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## Everything Old is New Again: The Criminology/Criminal Justice Freshman Research Seminar

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**Title:** EVERYTHING OLD IS NEW AGAIN: THE CRIMINOLOGY/CRIMINAL JUSTICE FRESHMAN RESEARCH SEMINAR

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## **Everything Old is New Again: The Criminology/Criminal Justice Freshman Research Seminar**

### **Abstract**

This is a report of an action-research project undertaken in tandem with the development of a new freshman seminar in criminology and criminal justice. In the freshman seminar the goal is to teach the research, critical thinking and writing skills that are the underpinnings of scholarship and good citizenship. Utilizing a unique approach, this class focuses on resources available through the University library and is taught by a professor, two librarians and a graduate teaching assistant. We hypothesize that freshmen who experience this seminar will show improvement in critical thinking skills, and that this will contribute to greater levels of academic success. This report describes the educational innovation (seminar) in sufficient detail to make replication possible, and presents preliminary findings that indicate the seminar enhances research and writing skills, fosters ability to think critically, and has a positive influence on *students' academic careers*.

## **Introduction**

At the beginning of the twenty-first century, the Holy Grail in higher education has become critical thinking. Even as some politicians fulminate against the liberal arts in favor of economic development and preparation for the workforce, there is widespread awareness that the success of individuals and of the nation depends on creativity, imagination, and the capacity to make and communicate reasoned decisions. Clear thinking is a skill that can be developed through a university education and transferred to the real world, where it also has great practical value. A recent survey of employers by the Association of American Colleges and Universities found that 93% of respondents placed the highest value on the capacity to think critically, communicate clearly, adapt quickly to change, and solve complex problems (2013). To that end, the College of Criminology and Criminal Justice at Florida State University has created a freshman seminar with the aim of teaching and enhancing these crucial critical thinking skills by teaching students how to write a high quality college research paper. The freshman seminar, taught by a professor, two librarians, and a graduate teaching assistant, aims to teach students how to use their library for scholarly research, and incorporates assignments structured toward the natural progression of a research paper. Research was undertaken to determine if the freshman research seminar is effective in enhancing research, critical thinking and writing skills, and has a positive long-term effect on academic success.

## **The Problem**

There is reason to be concerned about the preparation provided by secondary schools. The emphasis on standardized tests and five paragraph essays is not ideally suited to independent critical thought. The 1998 National Assessment of Educational

Progress found that high school graduates demonstrate only a limited grasp of extended or complex thought: they have not learned how to formulate complex questions, and they do not know how to figure out what it is they want to say (as cited in The College Board National Commission on Writing, 2003).

The College Board National Commission on Writing (2003) raised similar concerns at the university level: over half of first year college students were unable to analyze arguments, tended toward imprecision in thought, and demonstrated lack of clarity about sources of information. Worse yet, the Collegiate Learning Assessment concluded that critical thinking skills are not substantially improved throughout the college career (Arum & Roska, 2011).

The problem facing criminal justice educators may be particularly pressing. Criminology and Criminal Justice students come to universities with a wide range of skill levels, and instructors often find themselves with a mixture of new and returning students as well as criminal justice administrators and personnel (Myers, 2003). Given this variation in skill sets and academic attitudes criminology and criminal justice students often underperform when compared to other majors. Comparing criminal justice students to non-criminal justice students in an introductory statistics class, for example, the non-criminal justice students retained significantly more conceptual and computational statistical knowledge than criminal justice majors (Proctor, 2006). Additionally, criminal justice students are often perceived as particularly resistant to embracing the importance of writing sometimes lamenting about assignments on the basis that “they want to be a cop, not a professional writer” (Blowers and Donahue, 1994). One goal of criminal justice educators at universities is to awaken our students to the life of the mind by

teaching them to formulate questions, undertake research, evaluate and think critically and independently about the information they find, then organize, analyze and present their findings clearly with precision and perhaps even elegance.

### **The Solution**

Twenty years ago, the Boyer Commission Report on Undergraduate Education at Research Universities suggested that faculty and graduate teaching assistants should be less concerned with sharing the knowledge they have acquired through lifetimes of study, and more focused on explaining how they actually did their work (Katkin, 2003; Kenny, 1998). Faculty and teaching assistants at research institutions should draw on their experiences of engagement in scholarship and the life of the mind in order to guide undergraduates through projects of their own.

In Nichomachean Ethics, Aristotle asserts that people learn to do what they do not know how to do, by doing it. Students will learn to think and to make reasoned judgments on the basis of reliable information the same way they learn to ride a bicycle or play piano. Lectures have a place in the curriculum, but the development of skills such as logical thinking, coherently articulating ideas, and clear writing requires exercise, practice, criticism, and coaching.

The Criminology Freshman Research Seminar responds to this crisis in criminal justice education and in higher education generally with a relic of earlier times. The lowly term paper is an exercise that requires research, information literacy, sound judgment, organizational skills, a degree of imagination, willingness to engage with others' ideas, and the ability to use words, sentences and paragraphs as the infrastructure of higher order thought and communication. Everything old is new again. The college

level term paper, 15 to 20 pages in length with meticulous citations is the twenty-first century doorway into scholarship and critical thinking.

The interrelationships among skills in research, reasoning, and writing have begun to receive considerable attention in the self-study accreditation reports of many universities (Saunders, 2011, 2007; Whitmire, 2002), including Florida State University (2014), which identifies the enhancement of critical thinking skills as the foremost goal of the pedagogic enterprise. Almost all of the nation's elite private institutions require two first year seminars focused on critical thinking and writing. Catalogue descriptions of these seminars discuss the collection, assessment, organization, and analysis of data and evidence, skill in searching, selecting, and evaluating sources, the importance of multiple drafts with feedback, and the necessity of critical thinking in both research and writing. Oddly enough, there is no discussion of the role of the library in these course descriptions even though the library is the repository and retrieval system for information, without which there is nothing to think or write about.

Written words are the most conspicuous element of research papers, which is one reason why efforts to teach critical thinking skills are so often confabulated with writing classes and farmed out to English departments. But writing is only one element of the creative process there is still the business of figuring out what it is one wishes to say. Words on paper are the visible summit of an iceberg of research and thought beneath the surface.

Constructing a research paper begins with the formulation of questions, or at least with the initial concern that a particular topic deserves more consideration or could be better understood. The first requirement of the Criminology Freshman Research Seminar

is that each student must develop his or her own area of inquiry within the confines of crime, law, justice or social justice, broadly defined. The instructional team employs an essentially Socratic method asking students what they would like to know, challenging and encouraging them to think about how they might find, organize, analyze, and assess the information they need. Does their thinking about the question, problem, or issue change as they learn more about it? Are they able to share their ideas? Sometimes it is necessary to talk with students about how to accept and respond to criticism.

A student who becomes proficient as an author of well-reasoned essays based on thorough research into important questions will have acquired the fundamentals of critical thinking and higher education. The University's whole effort should be bent toward creating such graduates. This is not within the purview of any one department, but is rather the educational mission of the entire institution. Enhancing students' critical thinking skills is a project for the whole faculty. The University's effort to foster critical thinking skills will produce graduates equipped with a spirit of inquiry, zest for problem solving, skill in communication, mastery of language, and the potential to provide scientific, technological, academic, political, and creative leadership in the century ahead.

The literature in higher education refers to critical thinking as "reasoned" and "reflective," focused on deciding what to believe or to do (Facione, 2007). This is precisely the exercise required in writing a college level research paper. The best way to help undergraduates recognize assumptions, weigh evidence, and distinguish logical arguments from partiality (that is, to think critically) is by guiding them through the



process of writing a thorough, thoughtful, and well-organized college level research paper.

The library is central to the success of the Freshman Research Seminar. Florida State University's Strozier Library is a friendly and comfortable environment with a Starbucks, lounging areas, workrooms for group projects, as well as quiet spaces and holdings of more than three million books and 78,000 periodicals; but the library has evolved past the limitations of a physical space.

The modern university library is available wherever you are, and serves as a virtual portal into the universe of information and scholarship beyond the boundaries of Google and Wikipedia. It is a sophisticated high tech machine that multiplies the power of the human mind. Mastery of the technology for accessing and assessing information is part of what it means to be an educated person in the twenty-first century. Using the library skillfully requires practice in the same way that skill at writing requires practice. It is unrealistic to expect that college freshmen will comprehend the magnitude of resources available to them at a University Library, or come in having a clue how to find what they need in the vast storehouse of information that the library provides. Mastery of the library cannot be taught in a few short instructional sessions. Becoming familiar, secure, effective and creative with the global technology that provides full instantaneous access to the whole of human knowledge requires discipline, trial, error, and concentrated repeated effort.

**The Experimental Condition: The Criminology Freshman Research Seminar**

The freshman seminar in criminology and criminal justice is advertised as having no required reading and no exams; but students are also advised that it will be the most

demanding course they take that semester. The only requirement is a 15-page research paper with an abstract, in-text citations, and a bibliography consisting of high quality primary and secondary sources. Students have great latitude in their topic selection, so long as they are related in any way to law, justice or crime, including both social justice and the administration of justice. Criminology undergraduates frequently begin with interests in gun control, the death penalty, drug policy, juvenile justice, corrections, racism, crime and justice in the media, socio-biology, terrorism, or crimes against humanity. An interest is not sufficient; students must be able to articulate what it is about these topics that interests them. For example, a student who starts out with an interest in the death penalty might come to focus on whether it is effective in preventing crime, or whether it is implemented in a racially biased way.

Since so much of the work to satisfy the requirement of the class involves the use of library resources, the seminar meets for seven weeks in the computer laboratory in Strozier Library. Twenty undergraduates meet in the lab with one professor, one graduate student and two librarians (the instructional team). The first thing to observe about this approach is that it represents a wholly new conception of the library beyond its traditional roles as an archive and service organization; in our model the library becomes an active participant in pedagogy.

Seven weeks in the library entails fourteen 75-minute class sessions. Librarians begin each session with 15-20 minute presentations about searching, search engines, and systems of citation, including Boolean operators, wildcards, keywords, Academic Search Complete, JSTOR, Access World News, Lexis-Nexis, Criminal Justice Abstracts, CQ Researcher, and RefWorks. During the remainder of the class period, the instructional

team disperses to work one-on-one with students, assisting with the research and organization of individual projects. Of course, students are expected to use library resources outside of class time as well, but the tutorial process provides repeated exposure, develops competence and confidence, and allows information literacy skills to be integrated into the development of ideas and the process of writing; that is to say, into critical thinking.

During the other seven weeks of the semester, the seminar meets in a regular classroom with the professor and graduate student. The focus during those periods is on group discussion of problems, successes, and strategies students are experiencing in getting their research underway and starting to write. Topics might include note taking, systems of citation, organization and structure of ideas, reports on student progress. Twice during the semester classes are cancelled and each student meets individually with the professor to discuss progress on various stages in the development of a project.

Student papers are completed in three submissions:

The first, at the end of the fourth week describes the subject of the paper, the nature of the student's interest, and a report on how they have begun research on the topic including search engines used, keywords, results, a preliminary bibliography of varied primary and secondary sources. This is returned with comments and suggestions about the direction and organization of the project, clarity and precision in the use of language, and the quality of sources. The first round of one-on-one meetings takes place after this first effort has been submitted and returned.

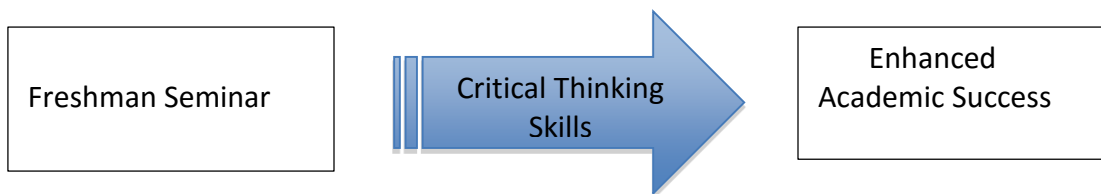
The second submission is due at the end of ninth week is meant to be as close to a full first draft as possible. Often students do not reach this goal, but there must be

enough submitted for written feedback about the thoroughness and quality of the research, originality of thought, organization of ideas, the use of language, and the implementation of the professor's edits from the first draft. The second round of one-on-one meetings takes place after this draft has been submitted and returned.

Final papers are due at the end of the semester. Written work throughout the semester is evaluated in relation to the clarity of research ideas and theses statements, overall coherence and organization of the paper, use of detail and evidence in support of positions taken, the extent, diversity and quality of sources; accuracy and thoroughness of citations, responsiveness to criticism, style including word choice, grammar, development of ideas within paragraphs, development of a theme connecting paragraphs, precision and elegance in writing. Students are reminded throughout the semester that the goal of the seminar is for them to produce the best written work they have ever done, and that if they can do it once, they can do it again, and use these skills to advance their education, careers and lives.

### **The Freshman Seminar as a Research Project**

From the outset Freshman Research Seminar was based on the premise that an intense introduction to independent research and scholarship would have a positive impact on subsequent academic achievement. We hypothesize that the freshman seminar contributes to academic success by enhancing students' critical thinking skills. In other words, critical thinking skills are the intervening variable between the freshman seminar and enhanced academic success.



Whether this is correct is an empirical question. Wanting to assess the value of the seminar as an educational innovation, our research focuses on three questions: 1) does the freshman seminar improve research and writing skills, 2) does it have a positive, long term effect on academic success, and 3) does it increase critical thinking skills over the course of the semester? The research includes survey data from end of semester and follow-up surveys to assess the impact of the seminar on subsequent academic success, as well as pretest and posttest critical thinking scores.

**Question 1: Does the Seminar Improve Research and Writing Skills?**

At the end of every semester since Fall 2011 a survey has been administered to assess the skills students acquired or improved and the components of the class they found to be helpful, as well as a self-assessment of research and writing skills before and after the seminar. This survey has been administered to roughly 20 students a semester, two semesters a year, since 2011, resulting in a sample size of 139.

Self-rated change score variables measure self-rated improvements in: (a) general research (b) clarification of research idea (c) general writing and (d) writing style. Students were asked to rate their research and writing abilities from 1 (low) to 5 (high) for each variable before and after the seminar. After scores were subtracted from before scores to determine the degree and direction of changes as a result of the seminar.

Table 1 is a frequency table of the skills learned in the freshman seminar. Large majorities of students (84.06% and 92.99%) agreed or strongly agreed that they learned to locate books and articles in the FSU libraries and the FSU library websites. In addition,

86.33% now feel comfortable using the physical library space, finding books or getting help from a librarian.

### **Table 1**

Table 2 shows components of the class that students reported as improving their research skills. Almost 70% of the students agreed that database presentations by the librarians improved their research skills. This was followed (64.03%) by the intensive attention to the research progress by the instructional team. 59.71% of the students stated that the library work sessions improved their research skills.

### **Table 2**

Table 3 examines which databases and online resources students learned to use as a result of the seminar, and with which databases and online resources they feel comfortable. Most students reported that they learned about all the databases and online resources listed in the survey. This is not surprising as these databases and online resources were the focus of librarian database presentations given at the beginning of each library work session. RefWorks was the online resource that most students reported that they learned about in class (87.05%), followed closely by online newspapers (85.90%), JSTOR (84.17%), and Lexis-Nexis (83.65%). Not far behind are Google Scholar, (76.92%) with which some of the students may already have been familiar, followed by Academic Search Complete (74.82%). Only 61.87% indicated they learned to use Criminal Justice Abstracts.

The next column indicates the percentage of students who were comfortable using the databases/online resources they learned about. Online newspapers were first (79.67%), followed closely by RefWorks (73.38%) and Google Scholar (73.08%).

Academic Search Complete (65.47%) and JSTOR (64.03%) were next. Criminal Justice Abstracts is the database students were least comfortable using, with more students not comfortable using it (56.83%) than comfortable (43.17%).

### **Table 3**

The end of semester survey includes a section in which the students rate their research and writing ability before and after the class. The abilities are separated into general research ability, clarification of research idea, general writing ability, and writing style. The students are asked to rate their abilities on a scale of 1 (low level) to 5 (high level). Table 4 shows that the students reported that each of the abilities improved over the semester. Each of the start means are lower than the end means, and a t test revealed that they all had statistically significant ( $p < 0.001$ ) differences between the start and end mean.

Overall Table 4 shows that the students felt their research and writing abilities improved over the course of the semester, but that their research skills improved more than their writing skills.

### **Table 4**

#### **Question 2: Does the freshman seminar produce long-term positive effects on subsequent academic success?**

A follow up survey was emailed to students in 2012 and again in 2014 to assess the impact of the freshman seminar subsequent academic success. In an effort to increase the sample size, an incentive in the form of a chance to receive one \$50.00 gift certificate was offered. The overall response rate was 44% with a total of 49 respondents.

Table 5 shows that 90% of respondents reported that the skills acquired in the seminar were helpful or extremely helpful in their other classes. More than 80% of respondents reported that the freshman seminar improved their research skills; and almost three-quarters stated that the seminar improved their ability to use research to support an argument. Two thirds of the respondents felt that their ability to read and evaluate research critically was improved as a result of this seminar and more than half agreed that the freshman seminar helped them improve their ability to evaluate and analyze information critically, but only 48.94% of the students felt that the freshman seminar helped to improve their writing skills.

#### **Table 5**

Table 6 shows that the overwhelming majority of respondents either agreed or strongly agreed that they were able to use the research (80%) and writing skills (76%) they learned in the Freshman Seminar in other classes.

#### **Table 6**

Table 7 shows that more than 80% of respondents either strongly agreed or agreed that the freshman seminar made the research writing process easier in subsequent classes and impacted their academic careers positively.

#### **Table 7**

### **Research Question 3: Does the freshman seminar increase critical thinking skills over the course of one semester?**

A time series critical thinking research design was incorporated into this multi-modal research project in the spring 2014 semester. The students were given the Watson-Glaser Critical Thinking Appraisal within the first few weeks of the semester (pre-test),



and again on the last day of class (post-test). The Watson-Glaser has high reliability (internal consistency  $\alpha=0.74$ ) and high validity as well (El Hassan & Madhum, 2007). The test correlates well with criterion measures (CAAP, SAT scores and GPA) and also has high construct validity, confirming that the test is measuring a uni-dimensional aspect of critical thinking ability (El Hassan & Madhum, 2007). Additionally, El Hassan and Madhum (2007) did not find any significant differences between the pre-test and post-test scores of students who took the Watson-Glaser Critical Thinking Appraisal with only 12 weeks between the pre-test and the post-test. Thus, differences in pre and post test scores are more likely produced by the seminar than by effect of taking the same test twice.

Table 8 reports changes in critical thinking skills over the semester, as measured by the pre-test and post-test scores of the Watson-Glaser Critical Thinking Appraisal. While improvements in scores are encouraging, the difference is not statistically significant ( $p=0.36$ ), indicating that there is a 36% chance that this difference is due to chance or sampling error. However these results are very preliminary, as data collection began in the spring of 2014. We are continuing to collect data and a larger sample size will give us a more accurate and stable assessment of whether increased critical thinking skills are the intervening variable that shapes subsequent academic success.

## **Table 8**

### **Discussion**

The results sections above indicate that all three research questions were supported by the data. The freshman seminar was able to teach and improve research and writing skills, was able to have a positive, long term effect on academic success and the preliminary results of the critical thinking skills appraisal, although not statistically

significant ( $p=0.36$ ), suggests that the freshman research seminar might increase critical thinking skills.

In reference to the first research question, the research shows that large majorities of students learned a wide array of research skills: locating books and articles in the library (both physical and virtual), using many databases and online resources including JSTOR, Academic Search Complete, RefWorks, Criminal Justice Abstracts, Lexis-Nexis, Online Newspapers and Google Scholar.

The data also shows that students felt that the freshman seminar increased research skills more than writing skills. It is possible that students interpreted the writing questions to refer to mechanics such as punctuation and word choice and not the whole process of thinking through what needs to be said, or they may have felt their writing skills were already good, which was often the case. This finding could also reflect the fact that more class time was focused on research skills than on writing. Another possibility is that the students were more willing to admit that their research skills needed improvement as opposed to their writing skills. As Table 4 indicates, the means for the self-rated skill level at the beginning of the class were slightly higher for the writing skills. On the other hand the self-rated means for their skill level at the end of the class were slightly higher for research skills than for writing skills.

The follow up data indicates that the freshman research seminar had a positive, long-term effect on academic success. A majority of the respondents reported that the freshman seminar impacted their academic careers positively. Just under half of the respondents stated that the freshman seminar was extremely helpful for their other classes and improved many of skills, including the ability to use research to support an argument,

facility with based library electronic research and writing skills. Over half of respondents agreed that the seminar improved their ability to evaluate and analyze information and research critically.

### **Conclusion**

The Criminology Freshman Research Seminar embodies the wisdom of a maxim attributed to Benjamin Franklin: “tell me and I forget. Teach me and I remember. Involve me and I learn.” The freshman seminar’s unique approach teaches and involves students in the production of their own research papers. The data generated by this project of action research supports the conclusion that by teaching students how to write a high quality college research paper the freshman seminar increases critical thinking skills and promotes positive achievement throughout the academic career. Perhaps that will encourage replication of the model at other universities and colleges as a strategy to enhance the critical thinking skills of their criminology and criminal justice students. In this age of large class sizes, online degrees, and multiple choice exams, the importance of teaching students the process of writing a well-articulated research paper cannot be overstated; everything old is new again.

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### Tables

**Table 1:** Student assessment of library skills learned as a result of the freshman seminar

<b>Skill Learned</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>Locate books and articles in FSU libraries</b>	37.68% (n=52)	46.38% (n=64)	11.59% (n=16)	2.90% (n=4)	1.45% (n=2)
<b>Locate books and articles from FSU library website</b>	53.24% (n=74)	39.57% (n=55)	5.76% (n=8)	0.72% (n=1)	0.72% (n=1)
<b>Feel comfortable using the physical library space, finding books or getting help from a librarian</b>	41.73% (n=58)	44.60% (n=62)	11.51% (n=16)	2.16% (n=3)	0% (n=0)

**Table 2:** Components of the freshman seminar that improved research skills

<b>Improved Research Skills</b>	<b>Yes</b>	<b>No</b>
<b>Reading/Writing Center visits</b>	55.75% (n=34)	44.26% (n=27)
<b>Database presentations by librarians</b>	69.23% (n=54)	30.77% (n=25)
<b>Library work sessions</b>	59.71% (n=83)	40.29% (n=56)
<b>Intensive attention to research progress by the instructional team</b>	64.03% (n=89)	35.07% (n=50)

\*survey question allowed students to circle all that apply, so the total percentage will not always be 100%

**Table 3:** Student assessment of the databases learned and their comfort using them

<b>Database/ online resource</b>	<b>Learned to use</b>		<b>Comfortable using</b>	
	<b>YES</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>
<b>RefWorks</b>	87.05% (n=121)	12.95% (n=18)	73.38% (n=102)	26.62% (n=37)
<b>Online newspapers</b>	85.90% (n=67)	14.10% (n=11)	79.67% (n=60)	23.08% (n=18)
<b>JSTOR</b>	84.17% (n=117)	15.83% (n=22)	64.03% (n=89)	35.97% (n=50)
<b>Lexis-Nexis</b>	83.65% (n=87)	16.35% (n=17)	54.81% (n=57)	45.19% (n=47)
<b>Google Scholar</b>	76.92% (n=60)	23.08% (n=18)	73.08% (n=57)	26.92% (n=21)
<b>Academic Search Complete</b>	74.82% (n=104)	25.18% (n=35)	65.47% (n=91)	34.53% (n=48)
<b>Criminal Justice Abstracts</b>	61.87% (n=86)	38.13% (n=53)	43.17% (n=60)	56.83% (n=79)

**Table 4:** Students' self-rated skill change before and after the freshman seminar

<b>Skill Change</b>	<b>Positive Change</b>	<b>No Change</b>	<b>Negative Change</b>	<b>Start Mean</b>	<b>End Mean</b>
<b>General Research Skills</b>	74.60% (n=94)	23.02% (n=29)	2.38% (n=3)	2.61*	3.52
<b>Clarification of Research Idea</b>	71.43% (n=90)	24.60% (n=31)	3.97% (n=5)	2.56*	3.48
<b>General Writing Skills</b>	41.27% (n=52)	49.21% (n=62)	9.52% (n=12)	2.94*	3.29
<b>Writing Style</b>	38.10% (n=48)	52.38% (n=66)	9.52% (n=12)	2.89*	3.24

\*t test determined start and end means are statistically significantly different ( $p < 0.001$ )

**Table 5:** The impact and improvement of skills due to the freshman seminar

<b>Overall Impact</b>		
Extremely helpful for other classes	46.18% (n=22)	
Somewhat helpful for other classes	43.75% (n=21)	
Not helpful for other classes	2.13% (n=1)	
Redundant	14.89% (n=7)	
Was a waste of time	2.13% (n=1)	
<b>Skills were improved</b>	<b>Yes</b>	<b>No</b>
Evaluate and analyze information critically	57.45% (n=27)	42.55% (n=20)
Ability to use research to support an argument	72.34% (n=34)	27.66% (n=13)
Ability to read and evaluate research critically	68.09% (n=32)	31.9% (n=15)
Skills with electronic based library research	80.85% (n=38)	19.15% (n=9)
Writing skills	48.94% (n=23)	51.06% (n=24)

**Table 6:** Skills learned in the freshman seminar that were used in other classes

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>Writing skills</b>	34.69% (n=17)	42.86% (n=21)	18.37%(n=9)	4.08% (n=2)	N/A
<b>Research skills</b>	34.04% (n=16)	46.81% (n=22)	19.15% (n=9)	N/A	N/A
<b>Use RWC</b>	30.43% (n=14)	45.65% (n=21)	15.22% (n=7)	8.70% (n=4)	N/A

**Table 7:** Long term impact of the freshman seminar

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>Research writing process easier</b>	35.56% (n=16)	51.11% (n=23)	8.89% (n=4)	4.44% (n=2)	N/A
<b>Impacted academic career positively</b>	35.56% (n=16)	46.67% (n=21)	17.78% (n=8)	N/A	N/A

**Table 8:** T Test of Mean Pre-test and Post-test Critical Thinking Scores

	<b>N</b>	<b>Mean</b>	<b>Std. Error</b>	<b>Std. Deviation</b>
<b>Post-test Score</b>	13	29.4615	1.40	26.39
<b>Pre-test Score</b>	13	28.4615	1.35	25.5051

p=0.3676