being able to think through a logical argument to a specific conclusion and being able to communicate that process through writing. While being able to communicate through writing was felt to be needed across the curriculum, the need to develop critical analytical, deductive and correlative research skills is every bit as necessary. The faculty member interviewed was in the process of designing a course similar to a CID course for their department and their criteria illuminated these very skills. “The idea is to create a course that is writing-intensive and gives students the opportunity to learn the draft revision process that professional academics undertake. Students will study essential concepts in [their discipline]. Students will learn about thesis statements, hypothesis formation, utilization of evidence to test hypotheses, and write precise conclusions based on the evidence. Learning these skills will serve students well in the graduate environment.”

While it was addressed that requiring courses intended for students pursuing professional academics was not practical for all students in all disciplines, it was generally noted that these same skills would serve those entering the job market after completing a bachelor’s degree, too. Continuing a student’s prior quote, “All students should be able to read critically, analyze, and synthesize. They should also be able to effectively communicate ideas in writing and speech. Students should be able to engage in debate linking arguments back to research, but also their own life experiences to analyze how research aligns with practice. Those are important research skills but also important life skills and foundations of a democratic society.”

Reading in the discipline was also mentioned in the interviews as a boon to graduate school success. One student said, “As an undergrad, I read only what I had to get by. That was mainly the sources I needed for what they called research papers in 102. When I got here to grad school, it was like being thrown into an ocean of new information, research methods, and understanding of just what the heck I was getting into. I had to make a huge decision early in my Masters if this’s really what I wanted to do with the rest of my life. Unless I was nearly drown in research articles that soon, I wouldn’t have really understood what my job was.” The faculty participant mirrored these sentiments by offering, “I am uncertain that students read enough of the literature. It’s all too easy with digital sources to glance through the literature without truly reading it and appreciating its [craft].”

Discussion

In examining the results of the surveys, it must be noted that though there were 217 students and 111 faculty participants, not all of these contributed to every question on the survey. The numbers represented as percentages are the percentages of those who contributed to that question. Participants who contributed to every question were: students $n = 21$; faculty $n = 92$. This is important because some of the survey questions received

opposing answers between students and faculty, and it is relevant to the extent that any interpretation of such contradictory answers may be due to a limited number of responses to that question. In the case of the student survey, and due to screening in the first section of the survey, the majority of questions in the later portion were answered by not more than 30 students. This may indicate that responses that diverge from faculty responses, especially strongly contrasting answers, may be caused by a narrow student demographic who are better prepared for research writing at the graduate level than the average student is.

Discussion of the comparative analysis

In the original comparative analysis, an attempt to break down college level research writing allowed four general areas of consideration and individual research writing elements to be categorized within them. By structuring elements in this way, additional information and patterns were able to be gleaned. The areas are more dynamic than absolute and many research writing elements overlap. One such example is that of the general outline or structure of a research paper. It is listed in the writing and organization section because understanding how to communicate an idea through writing is more or less effective depending on how the paper is written. However, because the conventions of the various disciplines differ in how they construct and present data in relation to the conclusions drawn, what constitutes effective organizational form overlaps significantly into the Argument and Discipline category. There are many such examples throughout this analysis, yet it was felt that the conclusions deduced from the analysis as a whole, and not the argument as to which category each element belonged to more, were of the most importance.

An area of importance illuminated by the analysis of undergraduate and graduate level research writing was the discovery of at-risk elements. By listing and categorizing research elements, then removing elements common to both levels of research writing, elements emerged which are specific to graduate writing. When examined, these elements were considered to be critical to the success of the graduate student yet were under-addressed or not addressed at all, at the undergraduate level. This discovery of defined at-risk research elements is of extreme importance if students and institutions alike desire a better level of preparedness in incoming graduate students. Some at-risk elements appear at face value to share an undergraduate counterpart, such as writing and revision skills, yet data from the surveys and interviews distinguish the clear difference between what is acceptable at the undergraduate and graduate levels. The elements of *advanced* writing and revision skills are therefore still considered at-risk elements because they are critical to success at the graduate level yet are not always required to earn a bachelor degree. There are at-risk elements in all four categories, but they are not distributed evenly between them.

A pattern emerged in the distribution of at-risk elements among the four categories. While the list of undergraduate level research writing elements was relatively evenly distributed among the four general areas of consideration, the graduate elements were not. They favored argument and discipline as well as discipline specific citation skills. When elements common to both lists were removed to reveal a list of at-risk elements, the distribution of elements heavily favored the argument and discipline grouping. The at-risk elements in this area now had twice the number of elements as the next largest grouping. This group includes such elements as being familiar with readings specific to your discipline, interest and motivation towards your research, and understanding and incorporation of discipline specific theory into your research writing. These elements *can* be found at the undergraduate level (every discipline prepares its students differently) but the majority of students can get by without them. On the other hand, these elements are critical to excellent graduate level research writing.

Discussion of writing and organization

The area of writing and organization overlaps with discipline probably more than any two other areas. It is almost impossible to separate the writing aspect of a discipline specific research paper from the discipline itself, because what constitutes good writing skill varies with the convention of the discipline. The distinction as to whether an overlapping element fell into the writing and organization category or the argument and discipline category was that of theory and practice. To know the applicable theory needing to be applied to data interpretation fell on the discipline side, whereas the actual practice of how to format, organize, and communicate those theories fell into the writing and organization category. The importance of this is recognizing that incoming graduate students may have an idea of what they want to communicate in a research paper, but not do it effectively because of a lack of writing or revision skill.

As a skill, it was the most desired element by both graduate students and faculty alike and represented the largest area of agreement between the two groups. Graduate students answered more than 3:1 above any other that they wished they would have acquired better writing and revision skills in preparation for graduate research writing. Similarly, faculty answered almost 4:1 above any other answer that better writing and revision skills were what they wished incoming graduate students would have learned as undergraduates. Some faculty, when asked what three things they wished incoming graduate students would have learned, said some aspect of writing for all three answers. If writing is so desired by both faculty and graduates, why isn't the skill at the level where each desires it to be? In the student surveys, participants indicated strongly that they had undergraduate opportunities to explore new ideas, experience growth through research, and that they received sufficient practice to solidify the model of research writing being presented. If this is indeed the case, why would students feel so strongly that they wished they would have had better writing skills to prepare them for graduate level research writing? Perhaps the model of research being presented is not as beneficial to the student's long term academic goals as it could be. It may also be that students only believe they have a grasp of the undergraduate model and only perceive themselves as practicing it well. Additionally, could it be that the undergraduate research writing model was open-ended so as to transition into graduate level research writing, yet students are less successful at recognizing it or transitioning? In the words of one interview participant, "Students don't know what they don't know."

In examining the original list of at-risk elements, the expectation might be that writing and organization would be lower on the list of desired skills since it only has two elements as opposed to the eight listed in another area. Why then is it the area receiving the most attention. It might not be that students did not learn writing or organizational skills at the undergraduate level, but rather there is so much needing to be learned between high school and graduate school that only a small percentage of students are truly prepared for graduate level research writing. If this is the case, perhaps more exposure and practice would bring a larger percentage of students up to the desired level prior to graduate studies. The cost of such a solution would unfortunately be fewer electives or more credits required for graduation.

Discussion of citation

Citation was the area of greatest disagreement between faculty and students. Students felt overwhelmingly (100%) that they read and understood the sources they cited in undergraduate research papers. Further, they strongly indicated that they only used relevant sources (95%) and that they cited them correctly, specific to their discipline (91%). On the other hand, 72% of faculty reported that incoming graduate students are used to glossing texts and understand little about the sources they cite. They also stated that incoming graduate students cite sources that have little to do with advancing their topics (56%), and students often need direction in how to cite sources properly, specific to their discipline (92%). When asked about such diverging answers during the interviews, all respondents felt the most likely cause was that as undergraduates, students are not aware of the higher standards required at the graduate level, and therefore felt they were doing better than they actually were in relation to graduate level requirements. On the surface this seems a plausible explanation, but that doesn't account for the fact that these were graduate students who were aware of the higher requirements at the time of reporting. Thus, they were either reporting as though they were advanced undergraduates, aware of and (to some degree) completing graduate level work, or they really were advanced undergraduates and not representative of the average student which the faculty were reporting on.

Though the results of the surveys and interviews do not lead to a clear conclusion in regards to the disparity between answers about citation, in another section of the survey, students listed citation as the second most desired skill they wished to have acquired during their undergraduate experience, behind writing and revision skills. Faculty, when asked the same question, listed citation as the third most desired skill to attain in the undergraduate years. When estimating how important citation would be at the graduate level, it rated far higher as a desired element than anticipated. Perhaps, like writing, there are gradations of proficiency and students only progress so far along that path prior to graduate studies. In light of the many instances citation comes up on the list of important skills, perhaps the interviews leaned a little closer to the correct interpretation, in that memory can be a fickle thing when compared to a current, real desire for improvement in certain areas.

Discussion of collaboration

Collaboration is one of the smaller areas of emphasis being examined, yet no less important. In the original comparative analysis, almost nothing from the list of elements associated with graduate level research writing was

had in common with the undergraduates. Discussion about some of the items included in this area might even be brought into question as an actual “element” of research writing. This might include group project collaboration, mentor relations, or even institutional navigation. Just having the experience of doing this research project, I was thrown into what seems like the deep end of the pool. For the first time, I was introduced to faculty mentorship and worked with or had to navigate permission through the English and Education Departments, the Office of Student Affairs, the Office of the Provost, the office of Institutional Analysis, Assessment, and Reporting, the McNair Program, and the IRB. All this was necessary to collect original data for a single research project. The greater benefit was that I now realize that this really was not the deep end of the pool. There are far more complex research projects involving elements such as grant writing and corporate, governmental, or even multi-institutional rules and compliance. The crux of the matter is this: these are indeed elements of research writing because most research writing at the graduate level cannot be done without at least some degree of collaboration and navigation.

The research elements comprising this area are, by nature, not a requirement for the bachelor’s degree, and are therefore less available to undergraduate students. Although, there are opportunities for those students would like to have faculty mentors and to participate in institutional navigation to do so individually in preparation for graduate studies. It appears that some of the students surveyed had the opportunity to work closer than the average reported by the faculty.

Discussion of argument and discipline

Argument and discipline represent the largest area of at-risk elements. Like collaboration, few of the elements encountered at the undergraduate level adequately prepare students for the requirements of graduate level research writing. Part of this may be due to the difference between what gains a passing grade at the undergraduate level is a night and day difference from the graduate level. Passing grades at the lower level are represented by a “C” average (though it is unlikely that graduate programs are interested in such students), but many graduate programs require students to maintain around a 3.5 GPA to keep in good standing (with a greater workload of more complex work). Undergraduates can simply “get by” in classes not specific to their discipline, while every class is specific to your discipline at the graduate level.

One interview participant brought up that many graduate students change degree paths between the undergraduate and graduate levels, so discipline knowledge was even harder for those students. The demographics of the graduate student survey certainly indicate some shifting of majors between levels. However, that participant also brought up that there were many critical thinking skills which transfer readily across degrees. I would also suspect that skills such as critical thinking, analysis, integration of outside sources, and communication of specific conclusions drawn from data would transfer readily to any discipline. This would seem that developing a strong base in core areas would significantly aid all students and most especially those even remotely considering a degree change between their undergraduate and graduate studies.

While building a strong base in argument and analytic skills seems like sound advice, it still leaves the discipline specific elements to be obtained at the graduate level. If all other research writing skills were developed to a sufficient level so they wouldn’t require excessive time at the onset of graduate studies, becoming familiar with a discipline might not seem that daunting. The problem lies in the fact that the evidence shows that all other research writing skills are found wanting and require significant time at the onset of graduate studies. The logical solution then is for students to become more familiar with their discipline through readings, collaboration, and undergraduate research writing specific to that discipline. One might even posit that if more was done in the discipline as undergraduates, there would be less changing of majors at the graduate level.

Discussion of CID courses

The idea of a course like the CID course found favor with both the faculty and the students who see the value of it from the graduate student perspective. There are several concerns with developing and instituting a course like this. The first of which is application. One faculty survey participant objected to a course like the CID citing that putting a new name on an old course changed little. Others furthered the concern that instructors of certain disciplines were not prepared or motivated to teach a writing intensive course to students who would only have to take it because it was required. This does raise the question of how courses would be designed (from the ground up) or redesigned (from an existing course) to fit the outcomes of the CID course. It also brings to light the need for qualified professors in each department to teach these courses, and where those qualified faculty will come from. Boise State already has in place a faculty support network to ensure faculty are prepared to handle the CID courses, but some respondents remained skeptical.

Another concern in instituting the CID courses was whether or not they should be required. Though there was strong support for a class like this being offered, it was less supported that it should be required. Some cited that doing so would take away yet another three elective credits from students already complaining about how few they have left (especially in some of the stem fields). Others mentioned the proposed shift from 128 credits necessary to graduate down to 120. Assuming the eight credits being eliminated were elective credits, making the CID required and moving to 120 credits would take 12 elective credits from students.

Another concern is that of a graduate school grooming course being required by the approximately 75% of students who will not pursue graduate studies. Though this is intended as a discipline specific writing intensive course, this is not intended as a graduate grooming course. Remember, this is a sophomore level course intended as a prep course for senior research in finishing foundations courses. The intended skills learned and applied in this and the finishing foundation courses are not only applicable to graduate studies, but also provide a valuable platform of experience in applying critical thinking and communication skills in oral and written forms. This would certainly benefit those students moving into the job market as well as those pursuing graduate studies.

Additional advantages which may be offered in requiring a course like the CID include exposure to new and relevant readings in the discipline. These readings were certainly called for by study participants and would give students a better picture of what their chosen major entailed. It might be interesting to examine future data on the changing of majors for students who have just completed a CID type course. In the least, the additional discipline specific readings should ease the transition into graduate studies as it provides models of research writing and conventions of communication that the student can emulate in their own research papers.

Conclusions and Recommendations

What is reasonable to conclude from this study comes in two areas. The first is that of undergraduate to graduate level research writing disparity. There certainly exists a difference between the two, and the gap is significant enough to cause many students to be unsuccessful in graduate studies. This gap constitutes many at-risk areas of research writing and there are ways of narrowing that gap to allow lower attrition rates in first year graduate students. The gap appears to be caused, at least in part, by the quantity and quality of information and research writing skills which undergraduates must obtain during their short undergraduate experience. The more that is gained at the undergraduate level, the narrower the gap; undergraduate proficiency equates to more students finding success in graduate level research writing. If information, access to faculty, and the opportunity to practice reading, writing, and research in the discipline are placed in the direct undergraduate path, better prepared students are the logical result.

In order to better prepare students, additional exposure and opportunity to practice specific at-risk elements are critical. These elements, dispersed through the four areas of emphasis, often work in concert and don't have to be addressed individually. For example, assigning one additional (longer) discipline specific research paper, with more citation sources and an oral presentation, could address the at-risk elements of: organization, formatting, and communication in larger more substantial discipline specific papers; readings or familiarity with discipline; framing a viable research question; organizing and writing a literature review; additional practice in writing and revision skills; discipline specific citation; finding, evaluating, and incorporating relevant sources into research papers; and presenting research findings in a public setting. Such an assignment might also include a library or writing center component to expose students to additional support personnel and help resources. Additional requirements could incorporate even more at-risk elements. Some disciplines may also include some degree of individual faculty advisement (mentorship) or simple elements of new data gathering, interpretation, and integration of that data into the project. The addition of original research elements could allow students the opportunity to design the research project around and use discipline theory as the foundation of their research. Viewed in this way, perhaps a single additional research assignment, complex and time consuming as it may be, would address the majority of at-risk elements comprising the gap and would give students a better idea of the type of work expected at the graduate level. Students then have the opportunity to make more informed decisions about graduate school and be better prepared should they decide to pursue it.

Conclusions can also be drawn about the CID courses. It was clear that students and faculty alike desired to have a course available like the CID, but many felt that it should not be mandatory. A strong positive response by students when asked if they would have taken a class, coupled with a similarly strong indication that such a course would better prepare students for graduate studies, clearly indicates their recognition of the value of information and practice contained in the course. Faculty also responded (90%) that such a course would ease the transition from undergraduate level research writing to the graduate level. The biggest reservations by faculty in making such a course required was the loss of elective credits and whether the course could actually function as designed. The loss

of electives is a whole can of worms in and of itself, but to be succinct, is the trading of a single elective course worth the significant edge gained by taking a CID course? I suggest that it is, and that all students should be exposed to the information contained therein. After all, the process is about the education, and who says a student cannot voluntarily take the extra credits and graduate with 123 instead of 120 if the elective is that important.

In light of evidence and strong opinions voiced through this study, I agree that the CID courses should be mandatory for the benefit given to all students, not just to those going on to graduate studies. This endorsement comes with recommendations of its own. To address the concern raised by several faculty that the courses or instructors would not live up to the outcomes intended, there must be sufficient faculty training and support for those disciplines not accustomed to instructing reading, writing, and research intensive courses at the undergraduate level. There also should be a monitoring system set in place by each department to gauge if the course outcomes are being met.

From the beginning, BSU's Center for Teaching and Learning (CTL), the Foundations Program, and the Writing Center have offered a significant amount of training and support for CID teachers. In the fall of 2010, faculty members were asked to collaborate on the design and outcomes of the CID courses in relation to, and as a component of, the Foundations Program. It was followed up by a series of retreats to help CID course instructors design a syllabus specific to each discipline. CID Institutes, a series of workshops aimed at faculty training and pedagogy, were in place and running by the summer of 2011. All these were mandatory and gave a small glimpse at the time, effort, and expense invested by the university in developing this series of classes. Ongoing support is offered by BSU through online resources and through the Writing Center. The Writing Center offers a virtual CID Coffee House as well as a real CID Coffee House. Writing Center Director Dr. Clyde Moneyhun even brings homemade muffins for those who attend the weekly CID Coffee House at the Writing Center. There is also a CID Mentors Program through the Writing Center. The strong foundation behind the CID course development, coupled with ongoing support and training, are a testament that this isn't (as one faculty put it) putting a new stamp on an old course. The question is whether the CID courses maintain the high standards designed from the beginning.

It is understandable that there will be some growing pains and necessary adjustment when broadly instituting such a series of courses. Yet if there is reasonable attention given to the ongoing success of the course, it will be more than putting a new stamp on an old course, it will be giving students access to the information and experiences needed to succeed in research writing at the graduate level. As the courses began in the fall of 2012, the ongoing training of faculty and course evaluation is the responsibility of each department. I would recommend that departments commit to the ongoing training of CID faculty and make them aware of support resources (especially those offered by the Writing Center). In addition, there needs to be some departmental means of tracking course success for making adjustments to the courses over time. I recommend that administrators in the Foundations Program and in academic departments examine the CID course to see how it might address the gaps I have identified in this study and to use this information for the ongoing benefit of students seeking to be better prepared for research writing at the graduate level.

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Appendix A

Faculty survey

Faculty Demographic:

1. Have you taught at least four graduate level courses?
2. Discipline in which you teach?
3. Are you currently, or have you ever been, a faculty mentor for a student working on a significant research project?

Questions: Answered as "strongly disagree, disagree, somewhat disagree, somewhat agree, agree, strongly agree."

1. Incoming graduate students were asked to complete research writing assignments during their undergraduate years which allowed them to explore new ideas through the research aspect of the writing assignment.
2. Incoming graduate students were asked to complete research writing assignments during their undergraduate years in which they discovered new information through the research portion of the writing assignment.
3. Incoming graduate students were asked to complete research writing assignments during their undergraduate years which consisted primarily of a thesis statement then using sources to "prove the thesis right."
4. Incoming graduate students have already acquired a model of research writing which they will be able to successfully use at the graduate level.
5. Incoming graduate students have had sufficient practice at the undergraduate level learning research writing.
6. Incoming graduate students are used to glossing texts and understand little about the sources they cite for research papers.
7. Incoming graduate students often cite sources which are have little to do with advancing the topic in their research writing assignments.
8. Incoming graduate students often need direction in how to cite sources properly for research assignment specific to their discipline.
9. Incoming graduate students rarely, if ever, have worked closely with a faculty mentor on research writing.
10. Incoming graduate students rarely know what institutional sources are available to them to help with research writing.

Text Box Questions:

1. What elements of research writing did graduate students acquire during their undergraduate years which you find helps them at the graduate level?
2. What are the three most important things you wish graduate students would have learned at the undergraduate level to prepare them for graduate level research writing?
3. If graduate students could have taken a course as an undergraduate which taught language, research, documentation, and writing specific to their discipline, how significantly would this alter their transition to graduate level research writing?

4. Would you make such a course required for their Bachelor degree?

Appendix B

Student survey

Student Demographic:

1. Number of semesters of graduate school completed?
2. Average number of credit hours completed per semester during graduate school?
3. Have you completed, or are you currently working on, any significant research or writing projects which you are working on with a faculty mentor at the graduate level?
4. Undergraduate major?
5. Graduate major?

Questions: Answered as "strongly disagree, disagree, somewhat disagree, somewhat agree, agree, strongly agree."

1. During my undergraduate years, I was presented with research writing assignments which allowed me to explore new ideas through the research aspect of the assignment.
2. During my undergraduate years, I discovered new information from the research portion of research writing assignments.
3. When I wrote undergraduate research papers, I was only coming up with a good thesis statement then using external sources to prove my thesis.
4. During my undergraduate years, a model of research writing was presented which I was able to later use successfully at the graduate level for research assignments.
5. During my undergraduate years, I was given enough research writing assignments to allow me to adequately acquire the research model being presented.
6. In my undergraduate research writing assignments, I read and understood the sources I was citing.
7. In my undergraduate research writing assignments, I cited only sources which were important to my research topic.
8. During my undergraduate years, I learned how to cite research sources correctly, specific to my discipline.
9. During my undergraduate years, I worked closely with a faculty mentor who helped me specifically with my research writing.
10. During my undergraduate years, I worked closely with a faculty mentor who helped me design or refine my research projects.
11. During my undergraduate years, I felt there wasn't much help available to me, from the school, when I was struggling with research writing.

Text Box Questions:

1. What elements of research writing did you acquire during your undergraduate years which you find helpful at the graduate level?
2. What are the three most important things you wish you would have learned at the undergraduate level to prepare you for graduate level research writing?
3. If you could have taken a course as an undergraduate which taught language, research, documentation, and writing specific to your discipline, would you have taken such a course?
4. Would taking a course like the one mentioned previously significantly alter the transition to graduate level research writing?
5. Would you make such a course required for a Bachelor degree?

Appendix C

Faculty interviews

1. Compare research writing at the undergraduate/graduate levels in your discipline and identify what you feel are the main differences. When and how do grad students learn these main differences?
2. How well is the average incoming graduate student acquainted with the language, citation, and research methods of their chosen fields? Are they familiar with the process of organizing, conducting research, and

writing quality research papers when they first enter graduate school? If they aren't well acquainted, how much time/effort does it take students to "come up to speed" in these areas?

3. What institutional/departamental help resources, specific to research writing, are available to grad and undergrad students? Do you think students at both levels are generally aware of these resources? Are these resources adequate for the success of each group? What research writing resources would you *like* to see for each and why?
4. Being as specific as possible, if you could design an undergraduate writing class that was specific to your field, and make it required for the bachelor degree in that field, what key elements would you include in its curriculum and why? How would these elements serve students going on to graduate school as well as those entering the job market after their undergrad?
5. Describe in as much detail as possible what you feel are the most common areas of graduate level research writing which incoming graduate students need the greatest help with. Would the class you designed in question five address these areas?
6. What other/outside/social elements adversely influence the quality of research writing at the graduate level?
7. Estimate the percentage of students you anticipate will conduct research for publication in your discipline after completing graduate school. How does this number correlate with the difficulties students have with research writing during graduate school?
8. There is considerable debate over what should be taught in undergraduate writing courses because only about 25% of undergraduates go on to graduate school. What can/should be taught in the area of research writing at the undergraduate level which would benefit all students despite their diverse professional or academic direction?
9. When examining what should be taught at the undergrad level, what/where is the balance between where it currently is, general familiarity with graduate level research writing, and trying to teach proficiency before they get there?
10. During the survey portion of this research, there seemed to be disagreement between the grad students and faculty surveyed with respect to the level of incoming grad student preparedness. Many of the students (most students surveyed are currently in their second or third years of grad school) felt they were personally prepared to a greater degree in research writing than faculty thought the average incoming graduate student was. What could explain so many students having a retrospective feeling of preparedness when most faculty thought the average student was less prepared? For instance, 72% of faculty thought graduate students (while as undergraduates) were, to some extent, used to glossing texts and understood little about the sources they cite. On the other hand, 100% of students (to some degree) agreed that as undergrads, they read and understood the sources they cited.

Appendix D

Student interviews

1. Compare research writing at the undergraduate/graduate levels in your discipline and identify what you feel are the main differences. When and how do grad students learn these main differences?
2. How well is the average incoming graduate student acquainted with the language, citation, and research methods of their chosen fields? Are they familiar with the process of organizing, conducting research, and writing quality research papers when they first enter grad school? If they aren't well acquainted, how much time/effort does it take students to "come up to speed" in these areas?
3. What institutional/departamental help resources, specific to research writing, are available to graduate and undergraduate students? Do you think students at both levels are generally aware of these resources? Are these resources adequate for the success of each group? What research writing resources would you *like* to see for each and why?
4. Being as specific as possible, if you could design an undergraduate writing class that was specific to your field, and make it required for the bachelor degree in that field, what key elements would you include in its curriculum and why? How would these elements serve students going on to graduate school as well as those entering the job market after their undergraduate?
5. Describe in as much detail as possible what you feel are the most common areas of graduate level research writing which incoming graduate students need the greatest help with. Would the class you designed in question five address these areas?
6. What other/outside/social elements adversely influence the quality of research writing at the graduate level?

7. Estimate the percentage of students you anticipate will conduct research for publication in your discipline after completing graduate school. How does this number correlate with the difficulties students have with research writing during graduate school?
8. There is considerable debate over what should be taught in undergraduate writing courses because only about 25% of undergraduates go on to graduate school. What can/should be taught in the area of research writing at the undergraduate level which would benefit all students despite their diverse professional or academic direction?
9. When examining what should be taught at the undergrad level, what/where is the balance between where it currently is, general familiarity with graduate level research writing, and trying to teach proficiency before they get there?
10. During the survey portion of this research, there seemed to be disagreement between the graduate students and faculty surveyed with respect to the level of incoming graduate student preparedness. Many of the students (most students surveyed are currently in their second or third years of graduate school) felt they were personally prepared to a greater degree in research writing than faculty thought the average incoming graduate student was. What could explain so many students having a retrospective feeling of preparedness when most faculty thought the average student was less prepared? For instance, 72% of faculty thought graduate students (while as undergraduates) were, to some extent, used to glossing texts and understood little about the sources they cite. On the other hand, 100% of students (to some degree) agreed that as undergraduates, they read and understood the sources they cited.
11. Do you anticipate conducting research for publication after completing graduate school? How many of your fellow students do you think will do research for publication after graduation? Does this number correlate with difficulties students have with research writing during graduate school?