Academic literacy: The importance and impact of writing across the curriculum – a case study

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Abstract: The paper provides case studies of how four faculty members who teach in undergraduate and graduate programs at the Indiana University School of Informatics promote academic literacy throughout the curriculum. The paper describes the writing assignments in several courses, the objectives of these assignments in enhancing the writing skills of students, the pedagogical approaches used by the faculty members and a discussion of the results. Suggestions for assessing student writing will also be provided.

Keywords: writing, academic literacy, informatics, health informatics, legal informatics, health information administration, new media, case study.

Effective writing is a skill that is grounded in the cognitive domain. It involves learning, comprehension, application and synthesis of new knowledge. From a faculty member's perspective, writing well entails more than adhering to writing conventions. Writing also encompasses creative inspiration, problem-solving, reflection and revision that results in a completed manuscript. From a student's perspective, writing may instead be a laborious and even dreaded exercise of attempting to place thoughts on paper while developing mastery over the rules of writing, such as spelling, citation format and grammar.

Over the past several years, it has become apparent to the faculty at Indiana University School of Informatics, Indiana University Purdue University Indianapolis (IUPUI) that students entering the undergraduate programs of Media Arts and Science, Informatics and Health Information Administration as well as the Health Informatics graduate program lack the necessary writing skills needed to become successful communicators both during their studies and after graduation. The authors teach in undergraduate, both undergraduate and graduate programs and purely graduate programs, providing a broad perspective on an issue that crosses all disciplines and educational levels. The concern for the writing abilities of students has become more focused with IUPUI's adoption of the Principles of Undergraduate Learning (PULs). The first PUL, Core Communication and Quantitative Skills, encompasses the ability to "express ideas and facts to others effectively in a variety of formats, particularly written, oral, and visual formats."

Whatever the reasons may be, the bottom line is that the majority of students do not possess the skills necessary to effectively communicate in a written format that will enable them to become successful upon graduation. There is a significant need for students at all levels not only to be good written communicators, but also to understand the importance of good writing skills. In addition, an important facet of written communication is being able to critically assess the writing of others, particularly at the graduate level as well as in professional programs.

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As educators, the key question becomes: How can faculty members teach their students to become effective writers and communicators in the short amount of time that there is to interact with and influence them? The environment in which today's college students communicate is primarily one of texting and email messages. One of the main problems with these communication methods is that they may rely on the use of abbreviations and informal language. Punctuation, capitalization, spelling, organization and flow may be forgotten in favor of bits and bytes. Also, because of the immediacy of these communication methods, there is little in the way of reflection of either what is received or what is being sent. Preparing students to communicate in the real world of work is a challenge for educators in higher education. Faculty members must balance the provision of content while modeling professional communication skills using efficient tools. However, writing skills must be addressed if faculty members are to adequately prepare students for jobs that involve more than minimal levels of responsibility.

The following article has three goals. The first goal is to familiarize the reader with the experiences of four faculty members at Indiana University School of Informatics, IUPUI, in trying to bring students to an acceptable level of writing skill before students complete their degree programs. This will be illustrated through case studies. Second, as part of these case studies, examples of assignments and other approaches that were used to aid the students in developing a higher level of writing ability will be discussed. Finally, this article will provide some suggestions, based on the experiences discussed in each case study, on how written skills could be assessed in undergraduate and graduate courses, including both online and face-to-face courses.

I.   Literature Review.

A study by the American Institutes of Research (Baer, Cook, and Baldi, 2006) surveyed the literacy skills of college graduates of two- and four-year programs, with the results indicating that over half of the students who responded lacked basic skills, such as understanding and executing simple instructions or balancing a checkbook. Students face the responsibility of developing their writing skills, specifically in the area of academic writing. However, it is clear that many students have difficulty with writing for a number of different reasons (Bartlett, 2003; Odell and Swersey, 2003). Another issue is how we measure excellence in writing (Dwyer, Millett, and Payne, 2006; Hacker, Dunlosky, and Graesser, 1998; Zamel and Spack, 1998; Zamel, 1987).

Concerns about effective writing among undergraduate and graduate students in higher education have been well documented. On the other hand, MacArthur (1996) thought that computers could support writing by students with learning disabilities by placing special emphasis on applications that went beyond word processing. He found that the basic processes of transcription and sentence generation, including spelling checkers, speech synthesis, word prediction, and grammar and style checkers provided ample support for writing abilities.

Stein, Dixon, and Isaacson (1994) suggest that "many writing disabilities may derive from too little time allocated to writing instruction or from writing instruction inadequately designed around the learning needs of many students" (p. 392). Their study reviewed the characteristics of students with learning difficulties and provided recommendations for teaching writing effectively to a broad range of students. The effective techniques cited in their study are: the concept of big ideas, strategies, scaffolding, and review.

Trioa (2003) suggests that the problems experienced by students in writing effectively are attributable, in part, to their difficulties in executing and regulating the processes which underlie proficient composing, planning and revisions of their work. Another important element in achieving excellence in writing is the reflective process – the ability to critique one's own work as well as the work of peers. As outlined by McGuire, Lay and Peters, this reflective aspect of writing is particularly important in the curriculum of professional programs as a method of teaching problem-solving (McGuire, Lay, and Peters, 2009). Holtzman and colleagues (2005), in an article about assessing the writing skills of dental students, noted that "the ability to communicate effectively has been recognized as a hallmark for membership in the learned professions." (Holtzman, Elliot, Biber, and Sanders, 2005, p. 285).

Another study found that the formal attention given to writing practice outside of the content covered was apparent in higher education. Cho and Schunn (2007) reported that the National Commission on Writing in American Schools and Colleges (2003) supported this claim. They cited the practice of peer review of student writing, indicating that peer reviews can help instructors spend more time on other aspects of teaching by reducing the instructors workload associated with writing activities (Cho and Schunn, 2005; Rada, Michailidis, and Wang, 1994). Using several innovative approaches in order to address writing practices among undergraduate and graduate students was implemented by four faculty members at IUPUI. Their work is discussed in the following sections.

II.   Case Study 1.

A. Background.

The first case describes the expectations of a Clinical Assistant Professor in the Health Information Administration (HIA) program regarding the writing skills of students. This program and its related certificates are only available at the undergraduate level. This faculty member acknowledges the fact that written communications skills for the undergraduate student in HIA must be clear and concise. Upon graduation, HIA students will be responsible for interpreting and explaining health information, especially for medical records.

B. Objective.

To encourage students to be better writers, the faculty member created three writing assignments as part of M325 Healthcare Information Standards and Requirements to give students the opportunity to develop good writing skills and to build on the knowledge and feedback from previous writing assignments in this and other courses. The Research Paper was the final writing assignment. Students were asked to explore a healthcare topic of their choice and research how the topic relates to health information. The assignments are outlined in Table 1.

C. Pedagogical Approach.

For the academic years of 2007 and 2008, HIA undergraduate students were given three writing assignments. The three assignments were given in sequential order beginning with a straightforward assessment of the student's ability to complete an American Psychological Association (APA) bibliography and questions regarding APA writing style. This assignment

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Table 1. Research paper.

Writing Assignments	Point Value
APA Citation Exercises	25
Literature Review	50
Research Paper	100

was followed by the Literature Review assignment, which required the student to take the knowledge learned from the American Psychological Association (APA) Citation Exercises and incorporate that knowledge into a Literature Review on a healthcare topic of their choice. This assignment was decisively not a formal writing assignment but did require the student to begin writing in a more professional and clear style. The assessment was on the student's ability to write in complete sentences and paragraphs and apply previously learned knowledge regarding APA citation formatting. The final and most complicated assignment was intended to give the students an opportunity to do a full research paper on a healthcare topic of their choice and to demonstrate the skills that were learned from assignments 1 and 2. The research paper contained detailed instructions on the content of each individual section of the paper, the number of resources required for the paper, the writing format of the paper and a complete bibliography and in-text citations. The proposed outline for the research paper is as follows:

I.   Title Page
II.   Table of Contents
III.   Introduction
IV.   Review of Related Literature
V.   Discussion
VI.   Conclusion
VII.   Recommendations (if appropriate)
VIII.   Half-title page for Bibliography
IX.   Bibliography

D. Results.

A total of 78 Health Information Administration students completed the writing assignments during the fall semesters of 2007 and 2008. The objectives of the assignments were to give each student an opportunity to learn from writing mistakes made on a previous assignment, correct those mistakes on the next assignment and consequently improve the student's writing skills over the course of the semester. The data revealed the following; 30% of the students in 2007 showed a significant improvement in their writing skills based on grades while 42% of the students showed a significant improvement in their writing skills in the year of 2008. The statistics indicate that well over 50% of the students in each class improved their writing skills over the course of the semesters.

III.   Case Study 2.

A. Background.

The next case describes the work of another faculty member at IUPUI's School of Informatics. She teaches a number of courses in both the undergraduate Informatics and Media Arts and Sciences program. Her courses are all offered online and are primarily related to law and legal informatics. These courses are required for the legal informatics area of concentration within the undergraduate Informatics program.

B. Objective.

Aware of faculty concerns as well as her own experience teaching in undergraduate programs, all of the faculty member's courses require students to participate in weekly written discussion forums as well as to complete a comprehensive final project at the end of the semester. The weekly discussion forums are one important approach that the faculty member uses to build community in her online courses, but they are also the method that the faculty member uses to be sure that students are actively participating in the course throughout the semester. The final project is similar to a take-home examination and requires comprehensive responses to 10-12 essay questions based on real-world scenarios.

C. Pedagogical Approach.

For Fall 2009, the faculty member taught two online courses in the School of Informatics. One course, Foundations in Legal Informatics, was being taught for the fifth time. A newly developed and approved course, Electronic Discovery, was taught for the first time. OnCourse (an online teaching and learning interface) was used to deliver the course content. Both courses were arranged as weekly modules. At the end of each week, students were required to use the discussion forum feature of OnCourse to respond to a series of written questions about the module, the reading assignment, supplemental material and the podcast (called a Fireside Chat). Questions also included an opportunity for students to report any experience they had with the topic of the module, how the topic related to their future careers and any other interesting or surprising issues raised in the module or the reading assignment.

An example of discussion forum questions from one module of Foundations in Legal Informatics is included as Appendix 1. Because of the nature of the questions, the amount of writing that students need to do to respond to the questions is extensive. At the end of each week, the faculty member would read the responses to the discussion forum. She would then provide a podcast summarizing the responses to the discussion forum questions, highlighting particularly those responses that presented unique perspectives, comprehensive treatment of the question or especially noteworthy comments. Students were identified by first name in the podcast, which contributed to the sense of the community in the courses as well as provided individual feedback to students on their responses. Participation in the weekly discussion forums is also identified on the syllabus and other course information as corresponding to PULs 1A: Core Communication – Written, Oral and Visual Skills, 2: Critical Thinking and 3: Integration and Application of Knowledge.

The second requirement of the faculty member's online courses is a comprehensive Final Project, which is essentially a take-home final examination. Students are given access to the final project questions several weeks before the due date, which is the end of the semester. The final project is based on a real-world scenario. For example, in the Electronic Discovery course, students were asked to imagine that they are experts in electronic discovery and have been hired

by a law firm. They were asked to respond to a series of questions from a senior partner about the implications of electronic discovery for the law firm as well as for two of the law firm's clients, which are major multinational corporations. The syllabus and other course material indicates that the Final Project corresponds to PULs 1A: Core Communication – Written, Oral and Visual Skills, 1C: Core Communication – Information Resources Skills and 3: Integration and Application of Knowledge. Examples of some of the questions from the Final Project in Electronic Discovery are provided in Appendix 2.

D. Results.

There is a direct correlation in the faculty member's online courses between regular participation in the weekly discussion forums and the final course grade. Student engagement in online courses is one predictor of student success, so this connection is not surprising. In fact, students have reported that the combination of weekly discussion forums and podcasts created a sense of community that nearly replicated what would be found in a traditional face-to-face course. For purposes of this paper, another benefit of the discussion forums is that students are writing every week and are then receiving feedback on their responses. Because of the nature of the discussion forum questions, the amount that students are required to write each week can be substantial. The questions are varied to discern student experience with the topic of the module, their comprehension of the material, their ability to apply the material to various scenarios, their likelihood of using the material in their future careers and whether there were issues in the module that they found surprising or interesting. It is particularly interesting to see which students will be the "first responders" to each weekly discussion forum and to observe when student responses become more robust as the semester progresses.

Likewise, the comprehensive Final Project also means that students must apply what they learned throughout the semester to a real-world situation. By the end of the semester, students who have participated regularly in the weekly discussion forums will already have done a considerable amount of writing. There also appears to be a correlation between regular versus inconsistent participation in weekly discussion forums and high and low scores on the Final Project. This is somewhat to be expected, since a student who is engaged in the course is likely to be motivated to do well on both the weekly and the final course requirements. However, it could also indicate that students who have reached a certain level of comfort by having to write each week are not as intimidated by the prospect of a comprehensive, essay-style assignment.

IV. Case Study 3.

A. Background.

The third case study focuses on writing skills in both undergraduate and graduate students. The course selected was titled Research and Design Methods, which was offered between the fall of 2005 through the spring of 2007. In this course, students were expected to conduct informal research and write on a topic of their choice.

B. Objective.

For this course, a qualitative approach was used as a framework to enhance the student's writing skills. Students were asked to identify a research topic in their field and to conduct informal investigation based on their research statement or hypothesis. A list of research titles is presented in Table 2.

Table 2. Research topic proposal list.

Gender	Academic Status	Research Title
F	Undergraduate	The Technology Behind K Zone
F	Undergraduate	Adobe Premier Pro 1.5 vs. Sonic Foundry Vegas Video
F	Undergraduate	GIF vs. JPEG: Which is the Better Format on the Web?
F	Undergraduate	3D Studio Max vs. Maya
M	Undergraduate	The Videogame's Composer
M	Undergraduate	Video Game Design Should Go Back to the Basics
M	Undergraduate	The Video Game: Three Dimensions
M	Undergraduate	Interactive Software Applications: Education for Health Patients
M	Undergraduate	Programming Flash vs. HTML- A Comparison
M	Undergraduate	I Want My MP3 (I Think)
M	Undergraduate	Game Design Development
M	Undergraduate	The Challenges of Using and Displaying Japanese Text
M	Undergraduate	Defining WWII DVD Documentary Standards
M	Undergraduate	Flash Animation: An Overview of the Design Process
M	Undergraduate	WWJP: What Would Jesus Play?
M	Undergraduate	The Future of 2-D Animation in an Increasingly 3-D World
M	Undergraduate	An Evolution in Console Controllers
M	Undergraduate	From Table Top to Desktop: The Evolution of Role-playing Games
M	Undergraduate	Interactive Cinema
M	Undergraduate	Sound and Its Affect in the Medical and Psychological Area
M	Undergraduate	Video Games: A New Form of Substance Abuse?
F	Graduate	A Survey of Archaeology in the Digital Age
M	Graduate	Realism in Animated Pedagogical Agents: Not Yet Realized
M	Graduate	An Instrument to Aid and Assess the Learning of Introductory Video Game Design

Students learned to identify research issues in the field of Media Arts and Science, articulate clear thesis and research statements, explore available scholarly literature, conduct an exhaustive literature review in the topic of interest, and adhere to the APA style of writing. The course included student peer-reviews of each other's work as well as instructor feedback. Toward the end of the semester, students gave formal presentations of their work.

C. Pedagogical Approach.

The pedagogical approach for these classes consisted of the logical steps toward writing a good research paper. In order for each student to achieve acceptable results the instructional theories of 'Learned by Doing' and constructivism were utilized. Students were able to build on and construct new knowledge about the research process as it pertained to their style of writing
Within the first two weeks of the course, students were asked to submit a topic proposal describing their areas of research interest. Students were instructed to include a sample reference

list of 10-15 references. The topic proposal provided the instructor with a glimpse of intended research and gave an illuminating view of each student's current writing skill-level.

Students were then given examples of excellent and poorly written thesis and research statements. Students were asked to write five examples of hypothesis and/or research statements based on their proposed research topic. In order to engage students in this process, a participatory approach consisting of student peer-reviews was a weekly activity throughout the semester. Once student research statements had been approved, students were instructed on how to develop an outline for their research papers. The proposed outline for their research papers consisted of the following:

I. Introduction
II. Literature Review
III. Methods
IV. Findings
V. Summary
VI. References
VII. Appendices
VIII. Abstract

Students produced several drafts for each section of the research outline during the semester. Student peer-reviews and instructor feedback were given for each draft submission. In order to review papers effectively, students were given written instructions on the review process, along with a scoring rubric (see Appendix 3).

Students were required to create and deliver a PowerPoint presentation as a succinct review of their research efforts. Students were given 15 minutes and expected to present no less than fifteen slides. The final slide in their presentation was to list three "unresolved issues" in the area of research they had selected then ask for questions and comments from their audience.

D. Results.

Between the fall of 2005 and the spring of 2007, a total of 24 students (3 consecutive semester classes) completed a research paper in the field of media arts and science. Papers were completed by ten students (eight undergraduate and two graduate students in the fall of 2005, seven students (seven undergraduate students (in the fall of 2006, and seven students (six undergraduate and one graduate student) in the fall of 2007.

Students produced papers of varying lengths based on their efforts in conducting qualitative inquiry and literature reviews on their topics of interest. All papers adhered to the APA Style of writing. Although students were instructed to engage in the writing process and make this one of their best works, issues of spelling, grammar, punctuation, and clarity surfaced repeatedly. Students conducted peer-reviews of each other's work and received detailed feedback from the instructor. Overall, student scores improved steadily from draft-to-draft submissions. Using this meticulous review process, students were able to reflect and learn from their mistakes. This process contributed to and reflected an increase in writing skills and learning outcomes for students based on their final research paper submissions.

V. Case Study 4.

A. Background.

The final case study presents the work of a faculty member in the School of Informatics Health Informatics program. This faculty member's focus was on the approach of academic literacy as an act of participation and that learning happens in communities of practice. The course titled, "The Social Impact of Information Technology" had students apply not only writing skills learned in previous courses but also connect writing to critical reading/evaluation of scientific manuscripts.

B. Objective.

For this course, students are encouraged to write a research paper on a topic of their choosing related to the impact of the information technology on the society. Faculty recognizes that writing is a complex process that involves a series of recursive activities and not linear: Students reexamine their thesis, consider and reconsider additional points or arguments, and reshape and reconstruct repeatedly rather than move through the writing process in discrete stages. Consequently, the faculty creates research writing-reading groups, in an attempt to address the four core criteria for student writing—critical thinking, use of language, structuring, and argument. Furthermore, as part of academic literacy, instructors not only need to develop students' academic writing, yet they also need to prepare them for externally mandated large-scale document critical evaluation, including online documents. The rationale of peer assessment of academic writing is providing the learner opportunities to develop tacit rather than explicit knowledge about the meaning of the core criteria and how they are applied rather than focusing on internalization of explicit rules or standards for academic writing (Elander, Harrington, Norton, Robinson, and Reddy, 2006).

C. Pedagogical Approach.

The pedagogical approach for the academic years of 2007 and 2008 in this course consisted of seminars designed to stimulate and direct thoughts around the student's selected topics related to legal and ethical impacts of information technology and technology advances and also topics related to socio-economic. The students read selected readings on those topics as well as independent readings. Students participated in group research projects: assess societal issues related to information technology and technology advances in their work field, formulate a research project, review research literature, write a report, and present the project in class. Critical reading, thinking, and writing are applied through this process. At the end of the semester, each student completed the evaluation criteria on two other students' papers. The outline of their evaluation criteria consisted of the following areas:

I.   Title
II.   Problem
III.   Purpose
IV.   Literature Review
V.   Methodology
VI.   Hypotheses/questions

D. Results.

A total of 36 students completed the evaluation criteria during the 2007, 2008 and 2009 academic year. The intention of this assignment was to give each student an opportunity to apply critical reading, writing, and thinking into their research paper. Also, it gave them an opportunity to receive feedback from their peers as well. A spreadsheet was created to see the differences between the 2007 and 2009 reviewers and students. The spreadsheet consisted of six different tabs with the reviewer number, student number, and areas from the evaluation criteria assignment. The tabs include Overall, 2007, 2008, 2009 Reviewer's Average, Student Average, and Overall Average. The data from these sections reveals that the project phase and methodology were graded the heaviest in the overall average section. Overall, the area that received the lowest score on the evaluation was the project phase. The Title, Problem, and Overall areas received the highest score throughout the entire evaluation. A major concern about this assignment's outcome is that several students have high grades with inadequate feedback while only a few gave low grades with valuable feedback. It appears the reviewers who gave, on average, students lower scores on their evaluations received higher on their own papers.

In 2009, it can be seen that Students # 1, 7, and 12 gave other students the lowest score on their final grades and also received the highest grades on their papers (Figure 1). In turn, Students # 2, 3, and 11 gave the highest scores on reviews and received the lowest final paper grades. This assignment is the most effective when students put in more time and effort into each other's papers. The strong connection between reading and writing supports these data since good writers are typically careful readers, as reported in Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities, 2002. Strong writers can better evaluate another person's writing because they are aware of proper writing forms; knowing how to create a clear thesis with strong supporting elements makes it easier to identify one.
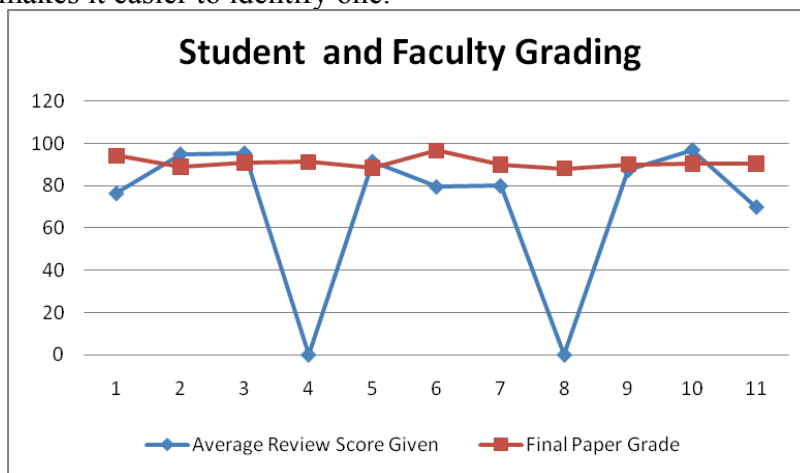

Figure 1. Peer review scores.

VI.   Conclusion.

The paper provided case studies of how four faculty members who teach in undergraduate and graduate programs at the Indiana University School of Informatics promote academic literacy throughout the curriculum. The paper described the writing assignments from several graduate and undergraduate online and face-to-face courses, the objectives of these assignments in enhancing the writing skills of students, the pedagogical approaches used by the faculty members and a discussion of the results. These assignments included research papers, weekly discussion forums, "learning by doing" and comprehensive final projects. Several suggestions for assessing student writing were also provided, including review by peers, evaluation at various stages of the assignment, self-reflection and feedback through weekly podcasts.

Appendices

Appendix 1. Sample discussion forum questions.

- Have you used the Internet for research? When you search the Internet, are you generally satisfied with the information you retrieve? Do you have any special search strategies?
- What is your favorite search engine and why? Do you generally use more than one search engine?
- What are some of the issues in using the Internet for legal research? How could you assure yourself that the information you retrieved was valid? What are some of the characteristics of the Internet that argue for or against using it for legal research?
- Do you use any of the other features of the Internet such as listservs, newsgroups, IRC, IM or FTP? If so, please describe.
- Of the many ways that law firms use the Internet, which seem the most valuable to you?
- In terms of law firm websites, what are some of the ethical issues involved? Why is it important for lawyer advertising to be strictly regulated? Have you seen advertising that you believe "crosses the line" of what should be considered ethical conduct? How have the Internet and email exacerbated the issues with law firm advertising?
- What are some of the ethical considerations with email? Do you think that the ABA's opinion on the confidentiality of email is sufficient to protect clients? What other suggestions would you have about securing information about client matters that is sent via email?
- Any other interesting points about Module 9 or the reading assignment.

Appendix 2. Examples of questions from final project.

Pretend that you were hired as the electronic discovery expert in a law firm. The law firm has just been retained by a major multinational corporation for a legal matter that will involve a large number of people who all will have a great deal of electronically stored and paper information. This is a complex case that will have high visibility in the media. The senior partner of the law firm has been in practice for a number of years - and this age of digital evidence is new to him. You are eager to show why the law firm needs an electronic discovery expert on staff. He has asked for a thorough explanation of the following topics:

1. Discuss several of the major legal cases that address issues related to electronic discovery. Naturally, the Zubulake case should be included. How have these cases shaped our understanding of electronic discovery and how should our law firm proceed?

2. What were the revisions to the Federal Rules of Civil Procedure and how will they impact the case? What are the risks? What are the law firm's responsibilities under the FRCP? What are the client's responsibilities? What is the timing of activities related to the electronic discovery process? How will the costs be covered? How does the FRCP interact with other legal doctrines on what we can present at trial?

3. What are the similarities and differences between electronic discovery and computer forensics? To what extent might computer forensics be utilized in the case? What are the computer forensics technologies that we should use? What are the best practices? What criteria should we use to hire a computer forensics expert? Search the web for a vendor that offers computer forensics services/expertise. How does this vendor compare against these criteria? What more would we need to know about the vendor before using it for our client's case?

4. Define each stage of the electronic discovery process. What is included in this stage? Why is this stage important? What are the considerations for our law firm? For the client? Discuss the available technologies for each stage of an electronic discovery process. How does each kind of technology address what needs to be done? How does the technology save costs, reduce risks, reduce the opportunity for human error, etc.? Discuss the EDRM as the current standard for electronic discovery. Search the web for a vendor that offers electronic discovery services/expertise. What stage or stages within the EDRM does this vendor focus on for its products and services?

5. We are planning for the required "meet and confer" conference. What should we be prepared to do at that conference? What do we want to accomplish? What will we request? What issues might be raised? How might we respond to requests from the opposing party that involve legacy systems, various file formats, backup systems or would require costly or burdensome efforts? How could we narrow the scope of discovery requests?

Appendix 3. Peer-Review Scoring Rubric.

Question	Excellent	Good	Fair	Poor	Missing
Does the topic proposal describe the area of intended research effectively?	5	4	3	2	1
Is the importance and/or significance of the research problem identified?	5	4	3	2	1

If you gave a score of 4 or 5, explain its strengths

If you gave a score of 3 or below, explain its weaknesses. Inform the author where clarification or re-writes may be necessary.

In the author's draft, point out trends or themes you feel would be appropriate for their research. (List at least three areas)

Does the author make a convincing argument for the need to study this topic?
(Indicate yes or no and explain your response.)

References

Academic literacy: A statement of competencies expected of students entering California's public colleges and universities. Intersegmental Committee of the Academic Senates of the California Community Colleges, the California State University, and the University of California, Spring 2002. Retrieved December 29, 2009, from http://www.universityofcalifornia.edu/senate/reports/acadlit.pdf.

Baer, J.D., Cook, A.L. and Baldi, S. (2006). The literacy of America's college students. Washington, DC: American Institutes for Research, 2006.

Bartlett, T. (2003). Why Johnny can't write, even though he went to Princeton. *Chronicle of Higher Education, 49* (17), A39-A40.

Cho, K. and Schunn, C.D. (2007). Scaffolded writing and rewriting in the discipline:
A web-based reciprocal peer review system. *Computers & Education, 48* (3), 409-426.

Dwyer, C.A., Millett, C.M. and Payne, D.G. (2006). A culture of evidence: Postsecondary assessment and learning outcomes. Princeton, NJ: Educational Testing Service.

Elander, J., Harrington, K., Norton, L., Robinson, H. and Reddy, P. (2006). Complex skills and academic writing: a review of evidence about the types of learning required to meet core assessment criteria. *Assessment & Evaluation in Higher Education, 31* (1), 71-90.

Hacker, D.J., Dunlosky, J. and Graesser, A.C. (1998). Metacognition in educational theory and practice. Mahwah, NJ: Lawrence Erlbaum Associates.

Holtzman, J.M., Elliot, N., Biber, C.L. and Sanders, R.M. (2005). Computerized assessment of dental student writing skills. *Journal of Dental Education, 69* (2), 285-295.

MacArthur, C.A. (1996). Using technology to enhance the writing processes of students with learning disabilities. *Journal of Learning Disabilities, 29* (4), 344-354.

McGuire, L., Lay, K. and Peters, J. (2009). Pedagogy of reflective writing in professional education. *Journal of the Scholarship of Teaching and Learning, 9* (1), 93-107.

National Commission on Writing in American Schools and Colleges. (2003). The
 neglected "R": The need for a writing revolution. Retrieved December 29, 2009, from http://www.writingcommission.org/report.html.

Defazio, J., Jones, J., Tennant, F., and Hook, S.A.

Odell, L., and Swersey, B. (2003). Reinventing invention: Writing across the curriculum with WAC. *Language and Learning Across the Disciplines, 6* (3), 38-43.

Principles of Undergraduate Learning, Indiana University Purdue University Indianapolis (IUPUI). Retrieved December 29, 2009, from http://www.iupui.edu/academic/undergrad_principles.html.

Rada, R., Michailidis, A. and Wang, W. (1994). Collaborative hypermedia in a classroom setting. *Journal of Educational Multimedia and Hypermedia, 3* (1), 21–36.

Stein, M, Dixon, R. C. and Isaacson, S. (1994). Effective writing instruction for diverse learners. *School Psychology Review, 23* (3), 392-405.

Troia, G.A. (2003). Effective writing instruction across the grades: What every educational consultant should know. *Journal of Educational and Psychological Consultation, 14* (1), 75-89.

Zamel, V. (1987). Recent research on writing pedagogy. *TESOL Quarterly, 21* (4), 697-715.

Zamel, V. and Spack, R. (1998). Negotiating academic literacies: Teaching and learning across languages and cultures. Mahwah, NJ: Lawrence Erlbaum Associates.