Contradictions Between How Students Are Taught to Write And What They Are Expected To Read In General Education Courses

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Abstract

This study explored the relationship between how students are taught to write in first-year English composition classes and what they are expected to read as part of the general education requirements at a publically-funded large university in the southeast (PLUS), and then to determine whether a gap exists. If a gap is found to exist between the preparation of students and their ability to read material that has been assigned by the teaching faculty, these students are less likely to be considered information literate by any rubric.

This study uses a mixed-methods approach. Content analysis is employed to examine the assigned readings students encounter, and interviews are conducted to explore how students make sense of the academic writings assigned in general education classes. Research questions included (1) What are the overall structures of both (a) instruction composition and (b) scholarly journal articles assigned for reading in subsequent general education classes in the disciplines of psychology and history at PLUS? (2) How can these structures be identified? (3) What are the top-level structural patterns of composition within these two academic disciplines and how do they differ? and (4) Do these differences create contradictions in how students are taught to write in freshmen composition courses and the composition of the journal articles they are expected to read in their required general education classes?

Thirty-one texts taken from general education syllabi were analyzed for incidence and placement of specific structural elements such as topic sentences and signal words.

This study also explored perceptions of these differences from the standpoint of college students. Interviews of twenty-two students were conducted using Dervin's Sense Making Methodology. These interviews were analyzed in terms of situations, gaps, bridges, outcomes, as well as thematic concepts that consistently arose during the interviews.

Significant differences existed between readings from English Composition classes and assigned scholarly journal articles in history and psychology in incidence and placement of topic sentences, use of signal words or phrases, and readability. In addition, thematic analysis of the interviews of students found that they experienced gaps between their expectations of text composition and their experience reading assigned journal articles.

Table of Contents

Chapter 1 Introduction and General Information 1
Introduction and Theoretical Foundation 1
Problem Statement 2
Information Literacy 3
Consequences of Gap 10
Writing Across the Curriculum and Information Literacy 11
Writing Across the Curriculum (WAC) 11
Cognitive Psychology and WAC 13
Information Literacy 14
Freshmen at PLUS and Their Preparation for Academic Success 16
English Composition Classes at PLUS 18
Information Literacy Environment at PLUS 22
The Experience of Beginning College Students 23
Curricular Paths and Implications 24
Pedagogical Approaches at PLUS 28
Potential Information Literacy Environment in Academic Libraries 29
Chapter 2 Literature Review 31
Students and Their Developing Minds 33
Cognition and Reading 38
Cognition and Writing Across the Curriculum 47
Paragraphs 58
Genre Analysis 67
Genre Analysis by Discipline 68
Humanities 69
Social Sciences 70
Natural Sciences 71
Information Literacy 74
Expectations of faculty within general education courses 74
Expectations of faculty concerning their students' prior preparation to primary research 76
Perceived benefits of reading primary literature in undergraduate courses 78
Measurement of these benefits as educational outcomes 79
Best practices in integrating information literacy within disciplines 80
The Sciences 82
Social Sciences 86
The Humanities 89
Conclusion 92
Chapter 3 Methods 93
Introduction 93
Research Questions 94
Proposed Methodology 101
Stage I. Content Analysis 102
Review of Content Analysis Literature 102

Assumptions 104
Operational Definitions 105
Overview of Testing Procedures 111
Plan for Analysis of Data 114
Stage II. Interviews 115
Research Design for Interviews 117
Analysis of Interviews 122
Ethics 124
Summary 125
Chapter 4 Findings 127
Introduction 127
Stage 1: Content Analysis 127
Findings from Content Analysis of Assigned Texts 127
Hypothesis 1 128
Hypothesis 2 129
Hypothesis 3 130
Hypothesis 4 133
Hypothesis 5 135
Hypothesis 6 137
Hypothesis 7 141
Stage 2. Analysis of Interviews 145
Situations 146
Gaps 150
Obstacles to Learning 154
Bridges (Verbings) 157
Outcomes 171
Helps 175
Hurts 177
Summary 179
Chapter 5 Discussion 183
Findings in Relation to Theoretical Framework 183
Pedagogical Implications by Sub-Audience 184
Teaching Faculty in Psychology or History General Education Courses 184
Faculty Teaching Freshman Composition Classes 187
Academic Librarians 188
Considerations for Further Research 188
Limitations of this Study 190
Conclusions 194
Works Cited 197
Appendices 215
Vita 231

List of Tables

Table 1.1 Comparison of Gilstrap & Dupree (2008) Outcomes to ACRL Standards and Performance Indicators 5
Table 1.2. Spring 2009 Enrollment of Students who took English 1009 or English 1010 in Fall 1008 19
Table 1.3 Pass rate of courses most frequently enrolled by students who took English 1009 or English 1010 in Fall 2008 semester in the subsequent semester (Spring 2009). 27
Table 3.1 Hypotheses 100
Table 3.3. Readings from Writing Well for Academic English 108
Table 3.4. Psychology Articles 109
Table 3.5. History Articles 110
Table 3.6 Interview Transcripts 123
Table 4.1. Incidence of Topic Sentence per Discipline 129
Table 4.2. Chi-Square: Incidence of Topic Sentence by Discipline 130
Table 4.3. Placement of Topic Sentence by Discipline, Chi-Square 131
Table 4.4. Mann-Whitney Calculation Comparing Placement Topic Sentence Placement by Disciplines 132
Table 4.6. Mann-Whitney Calculation Comparing Signals per Topic Sentence by Disciplines 134
Table 4.7. Chi-Square: Structure in English Composition, Psychology, & History 135
Table 4.8. Problem/Solution Signals in Topic Sentences by Discipline 137
Table 4.9. Range of Reading Ease Value by Discipline 138
Table 4.10. Flesh Reading Ease Value ANOVA 138
Table 4.11. Flesch Reading Ease Value Tukey HSD 139
Table 4.12. Flesch Reading Ease Value Subset for alpha 140
Table 4.13. Range of Flesch-Kincaid Reading Level Scores by Discipline 141
Table 4.14. Flecsh-Kincaid Reading Level ANOVA 142
Table 4.15. Flesch-Kincaid Mean Reading Level by Discipline 143
Table 4.16. Mean Differences in Flesh-Kincaid Reading Level Tukey HSD by Discipline 144

Table of Audio Excerpts

Audio Excerpt 1. Profile of Student Experience **147**
Audio Excerpt 2. Too Much Information **151**
Audio Excerpt 3. Trouble with (APA) Citations **153**
Audio Excerpt 4. Graphs Help **156**
Audio Excerpt 5. How Much Bigger The World Is **157**
Audio Excerpt 6. Psychological Aspects of Medical Career. **173**
Audio Excerpt 7. Quizzes Help **176**

Chapter 1

Introduction and General Information

Introduction and Theoretical Foundation

The theoretical foundation of this study is the theory of cognitive dissonance (Festinger, 1957). Cognitive dissonance occurs when individuals experience challenges to their existing schema. Cognitive dissonance requires reconfiguration of schema through trial and error, process of elimination, or reconciliation of competing alternatives. While in a state of cognitive dissonance, an individual cannot properly interpret or make sense of his or her intellectual space and experiences an unpleasant disequilibrium. Leon Festinger (1957) explained the theory as a phenomenon in which a person holds two inconsistent cognitions and experiences the pressure of an aversive motivational state called cognitive dissonance. The individual will seek to remove the pressure by altering one of the two dissonant cognitions.

Because of the impact of cognitive dissonance of individuals in environments where the demands and contexts change constantly, from class to class and over time, this theory underlies both the analysis of the texts and the students experience with those texts.

Scholarly and academic texts differ so much from each other and from what students have previously encountered in their education, that reading these texts may cause cognitive dissonance. This study employs genre analysis to elucidate the types of differences that exists between texts.

In addition to the differences in the texts, differences among individuals affect cognitive dissonance. Two additional theories explore facets of the student experience. William Perry's

Stages of Intellectual Development (1970) provide a schema for understanding the mindset of traditionally aged college students. Brenda Dervin's Sense-Making Methodology (1983) supplies the theoretical lens to access the experiences of students as they identify instances of cognitive dissonance in their experience reading assigned scholarly journal articles and attempt to overcome the challenges of cognitive dissonance as they arise.

Problem Statement

Current endeavors to integrate information literacy into the college curriculum stem from incorrect assumptions of teaching faculty and academic librarians about how students are prepared and expected to be information literate. Current practice in courses designed to introduce students to university writing provide essay models written on a 10th grade level with generic (not scholarly) conventions. Students, struggling to internalize the *right* way to write an essay, experience cognitive dissonance when applying the 5 point essay model to scholarly articles they encounter in assignments in other general education classes. This system of introducing students to university writing undermines academic success by rendering the student illiterate at the college level of reading comprehension and unable to benefit from information literacy efforts such as instruction in searching databases and properly citing sources. Academic librarians are stuck in the unenviable position of teaching *research* methods to students who have not yet developed adequate *reading* methods, a situation analogous to selling wagons to people who have no horses.

In order to understand how information literacy landed in such an infertile environment, an deeper look at information literacy and how it has been interpreted within the academic library is required.

Information Literacy

Information literacy, the most recognized campaign of academic librarians, has received tremendous scholarly attention with more than 5,000 publications since 1973 (Rader, 2002). The literature on information literacy encompasses "multiple points of view, innovative approaches, and critical assessment" (Budd, 2008, p. 319). Despite the reception of information literacy into the scholarly and assessment community, dissatisfaction exists regarding its definition and implementation.

The Association of College and Research Libraries (ACRL) Standards for Information Literacy in Higher Education (2000) are the professional standards in academic libraries. ACRL defines information literacy as "a set of abilities requiring individuals to recognize when information is needed and [to] have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 2011).

Scholars have criticized this definition as too limited. As John Budd (2008) questions, "We can probably stipulate for the time being that the content of the standards is necessary, but is it sufficient" (p.319)? Simmons (2005) asserts that this definition of information literacy fails to address assumptions about information and the importance of helping students examine and "question the social, economic, and political context for the production and consumption of information" (p. 298). Elmborg (2004) also criticizes the definition as reductionist.

> In order to provide a working definition of information literacy, we must navigate two competing visions of the library. In one vision, the library retains its status as neutral purveyor of information, and information literacy is based on students mastering the libraries' tools and systems. In this vision, information literacy is reduced to mastering a set of library skills with traditional tools. In the other more ambitious vision, the library becomes a site for student empowerment, a place where students create genuine questions and construct their own answers. In this vision, the

> library's role in perpetuating disciplinary classifications and organizing and disseminating authoritative knowledge becomes part of what students must understand to be information literate, but only part (p.10).

Budd (2008) suggests that "there are some essential factors that are not included in the standards and that may even be at odds with some specific points articulated by ACRL" (p. 319). Budd goes on to assert a need for including "metacognition into instruction. Once a fundamental understanding of reading and assessing the thought of others is introduced, students can begin to reflect on their knowledge of their own cognitive actions" (p. 321).

Some scholars even assert an alternative definition. Lloyd (2007) explains that information literacy is a complex process that "requires engagement with a range of psychical, social, and textual sources that are recognized and sanctioned as legitimate by experienced practitioners" (p. 183).

In addition to the perceived shortcomings of the ACRL definition of information literacy, the standards are also subject to incomplete implementation.

> Performance Indicator 1, Standard Three states,
>
> The information literate student summarizes the main ideas to be `extracted from the information gathered. The outcomes of this performance include: *reading the text and selecting the main ideas* [italics added], restating the textual concepts in his/her own words and selecting data accurately, and identifying verbatim material that can be then appropriately quoted. (ACRL, 2000, p. 11)

In studies that link assessment of information literacy efforts to ACRL Standards, Outcomes and Performance Indicators, Standard Three, Performance Indicator 1 (3.1) is omitted or considered outside the scope of the librarian's responsibility, with rare exceptions.

For example, Gilstrap and Dupree (2008) carefully tied each result of their study, Assessing Learning, Critical Reflection, and Quality Educational Outcomes, to ACRL Standards and Performance Indicators.

Table 1.1 Comparison of Gilstrap & Dupree (2008) Outcomes to ACRL Standards and Performance Indicators

Results	***ACRL Standards & Performance Indicator***
Learning, Question 1	1.1, 2.2, 3.6
Searching, Question 1	2.2, 3.6
Time, Question 1	None
Learning, Question 2	3.7. b-c, 1.1.c-d
Evaluation of Resources, Question 1	1.2.d, 3.2.c
Searching, Question 2	3.4e
Time, Question 2	None
Evaluation of Resources, Question 2	3.4e
Confidence, Question 3	1.2.a, 1.2.c, 1.4.b, 2.1.d, 3.4.a, 3.7.a
Evaluation of Resources, Question 3	3.2.a, 3.4, 3.5
Learning Experience, Question 3	1.1.d-e, 1.1.f., 2.2.a, 2.4, 2.4b, 3.7.c, 4.1.b
Learning: Synthesis and Application, Question 4	2.1.c, 2.2 c-f., 2.5d, 3.4, 5.1.b
Evaluation, Question 4	1.3.b,3.2.a, 3.2.c, 3.6.a
Question 5	1.2.c,1.3, 2.2.3-f, 2.3.a, 3,4, 4.1

Conspicuous by its absence is Standard 3.1, in which students are expected to analyze the text at a paragraph level, identify its main idea, and restate the idea in their own words. Despite

the inclusion of this specific ACRL performance standard that addresses students' ability to understand the scholarly research, the emphasis in the traditional bibliographic instruction is finding and accessing the available and appropriate resources, not facilitating an understanding of those resources' context within the discipline (Elmborg, 2006).

Knight (2005) limits consideration of Standard Three to evaluating the credibility of the information, but notes that students show minimal accomplishment in "understanding of how to identify and articulate the critical attributes of the information" (p. 50).

In her study of teaching faculty in humanities, social science, and sciences, Gullikson (2006) asked how important the ACRL Information Literacy Competency Standards' outcomes were. The outcomes of highest average importance overall included Standard 3.1a, "Reads the text and selects main ideas" and 3.1b, "Restates textual concepts in his/her words and selects data accurately" ranked as number 2 and number 3, respectively. Unfortunately, Gullikson did not consider Standard 3.1 in her ranking of "Top Ten Librarian-Responsible Outcomes."

Despite Gullikson's position that the librarian bears no responsibility for Standard 3.1, a few examples exist of pedagogical and assessment practices that specifically address this standard. Bronshteyna and Baladad (2006) described using paraphrasing exercises within information literacy instruction in order to allow students to practice thinking critically about the information source and articulating their thoughts using parenthetical citation. Fiegen, Cherry, and Watson (2002), a team comprised of one business librarian and two management professors created an assignment in which students read articles from *Business Week* and wrote a one paragraph summary and a one paragraph analysis of how the article related to theories presented in the class lecture (p. 311). This assignment allowed the professors to specifically address

learning outcomes of information literacy Standard 3, Performance Indicator 1a and 1b within the context of a gateway course in the business curriculum.

Samson (2010) provides detailed evaluation guidelines that allow for assessment within the context of a research assignment. Included in her criteria are the following questions.

> How many short direct quotes (three lines or less) are included in the text?
> How many long direct quotes (four lines or more) are included in the text?
> How many total in-text citations are included in the essay?
> Are the quotes used as filler?
> Does the author acknowledge, question, or combat possible author or publication bias in the essay? How does the student accomplish this?
> Does the author create an original thesis statement using the supporting evidence s/he presents? (p. 206)

Other than the few examples mentioned (Bronshteyna & Baladad, 2006; Fiegen et al., 2002; Samson, 2010), discussion of how to implement Standard 3.1 remains scarce in literature. However, the Psychology Information Literacy Working Group, a section of the Education and Behavioral Sciences Section of ACRL recently included Standard 3, Indicator 1 in the Psychology Information Literacy Standards (ACRL, 2010). These standards state that an information literate student "summarizes the main ideas to be extracted from the information gathered and synthesizes to construct new ideas" (Standard 3, Performance Indicator 1).

This dissertation study asserts that the absence of specific pedagogy about reading, summarizing, and synthesizing information extracted from scholarly journal articles pervades composition courses and information literacy efforts of academic librarians. This study addresses the impact of this instructional deficiency on students attending PLUS specifically, as well as extrapolates general implications for students attending similar institutions.

Understanding assigned scholarly journal articles represents one of many potential points of failure for early undergraduates. Other barriers include test anxiety, test-taking competence, study skills, and learning disabilities that may or may not have been recognized in secondary school. This study focuses exclusively on students' experiences with assigned scholarly journal articles for several reasons. Assigned scholarly journal articles represent disciplinary convention and modes of thinking. In addition, scholarly journal articles require a higher degree of critical thinking in order to comprehend them. A student who can understand a scholarly journal article assigned for class will most likely be able to comprehend a textbook used in the class, but a student who can understand the textbook may not necessarily be able to comprehend a journal article. Therefore, the comprehension issues associated with scholarly journal articles are more likely to reveal undergraduates' difficulties in comprehension and critical thinking than textbook readings. These difficulties point to gaps in preparation and opportunities for curricular intervention.

To equip students with at least basic preparation for the skills necessary to succeed in college, the practice since the 1960s has been to provide the freshmen students writing instruction via English faculty and information literacy instruction via academic librarians (Elmborg, 2003).

Composition and Information Literacy represent the two areas within the academy where students are most likely to be taught how to read, summarize, and synthesize information extracted from scholarly journal articles. Both of these areas emphasize acquiring an understanding of the conventions of academic writing (composition) as well as an understanding of the scholarly article within the context of the research discipline. Unfortunately, traditional

pedagogy in composition and information literacy emphasizes many specific skills but not reading, summarizing, nor synthesizing. College composition courses use generic writing styles as examples for students to emulate. Most instructors in college composition courses have internalized the conventions of research in English literature and lack enough experience with writing genres in other academic fields to teach students to write effectively using the conventions of social science or sciences. Elmborg (2003) states that library instruction and writing instruction share similar problems. Their challenges involve struggles with the issue of responsibility, such as which instructors are best suited to teach undergraduates to write and do research. Should it be the disciplinary faculty or specialists like composition teachers and librarians?

Competing priorities fragment librarians' efforts to teach college students the skills necessary to conduct research within the current information literacy climate. Concerns regarding correct use and attribution of scholarly articles and plagiarism plague academic librarians. They complain that they see students cut and paste from articles without citation, that the students cherry-pick quotes out of context to bolster their arguments, and that they cannot tell an appropriate article from an Internet commercial site (Nimsakont, 2008, p. 10). Students struggle to conceptualize and operationalize research related to their courses (Head, 2008).

The information literacy efforts of academic librarians focus on identifying, selecting, and retrieving quality research sources and making sure students know how to use those sources with an understanding of academic integrity. Many of these instructional efforts occur within a one-hour, one-shot bibliographic instruction class. In addition to the time constraints, most

librarians who teach bibliographic instruction to early college students do not possess enough subject knowledge to teach students how to understand scholarly literature.

Consequences of Gap

The absence of specific pedagogy in composition and information literacy programs about reading, summarizing, and synthesizing information extracted from scholarly journal articles undermines educational success. Information literacy presupposes literacy. Beneath all other considerations of information literacy lies the assumption that the student is able to comprehend the scholarship that the library provides. If students do not understand the nature of the scholarly article and its context, they will not be able to apply information literacy criteria adequately. Academic librarians, like composition instructors, are often left superimposing information literacy skills (source authority and citation practices) on top of a weak and undeveloped understanding of the research process and nonexistent comprehension strategies.

Many students fail to achieve adequate success in their first year of college. On average, 30% of freshmen students at institutions that fall into the Carnegie classification of "Master's Colleges and Universities" do not return to college the following year (ACT, 2008).

Efforts to address students' lack of preparation to read and write within disciplinary genres occur in both the Writing Across the Curriculum (WAC) movements and information literacy practice. The next section explores the contributions of these curricular philosophies as well as the gaps between what students are expected to be able to do versus what they were taught to do.

Writing Across the Curriculum and Information Literacy

Gaps in assumptions of student preparation and performance exist. This study examines these gaps experienced by undergraduate students as well as the students' attempts to overcome those gaps. In particular, this study addresses the gaps produced from writing and research instruction designed to be generic and the specific disciplinary discourse encountered within the general education curriculum. In exploring these issues, a student's experience as a college researcher and a college writer receive substantial emphasis.

WAC and information literacy initiatives help frame the questions, "How are students taught to write, and what are they expected to read in general education courses?" Although deeper consideration of these traditions occur in Chapter 2, a brief description of the philosophies and practices illustrate curricular efforts to address this gap.

Writing Across the Curriculum (WAC)

The relationship between reading and writing affects students in numerous ways. Much scholarship accentuates the primacy of reading in shaping writing competence (Applebee, 1984; Geisler, 1994, p. 37). The WAC movement focuses on writing as the most important part of the knowledge-acquisition process. WAC stresses the importance of the students creating their own world to interact with and understanding the knowledge structures encountered within the discipline.

The WAC tradition became very strong in the 1970s and the 1980s as a reaction to the way that composition studies had been estranged from other disciplines and disenfranchised from even English literature. The practice in higher education in America since the 1870s separated writing instruction from other instruction and relegated it to first-year composition courses taught

primarily by junior, temporary, or graduate student instructors (Russell, 1994). Criticism of this practice increased within the academy in the 1960s. By 1966, educators in the American English profession met at the Dartmouth Seminar, which was jointly sponsored by the Modern Language Association (MLA), the National Council of Teachers of English (NCTE), and the National Association for the Teaching of English (Russell, 1994). Although the conference attendees agreed on little at the time, discussions began about practical writing in the disciplines and freeing students from "the System." The System represented a combination of a skills model of teaching composition with an industrial model of educational specialization (Russell, 1994). The WAC movement arose from participants from that seminar—James Britton, Douglass Barnes, Harold Rosen, and James Moffett, among others (Russell, 1994, p. 11).

WAC is concerned with language in which the student's learning and development depends on using language to make sense of personal experience (Martin, 1992, p. 17). The WAC philosophy attempts to rediscover the authentic voice of the writer, letting the writer dig up his or her expressive writing style, deconditioning the flat, artificial style that had been indoctrinated into students throughout their schooling. Once an authentic voice is developed, it can address various audiences using writing convention and vocabulary appropriate to that audience.

The purpose of WAC programs is to encourage teachers in all disciplines to use writing as a way of learning. Writing in every discipline requires (or should require) prewriting, drafting, rethinking, and revising (Bizzell & Herzberg, 1985).

The WAC movement offers a critique of the relationships between composition and differing academic disciplines as being assumed and tacit as opposed to transparent and easy to

understand or emulate. Russell (1994) asserts “discursive practices of each academic field are deeply embedded in the texture of its disciplinary activity and that they have not, until very recently, been studied or taught within the disciplines” (p. 5).

Russell continues this argument by explaining how writing competency at the discipline level is assumed but not fostered,

> This transparency of writing has created a central contradiction in the American mass education system: its organizing principle—disciplinary specialization—recognizes no integral role for writing, and in many ways the disciplines have resisted the sharing of responsibility for writing instruction; yet schools and colleges are expected to teach students to write in ways sanctioned by the disciplines (p. 5).

Cognitive Psychology and WAC

Underlying the WAC movement, although not always explicitly argued as such, are the foundations of cognitive psychology in which writing and reading are complex psychological processes where knowledge schemata residing in the mind are created or altered as individuals interact with new stimuli and models. Contradiction in writing style and disciplinary conventions may cause cognitive dissonance in freshman and sophomore readers. Another barrier results between the student and a required assignment when a contradiction leads to cognitive dissonance. For at-risk students, this barrier could be one too many.

In expository writing, students are taught to write in a clear and direct style. Thesis statements often appear at the beginning of the essay and are supported with examples. Scholarly writing often builds on previous academic research and addresses arguments that are not explicitly stated within the article (Kuhn, 1996).

A central phenomenon in cognitive psychology is repetition, performing an action that is the same in some respects as one we have performed or observed before. "Research in the language sciences focuses on a striking form of repetition called structural priming. When people talk or write they tend to repeat the underlying basic structures they recently produced or experienced others produce" (Pickering & Ferreira, 2008). Individuals are also influenced by the type of text they expect to read, so if they expect to read expository texts, they are more likely to activate individual-item processing as they read, as opposed to relational processing (Zwaan, 1994). Students who assimilate the structures associated with expository texts will attempt to use them as they read assigned scholarly journal articles. If the underlying text structures of the assigned scholarly articles do not conform to the expository model, cognitive dissonance becomes more likely.

Information Literacy

Information literacy researchers have begun to step back and re-examine prevailing practices, techniques, and theories in light of what is known about the students whom they are attempting to educate. In the last few years, researchers in the field of information literacy began promoting looking at the life-world of the student to better understand how to education him or her. A life-world consists of an individual's consciousness based on pure experience as well as the prejudices and interpretations derived from the individual's culture (Carr, 1970). Beginning college students may not be cognitively ready for inquiry based on complex concepts (Budd, 2008, Perry, 1970). John Budd addresses the realities of underdeveloped research and comprehension skills by asserting the need for metacognition into instruction: "Once a fundamental understanding of reading and assessing the thought of others is introduced, students

can begin to reflect on their knowledge of their own cognitive actions" (p. 321). Budd emphasizes that the first step in developing information literacy is to "enhance students' abilities to frame meaningful questions" (p. 325). Framing meaningful questions occurs by critically reading documents and having the students imagine asking the author questions.

The phenomenological responsibility of the teacher (or librarian) is to comprehend and present the problem that fits a student's capabilities. If the student struggles with comprehension of a journal article, the other information literacy competencies will be compromised. Librarians (teachers) need to retreat from enabling students to seek and retrieve information that they cannot understand or apply and move to helping students learn to retrieve information that fits their abilities.

Students face uncertainty and confusion as they struggle to make sense of their college experiences. The student's life-world experiences tremendous upheaval as he or she transitions from high school to college, and the student must develop his or her own way of thinking and doing to meet the demands of this new existence. Education is a formal way to expand one's life-world (Budd, 2008). As that process occurs, students are exposed to rules and conventions of the academic community, which they interpret into their own frames of meaning and ultimately accept and internalize or reject (Magolda, 1992; Perry, 1970). They navigate the collegiate academic environment by relying on advice and insight from other freshmen, older students, and experimentation based on study skills developed in secondary school and the direction and feedback they receive from their instructors (Pascarella, 1985; Pascarella & Terenzini, 1991). Their ability to discern and learn from these sources in their first semesters on campus determines their future academic, social, and vocational success.

This dissertation follows recent information literacy research in its aspiration to study the life-worlds of the students. Accordingly, the beginning point of this study is what is known about the experiences of freshmen and sophomores who enroll in freshman composition and general education classes at PLUS (PLUS). By focusing on this population, this study assesses the broader problems of information literacy, academic preparation, student development as well as students' ability to read, summarize, and synthesize main ideas in assigned scholarly journal articles.

Freshmen at PLUS and Their Preparation for Academic Success

Many students' challenges directly relate to their academic preparation in high school. College preparation varies as a function of individual ability as well as the curricular offerings and degree of rigor expected from high school classes. None of these factors can be easily measured, but most colleges and PLUS (PLUS) use a combination of high school grade point average (GPA) and scores on standardized achievement tests such as the ACT (formerly known as American College Testing, Inc.) to predict academic success in college.

Academic success can be defined in various ways, but there is increasing legislative pressure by the Complete College Act of Tennessee (2010) to assess success in terms of retention rates from freshman to sophomore year and six-year graduation rates. PLUS's retention rate for freshman to sophomore year from Fall 2006 to Fall 2007 was 78.69% as compared with 70% average rate for universities in the Carnegie classification of "Master's Colleges and Universities (larger programs)" from 1983 to 2008 (ACT, 2008; PLUS Fact Book, 2007). PLUS's 2006 overall six-year graduation degree rate is 46.84%, which is similar to the national

average for Master's Colleges and Universities' (larger programs) 44.38% in six years (calculated from The Integrated Postsecondary Education Data System [IPEDS] of the National Center for Education Statistics). Both PLUS's retention rate from freshman to sophomore year and its six-year graduation rate remains representative for PLUS's Carnegie classification peer group, but PLUS is working to increase its six-year graduation rate (PLUS, 2003). In comparison to PLUS, The University of Tennessee at Knoxville's six-year graduation rate as of 2007 is 63.93% and the national average six-year graduation rate is 56% (ACT, 2008; PLUS Fact Book, 2008).

Factors that influence PLUS's retention rate include the high percentage of first-generation college students (self-reported on financial aid applications at 33%, but assumed to be higher), the high percentage of students who work part-time, as well as a high percentage of students who require some level of remediation as a condition of enrollment (1,877 for Fall 2008; Middle Tennessee Academic Support Center, 2008). PLUS's Office of Institutional Research reports that first-time freshman enrollment is 3,456 and other freshman enrollment is 2,829 for the Fall 2008 semester (http://www.PLUS.edu/iepr/factbook/factbook_08.). In a total freshman population of 6,285 students, 30% require at least one prescribed course to address high school deficiencies.

Students who score an 18 or below on their ACT exam must take Introduction to College Writing, (English 1009) to prepare them for the expectations of college-level writing. If students are automatically assigned to the English 1009 course, they must still take a mandatory skills exam called COMPASS. COMPASS is a placement test that measures a student's ability to write an essay. It is different from the ACT, which only tests a student's ability to choose correct

syntax in the form of a multiple-choice option. PLUS considers the COMPASS exam a more valid measure of a student's writing ability than the ACT (Otto, 2008).

English Composition Classes at PLUS

At PLUS, students generally encounter academic expectations of research and academic writing through freshman composition classes, Introduction to University Writing (English 1009) and Expository Writing (English 1010). The English department also offers Research and Argumentative Writing (English 1020) as a general education course, although it is optional. Composition instruction at PLUS incorporates a WAC philosophy (Smith, 2010). This study asserts that students remain unprepared for disciplinary-specific writing despite the WAC emphasis.

The Introduction to University Writing course enrolls approximately 9% to 10% of the freshman class in the fall semester and additional freshmen in the spring semester. In fall 2008, 582 students enrolled in English 1009 at PLUS. These students were enrolled into 35 sections. The course helps students develop rhetorical knowledge, critical thinking, reading, and writing skills. The course places emphasis on the processes of writing and the knowledge of writing conventions. English 1009 is the first course in a linked pair of courses called the Stretch Program. In this program, the student will continue with the same writing instructor and classmates into English 1010 in the spring semester. English 1009 uses the same syllabus and the same grading standards as English 1010 but provides students additional opportunities for practice, editing, revision, and conferences with their instructors. During the semester, students typically produce a minimum of three essays, totaling at least 2,000 words. The following learning objectives are stated in the syllabus:

> Develop a thesis clearly with a variety of supporting evidence (e.g., definition, illustration, description, comparison, and contrast, causal analysis); adapt writing to audience and purpose, integrate and document primary sources accurately; vary the structure and length of sentences and paragraphs; and acquire a basic vocabulary for discussing university level writing. (English 1009 Introduction to University Writing Course Syllabus, 2008).

In spring 2008, 10.42% of the 546 students who took English 1009 in the fall 2007 had to re-enroll in the course because they did not pass the course (Table 1.2). According to Dr. Sheila Otto (2008), Director of the Introduction to University Writing Program, 76% of the students passed the course in the fall 2007 semester. All of the students enrolled in English 1009 are considered at-risk students for retention because of their low ACT scores.

Table 1.2. Spring 2009 Enrollment of Students who took English 1009 or English 1010 in Fall 1008

Course Enrolled	***English 1009 Fall 2008***	***English 1010 Fall 2009***
College Algebra, MATH 1710	24.23%	16.66%

Expository Writing, ENGL 1010	80.24	8.47%
Fundamentals of Communication, COMM 2200	14.09%	14.70%
Health and Wellness, HLTH 1530	13.40%	12.75%
Introduction to Psychology, PSYC 1410	16.67%	19.64%
Introduction to Music, MUAP 1030	15.81%	18.71%
Orientation to Art, ART 1030	10.14%	11.77%
Research and Argumentative Writing. ENGL 1020	N/A	67.47%
Survey United States History I, HIST 2010	21.99%	21.5%
Theatre Appreciation, THEA 1030	17.01%	18.05%
University Seminar, UNIV 1010	12.19%	2.2%

* Calculated from Blue Info Data Warehouse, 2010

The larger proportion of the entering freshman class, 2,149 or 62%, enrolled in English 1010, Expository Writing, in the fall semester of 2008 without taking English 1009. These students are also part of this study. As mentioned above, these students use the same syllabus, textbook, and assignments as students in English 1009.

Transfer students who took their English composition classes elsewhere comprise the third group of students in this study. These students often have completed freshman composition classes at other institutions. As students may transfer in as a freshman, sophomore, junior, or

senior, they may need to complete some or all of their general education courses after they enter PLUS. These students differ from the students who begin college at PLUS and take either Introduction to University Writing (English 1009) or Expository Writing (English 1010) in their first year. These students also differ widely among themselves. Although articulation agreements exist between many undergraduate institutions, the content and structure of the courses that they offer vary extensively. By necessity, these students' experiences are explored solely through interviews because it is not possible to examine the texts and assignments in their English composition classes.

The incidence of students transferring from one institution to another continues to rise. According to the National Center for Education Statistics (2005), 27% of all students who initially attend public four-year institutions and 41.5% of all students who initially attend public two-year institutions transfer. PLUS, however, surpasses the national averages for its sector with the percentage of transfer students enrolled at PLUS at 44.57%. In fact, PLUS ranks in the top 35 transfer institutions in the country (PLUS Transfer Office, 2010). Three public two-year institutions, Molto Community College (12.61%), Volunteer State University (9.69%), and Nashville State University (7.85%) comprise 30.15% of the feeder institutions to PLUS.

This study's methodology has been modified to address the disparity in experience across these three student populations. For the first two groups of students, a total of 2,731 first-time freshmen, this study will consist of comparing required texts and the assignments in English 1009/English 1010 to the journal articles required by courses that these students enroll in the next semester. The reading list of assigned scholarly journal articles is examined in order to compare the type of reading required with the type of writing that students were exposed to in

Introduction to University Writing (English 1009) and Expository Writing (English 1010). In addition, students who took either English 1009 or English 1010 and one of the general education courses will be interviewed. For the third group of students, the transfer group, only interviews will be conducted.

Information Literacy Environment at PLUS

Teaching students to comprehend text as defined by Standard 3, Performance Indicator 1 requires instructing students in how to read the text and select the main ideas, restate the textual concepts in his/her own words, select data accurately, and/or identify verbatim material that can be then appropriately quoted (ACRL, 2000). Academic librarians at PLUS do not consider teaching students to comprehend text as the librarian's responsibility. Librarians at PLUS act as generalists, not subject specialists. Although librarians began liaison relationships with academic departments as recently as 2005, they have never adopted a subject bibliographer model in which librarians specialize in the bibliographic resources and research skills of a discipline. In subject bibliographer models, the librarian assumes responsibility for teaching bibliographic instruction for all classes taught for an academic department. This model allows for greater focus on the specific culture of scholarship within a discipline. Because of the generalist model, difficulties exist in implementing team teaching information literacy efforts between teaching faculty and academic librarians. Scholarship in academic librarianship has recommended for the last 15 years that librarians form partnerships with teaching faculty and collaborate in designing information literacy instruction that addresses the context of specific courses. However, in practice, these partnerships are relatively rare compared to the typical one-shot bibliographic instruction session or website tutorials. Scholarship on these partnerships tends to focus on the

merits of creating and sustaining the partnership without emphasizing the specific course assignments (Nutefall & Ryder, 2010). These partnerships do not exist at PLUS, and librarians often practice information literacy instruction in a relative vacuum of disciplinary expectations. One of the unintended consequences of the rare partnerships between librarians and teaching faculty include viewing the research process from different perspectives. For instance, Nutefall and Ryder (2010) found that first-year writing faculty and instruction librarians used "keywords" differently and disagree about when students should narrow their research question (p. 437). Librarians encourage students to narrow their research question early so that library instruction sessions can emphasize searching, retrieval, and evaluation. Writing faculty suggest that students read first and allow the research question to emerge after engaging in the scholarly conversations and revising their original assumptions (Braun & Prineas, 2002). Gaps in pedagogical approaches to the research process further complicate the efforts and collaboration attempts of academic librarians.

The Experience of Beginning College Students

This study explores potential gaps in pedagogical approaches to information literacy by identifying and discussing gaps in assumptions and expectations of students from the point of view of the student. As previously discussed, the life-worlds of students are in the process of transformation during their first semesters of college. This complex transition stems from many forces, including the students' preparation in high school, the classes they take when they matriculate at PLUS (PLUS), the pedagogical approach of PLUS in the design of remedial and general education classes for first-time freshmen, as well as the responses of individual students to their environment and its stresses.

Myriad influences that act upon students as well as the students' perceptions of their experiences chiefly because these combine to create the context of success or failure for these students. Some of the student-centered influences include: characteristics of the freshman class, classes that these students take during their first and second semesters, the pass and fail rates of these classes, and the content and requirements of these classes. Another set of influences involve the over-arching institutional culture of PLUS and the subcultures of its academic disciplines. Elements of the institutional culture of PLUS include a commitment to WAC principles and information literacy for all students regardless of discipline. A third consideration is the curricular path that the student follows. Did the student take English composition at the same time or before taking history or psychology courses? Did the sequence of classes prepare the students for the demands of subsequent classes? Finally, individual experiences of undergraduate students are investigated to determine the students' perceptions of their own abilities as well as the disciplinary conventions that they encounter in general education classes that seem strange or difficult.

Curricular Paths and Implications

To determine what classes are most likely to be taken by English 1009 students in the subsequent semester, a preliminary analysis was conducted in which enrollment patterns were examined from fall 2007 to spring 2008. In fall 2007, 546 students took English 1009. In the spring, these students took 212 different classes (derived from PLUS's Blue Info Data Warehouse at https://blueinfo.PLUS.edu/cgi-bin/DW-bin/dw_signon.pl). The biggest concentrations of classes clustered around courses that fit general education requirements such as Expository Writing, Fundamentals of Communication, Survey of American History I, Survey of

American History II, Introduction to Music, Theatre Appreciation, College Algebra, General Psychology, and Health and Wellness. Others repeated Introduction to College Writing or took Essentials for Mathematics and Math for General Studies, which are other prescribed courses to address high school deficiencies. These classes consistently appear as the most popular spring semester classes in spring 2008 and spring 2009.

In addition, both students who took Introduction to University Writing in fall 2008 and those who took Expository Writing in fall 2008 took similar classes in the spring of 2009, as shown in Table 1.2. Obvious exceptions include the subsequent composition courses that students take in sequence. Another exception is University Seminar, which is normally taken in the fall semester. According to the Director of Academic Enrichment, Marva Lucas (2009), students who take University Seminar in the spring have failed it in the previous semester.

Table 1.2 shows us that the students who completed English 1009 and English 1010 are most likely to enroll in College Algebra, American History 2010, Theatre Appreciation, and Introduction to Psychology in addition to the next level of English composition in the subsequent semester. The patterns are similar for both groups of students.

Courses listed in Table 1.2 represent a generalized and symbolic “critical path” for entering freshmen to complete the necessary 41 credit hours of general education required by the state of Tennessee. There is no acknowledged critical path for these students. In reality, each student’s curricular journey arises from the influence of their academic advisor and the availability of these courses when the student registers.

Using these courses as a generalized curriculum, specific courses that require scholarly journal readings were identified by talking to faculty. The American history course, the

communications course, and the psychology course assign scholarly journal readings at the discretion of the faculty. College Algebra, Introduction to Music, Theatre Appreciation, and University Seminar do not assign scholarly journal readings. Because American History (and Introduction to Psychology show lower pass rates than Fundamentals of Communication, these courses were selected for a content analysis of their assigned scholarly journal readings. Table 1.3 shows us that students pass American History and Introduction to Psychology at a rate of 78% and 81% respectively.

Table 1.3 Pass rate of courses most frequently enrolled by students who took English 1009 or English 1010 in Fall 2008 semester in the subsequent semester (Spring 2009).

Course Enrolled	*English 1009 Fall 2008*	*English 1010 Fall 2009*
College Algebra, MATH 1710	73.74%	71.62%
Fundamentals of Communication, COMM 2200	91.71%	92.24%
Expository Writing, ENGL 1010	74.03%	50.93%
Health and Wellness, HLTH 1530	90.90%	92.17%
Introduction to Psychology, PSYC 1410	80.89%	81.12%
Introduction to University Writing, ENGL 1009	64.10%	N/A
Introduction to Music, MUAP 1030	81.11%	81.62%
Research and Argumentative Writing. ENGL 1020	N/A	83.33%
Survey United States History I, HIST 2010	93.31	78.13%
Theatre Appreciation, THEA 1030	91.95%	91.89%
University Seminar, UNIV 1010	70.91%	75.6%

**Calculated from Blue Info Data Warehouse, 2010

Pedagogical Approaches at PLUS

General education classes at PLUS, like those at other institutions, enroll freshman through senior students. These students vary in preparation and maturity. University-level educators in higher education are generally aware of this situation and often shape their curriculum and teaching style to the developmental stage of their students (Magolda, 1992). When students represent various ages (including students that qualify as nontraditional at age 23) as well as classes (freshman, senior, etc.), tailoring becomes more difficult. Through their enrollment in English composition classes or the University Seminar class, slightly more than half the freshmen at PLUS participate in bibliographic instruction sessions taught by academic librarians during their first two semesters (Kirk, Vance, & Gardner, 2010). Librarians at PLUS design and teach bibliographic instruction in accordance with the Information Competency Standards for Higher Education (2000) set forth by the Association of College and Research Libraries (ACRL) within the academic library community.

In addition to calibrating their instruction to ACRL standards, academic librarians work collaboratively with the English faculty at PLUS to ensure that bibliographic instruction supports the learning objectives of English courses. Increased interest in partnership between these two initiatives has developed over the past few years.

The pedagogical traditions of WAC and information literacy have implications for preparing students for academic success. Both initiatives wrestle with the demands for remediation (Elmborg, 2003). In the past, college instructors expected solid library research skills from their freshman students. Most academics today would agree that even well-prepared freshmen do not possess sufficient critical information literacy skills to excel in college, although

they may concede that well-prepared high school students may survive academically by relying on high school preparation (U.S. Department of Education, 2006). Unfortunately, the nation faces a dearth of well-prepared high school graduates (Venezia, Kirsch, & Antonio, 2003) and most freshmen students at PLUS represent the consequences of "average" public school education with ACT averages of 22.0 and grade point averages of 2.83 (PLUS Office of Institutional Research, 2010).

Potential Information Literacy Environment in Academic Libraries

Academic librarians enjoy an unusual vantage point in higher education. Sometimes, they see the disconnection between a research assignment and available published research. In other instances, students may ask librarians more direct questions that reveal problems with the students' understanding that they may not risk asking in class or disclosing to a professor.

> Academic librarians, by the nature of the profession, have an interdisciplinary perspective . . . This interdisciplinarity provides librarians an opportunity to see how discourses differ across disciplines, positioning them uniquely and powerfully to help students recognize and make sense of the disciplinary differences. They have the opportunity to see the academic culture as an anthropologist would, as an insider-outsider who observes deliberately and sensitively, noticing what might not be visible to others within the culture—in this case, faculty members, and students. (Simmons, 2005, pp. 298–299)

With this study, an opportunity may occur for academic librarians to act as both an insider of an academic culture (through collaboration with teaching faculty and repeated exposure to sources within the discipline) and as an outsider to target specific gaps in information literacy instruction within general education courses where conventional research strategies, such as the normal one class period bibliographic instruction, resist sufficient modification into the culture of specific disciplines.

Before this study begins to explore the student's life-world and his/her experience of assigned scholarly journal articles, relevant research in information literacy must be identified and reviewed. Unfortunately, literature in information sciences does not address this issue. The research that focuses on Standard 3, Performance Indicator 1 in the beginning of this chapter represents the only literature found that explores the importance of reading, understanding, and synthesizing. Chapter 1 also already includes the scarce literature that emphasizes the life-world of students and their abilities to frame meaningful questions and their subsequent empowerment as they actively engage with information. The nascent literature in information sciences does not encompass a synthesized perspective of literature from the disciplinary traditions and their views of academic reading and writing that provide theoretical underpinnings to this study. Therefore, an exploration of such a multifaceted problem necessitates a review of the core relevant literature in composition studies, cognitive psychology, genre analysis, educational psychology, and information literacy in higher education. The literature review in Chapter 2 of this study emphasizes the most relevant research about the complex interplay of writing and research within rich, but diverse, scholarly traditions. Some of this research represents practices and approaches that have proven to be dead-ends. This study includes them anyway in order to glean whatever insights exist and to recognize the lineage of researchers who have attempted to understand how students understand scholarly literature as well as their obstacles in achieving this educational competency.

Chapter 2

Literature Review

Students need help comprehending journal articles. Reading long and complex texts requires skills that reading short stories and brief expository essays do not. A student's ability to comprehend scholarly journal articles is a complex and multifaceted dynamic involving the genre of the text, the student's exposure to varying writing styles, his or her educational experience to date, the student's worldview, and the expectations of the professor. Understanding this literature entails understanding both how intellectual thought and inquiry occurs and how scholars communicate the results of these efforts. The nature of inquiry and communication differ by discipline, which means that generic forms of bibliographic instruction have little impact on students. Current information literacy practices rest on questionable conjecture about what the student "should" know at this point in his or her curriculum and flawed assumptions about the way the student will have to apply research skills in completing assignments.

Academic librarians need a deeper appreciation of a student's level of preparation, the culture of the discipline and conventions of the genre that influence the student's development as well as how these influences operate over time and under the surface in order to design effective information literacy instruction. Exploring the dynamics of learning the language of an academic culture and discerning the information practices that constitute literacy in undergraduate education require moving beyond the boundaries of current information literacy scholarship.

Information literacy presupposes literacy and literacy includes cognition, reading, writing, and how the separate processes of thinking, reading, and writing may be intertwined. This literature review will examine scholarship from cognitive psychology and developmental

psychology to explore critical thinking and composition studies to investigate implications of writing pedagogy on information literacy. Because Writing Across the Curriculum (WAC) emphasizes the integration of thinking, reading, and writing processes, this literature review will address seminal writings in the WAC tradition.

Cognitive and developmental psychology, WAC, and composition studies include an enormous amount of both core scholarship and recent research. Two theoretical frameworks necessarily discipline this inquiry into an investigation about the experiences of undergraduates as they read assigned journal articles in general education studies: Genre Analysis, and Dervin's Sense-Making Methodology. Genre Analysis emphasizes text and its incorporation of disciplinary conventions as a medium that communicates values and shared understandings between readers and writers within the same academic tribe (Becher & Trowler, 2001). A discussion of Genre Analysis scholarship will be included in this literature review. Dervin's Sense-Making Methodology (SMM) focuses on the processes individuals use to comprehend and articulate their "life world" within various disciplinary and curricular contexts, over time and from multiple perspectives. An overview of SMM occurs in Chapter 3, the methods chapter.

To provide the reader with some structure for a review that gathers so many disciplines, the literature is explored from a continuum that begins with the mind of a student and travels along the expectations that the student faces in reading and writing to the specific academic cultures of the differing disciplines that the student is likely to encounter in a general education curriculum at PLUS. The end of this continuum, the student's interaction with the academic librarian, results from information literacy design that connects with both the student and the specific disciplinary culture that contextualizes the student's information need.

The first section of the literature review encompasses research into the developing mind of the student, which represents the final frontier to which all educational endeavors that develop reading, writing, and critical thinking are aimed. Section 2 will be devoted to the cognitive demands of reading and understanding academic writing that are imposed by the academy. The third section further develops the domain of academic writing and how it is both taught and experienced. The third section also explores literature about the philosophy of the Writing Across the Curriculum movement and composition studies in general, with specific emphasis on the importance of paragraphs and paragraph construction. The fourth section continues the theme of the skills required of students in the academy, but shifts the focus to how those expectations differ based on the specific culture of each scholarly discipline. The final section addresses the field of information literacy and its pedagogical response to both the multifaceted collegiate landscape and the individual students who use scholarly journal articles. Specifically, this section explores the extent to which students are expected to read assigned journal articles in their general education classes and the pedagogy employed to integrate information literacy into subject content, whether or not the efforts derive from teaching faculty or academic librarians.

Students and Their Developing Minds

As indicated above, the first consideration of this review of literature explores the mindset of traditional college students. College student development literature begins with the work of William F. Perry (1970), who studied Harvard undergraduates over a 15-year period beginning in the 1950s. Perry created a development scheme of nine positions that continues to influence thought in education research today. An overview of the scheme follows.

Position I, basic duality, describes a stage in which the individual sees the world of truth and morality in terms of in-group vs. out-group (us versus them) constructions. Moral and personal responsibilities consist of simple obedience to these constructions (Perry, 1970, p. 66). Educational success results from memory, imitating skills demonstrated by an authority, and correct responses and answers. From Position I, according to Perry, any proposition "must be either right or wrong. It cannot be better or worse" (p. 71). The culture of a pluralistic university is incompatible with the assumption of Position I, and many freshmen who hold this position struggle to make sense of their new milieu (Perry, p. 67).

In Position II, multiplicity prelegitimate, the individual recognizes that others hold beliefs that oppose their sense of good. Diversity and complexity represent alien perspectives, but they are introduced within the community by authorities who are failing their role in representing the "right" knowledge (Perry, 1970). In situations in which peers and authorities appear to represent the "wrong" position, the student relocates his or her own stance as opposition. These students may rebel against the required courses of a general education curriculum with the belief, "It's going to do me no good" (Perry, p. 83).

Perry (1970) asserts that the transition of the individual from one stage to another "reveals a point of paradoxical incongruity between a process in personal development and the nature of modern, liberal education" (p. 80).

In Position III, multiplicity subordinate, the individual begins to understand that some truth remains unknown even to true authorities. The student accepts that different opinions are legitimate even among authorities, but believes these uncertainties will ultimately be settled in the future.

Position IV, multiplicity correlate, marks the beginning of the shift where the individual begins to see that reality is more uncertain than certain. At this point, the student begins to believe that everyone has a right to his or her opinion and there is no absolute right or wrong, except in the relatively rare incidences when authorities have proven right answers. From the student's points of view, assignments have shifted in nature. Professors are not necessarily expecting the right answer. Instead, these instructors expect students to think about concepts in a certain way and support their conclusions and opinions with data. Perry (1970) asserts that students realize that independent thought, or independent-like thought, results in good grades.

Position V, relativism correlate, demands that the student radically reperceive all knowledge as contextual and relativistic (Perry, 1970, p. 121). The student's original dualistic schema cannot accommodate the new ideas that he or she attempts to grasp. Perry describes the status of the student's mindset before the shift,

Up to this point students have been able to assimilate the new, in one way or another, to the fundamental dualistic structure with which they began. The new, to the extent that it has been anomalous or contradictory, has naturally forced them to make certain accommodations in the structure, but these have been achieved by elaboration of dualism into dual dualism or by the addition of a new subcategory of 'critical thinking' to the general category of 'what Authority wants'. (p. 121)

At Position V, this mental model of the student's representation of reality has become both overelaborate and incongruitous. To cope with this dysfunctional mental model, students ultimately promote relativism from "its status as a special case within the general dualistic model to the status of context. Within the new relativistic context, dualism is assigned a subordinate

status of special case" (Perry, 1970, p. 121). Moreover, in Position V, all proposed solutions are supported by reasons which must be viewed in context and relative to supporting evidence. Some solutions are better than others. The student's task is to learn how to evaluate potential solutions (Rappaport, 2010).

The next developmental stage is Position VI, commitment foreseen. In this stage, students accept that they live in a fully relativistic world in which countless contexts coexist. Despite the discomfort of not knowing if one will ever know for sure if he or she chose the best solution to issues given the overwhelming amount of evidence and lack of foresight, the individual begins to realize that choice is essential to avoid paralysis of constant disorientation. Ultimately, development in this stage "involves a kind of confidence, a Commitment to one's self as point of origin to other Commitments, and is therefore difficult to distinguish from a sheer trust in one's competence" (Perry, 1970, p. 166).

Position VII, initial commitment, position VIII, orientation of implications of commitment, and position IX, developing commitment(s) vary along a continuum of commitment and differ in qualitative instead of structural terms.

Position VII, initial commitment, describes the state in which the individual has started to decide on his or her own responsibility for whom he or she is and who he or she will be. This decision results in a sense of relief and focus (Perry, 1970).

Position VIII describes a stage in which additional choices emerge from the implementation of the initial commitments. These choices require the individual to consider balancing them in terms of short-term or long-term, certainty or tentativeness, breadth or depth. Individuals experience contradictions in the implications of their commitments (Perry, 1970).

The final position, developing commitments, describes a maturity in which a student has developed an experience of individuality. This individuality is expressed in the commitments made and the lifestyle of implementing them. It is very rare that an undergraduate student evolves to position IX during college. In Perry's study, only 13 of the 110 seniors interviewed exhibited instances of position IX. There were no instances of this position in freshman, sophomore or junior students (Perry, 1970).

Perry's study and resulting scheme raises pedagogical issues for institutions of higher education. Fundamental assumptions regarding best teaching practices should be reconsidered in light of the different ages and maturity of levels of students ranging from freshman to senior who enroll in general education classes, often side by side. In addition, this issue of pedagogical suitability intensifies within those general education classes that incorporate bibliographic instruction. Perry (1970) discusses the difficulties involved with connecting content to students' ability to comprehend subject matter.

> In the modern liberal arts college….the majority of the faculty has gone beyond differences of absolutistic opinion into teachings which are deliberately founded in a relativistic epistemology…In this current situation, if a student revolts against 'the Establishment' before he has familiarized himself with analytical and integrative skills of relativistic thinking, the only place he can take his stand is in a simplistic absolutism. He revolts, then, not against homogenous lower-level orthodoxy but against heterogeneity. In doing so, he not only narrows the range of his material analysis, he rejects the second level tools of critical analysis reflection and comparative thinking—the tools through which the successful rebel of a previous generation moved forward to productive dissent. (p. 80–81)

This section of Perry's research emphasizes the effect of students' maturity on reasoning and problem solving in personal and academic problems. The issues that the students faced occurred in a holistic college environment where students intellectually and personally challenged on a variety of levels. The following section will narrow the consideration of student academic development to how the individual interacts with concepts embedded in the text. In this section, research about cognition as it pertains to reading will be explored. This literature describes research performed with college students of varying ages and stages and does not address individual differences in maturity.

Cognition and Reading

How information is presented determines how it is processed. According to constructivism, readers and writers share common mental activities and purposes. In the constructive metaphor, composers, whether they are readers or writers use textual cues and prior knowledge organized in cognitive structures (schemata) to make cognitive inferences and elaborations to fill gaps of understanding and refine textual representations (Greene & Ackerman, 1995). Organizational signals such as headings, summaries, and marginal inserts help the reader make inferences by cuing the ordering of words and framing concepts. The reader incorporates the textual cues into existing schemata to create a mental representation that matches the ideas present in the text (Nevid & Lampmann, 2003, p. 229).

Social cognitive theory, also referred to as social learning theory, strives to understand the psychosocial mechanisms through which individuals "manipulate symbols and engage in reflect thought" in order to "generate novel ideas and innovative actions that transcend their experience" (Bandura, 1989, p. 1182).

In addressing the question of how meaning is constructed, this theory considers behavior as cognitive and other personal factors and environmental events as interacting determinants of one another. A person's ability to self-regulate motivation and action operates partly through internalized standards and evaluative reactions to that individual's own behavior. These evaluative reactions serve as motivators and guides for action (Bandura, 1989). Forethought adds another dimension to the self-regulation process. Bandura explains,

> Human adaption and survival depend increasingly on the power of forethought to override immediate feedback control of action….The capacity to extrapolate future consequences from known facts enables people to take corrective actions to avert disastrous futures. (p. 1181)

Observational learning, referred to as modeling, refers to complex behavior and conceptual acquisition skills. Bandura (1989) says, "Modeling influences convey rules for generative and innovative behavior as well. Through the process of abstract modeling, observers extract the rules underlying specific activities for generating behavior that goes beyond what they have seen or heard" (p. 94). People note the specific behavior patterns from interactions they observe and adjust the underlying rules to fit their own situations as they arise (Bandura, 1989). This action, modeling, assists readers and writers to extract and apply rules from observed situations to their own behavior.

Modeling includes four component processes: attentional processes, retention processes, behavior production processes, and motivational processes. Attentional processes determine what humans perceive from the almost infinite possibilities. Attention is a selective process. Retention processes involve receiving and encoding information into schemata that can be stored

in the memory in the form of rules and ideas. The quality of schema coding determines the quality of learning and retention.

Behavioral production processes represent the subprocess. In this stage, “the symbolic codes are transformed into appropriate courses of action through a conception-matching process” (Bandura, 1996, p. 330). Conception-matching occurs until the desired behavior mirrors symbolically coded action (Carroll & Bandura, 1987).

Motivation processes characterize the fourth subprocess of modeling. The incentives that drive motivation may be sensory, tangible, observed benefits others receive for the same action, or even how the individual values him- or herself for performing an action (Bandura, 1996).

Bandura’s theory effectively describes the efforts of novices as they struggle to first imitate behavior of their more accomplished peers and authorities and then attempt to transfer the behavior to applicable challenges beyond the original context. Students use examples and illustrations from teachers and other authorities as templates to be reproduced and applied in their own behavior. This behavior, modeling, effects how students acquire writing skills.

Social cognitive learning theory provides the mechanism by which individuals negotiate social and textual contexts within the constructivist paradigm.

> Constructivism has become a common metaphor for the active and authoritative processes of readers and writers…It operates in reading and writing operates at the level of a disciplinary belief, helping to sustain an image of literate people who deliberately and inventively negotiate social and textual contexts-even if this image has been underspecified in terms of what this negotiation entails. (Greene & Ackermann, 1995, p. 384).

Within the structuralist paradigm within constructivism, two dominant models exist: the structure strategy and the situation (construction-integration) model. The structure viewpoint asserts that learning to recognize the structure of the text determines successful comprehension.

Readers who can match their understanding to the writer's plan have an advantage in comprehending the text over readers that use a different plan (or mental representation of the text). The most disadvantaged readers are those who have no plan or mental model at all:

> Such a hierarchy is based on the top-level structure or plan for the text, and readers who use a different plan from that used by the author may be at a disadvantage in understanding the text. However, those that use no plan at all in processing the text are at a definite disadvantage. (Meyer, 2003, pp. 208–209)

Advocates of the structure position maintain that knowledge of text structure is an important cognitive requirement for comprehending complex text (Samuels et al., 1988). Meyer encourages using a structure strategy to determine the model or strategy of the text and then using the signals provided to interpret the specifics of the subordinate information. According to Meyer (2003), expository texts have top-level structures with most falling into one of five structures: description, sequence, causation, problem/solution, and comparison. Recognizing the top-level structure allows the reader to see where the logic of the text is going.

In addition to the top-level structure providing for the coherence of the text, signals express the relational structure among the main propositions (Meyer, 1985). Loman and Mayer (1983) explain, "Signaling is an attempt to make the conceptual organization and causal links in a passage more obvious to a reader (p. 409)." According to Loman and Mayer, two types of signaling exist. Selective attention signaling directs attention to conceptual information, and coherent organization signaling cues the reader to build an integrated text representation.

Text processing demands cognitive capacity. Complicated vocabulary and syntax increase text processing demands and require high levels of cognitive capacity. Signals help learners construct an internal representation of text content. If signals are not provided, then

learners must use higher levels of cognitive capacity to infer the ideational relations necessary to construct the internal representation (Britton, Glynn, Meyer, & Penland, 1982). In experiments of text processing, researchers compared cognitive capacity as subjects read text with versions that included signals to the cognitive capacity used as subjects read text without signals. Text with signals embedded required less cognitive capacity to process (Britton et al., 1982).

In 2001, Meyer and Poon trained younger and older adults to use the structure strategy versus a control group that received interest training and a group that received no training. Structure training had a much larger impact on measures of total and recall gist than those of either control group. Meyer and Poon concluded, "It appears necessary to provide readers with instruction about how to identify and use text structure to aid recall and determine what is the important information" (pp. 153–154).

Researchers found that college students who were given training on how scientific articles are organized had significantly better recall than students who were not given the training (Samuels et al., 1988). Most importantly, the researchers found that:

> Text structure knowledge is especially helpful for the well-organized text, where there is a close match between the reader's expectations and the actual text, but is helpful even with the less well-organized text, where there is not so close a match between the reader's expectations and the text. (p. 174)

Samuels et al. hypothesize that comprehension and retrieval of information through knowledge of text structure operates through the mechanism of conceptual schemata. Once the reader has cultivated a conceptual schemata for scientific text structure, there exist waiting places, or attribute names, for the components of a scientific text in the reader's mind. The comprehension of the text becomes a problem-solving exercise in which the reader seeks

information in the text to match it with its matching attributes in the awaiting schemata (Samuels et al., 1988).

Readers recover more quickly from interruption if relevant topic information is reinstated than if no information or if more general information is reinstated (Lorch, 1993). This finding suggests that readers use the topic cues to integrate subordinate information (Lorch, 1993). Students who either received training in structure strategy or who read a signaled text (but did not receive structure strategy training) ended up using a structure strategy in reading the text. However, students who did not receive training and who read nonsignaled text used a linear reading strategy (Sanchez, Lorch, & Lorch, 2001). A linear strategy is one in which the readers encode the text as a "temporally organized list of ideas" (Sanchez et al., 2001, p. 9).

The situation model, advanced by van Dijk and Kintsch (1983), asserts that readers produce a situation model of a text independent of the mental representation of the text. The situation model encompasses the structural representation of the situation described by the text. This model consists of the reader's knowledge of other people, what motivates them, and the way people achieve their objectives within the world of social relations. In Kintsch's situation model, the reader's relationship with pertinent social, affective, and psychological factors affect the way the reader interprets the data. These factors determine the situation's relevancy to the reader and assist the reader in constructing a mental model of the text.

Kintsh's construction integration model, whose highly integrated textbase is equivalent to a situation model, addresses two phases in text comprehension. In the construction phase, the reader forms a textbase that contains concepts and propositions that directly correspond to the linguistic input, a small number of the most closely-associated neighbors to those fundamental

objects in the general knowledge network as well as additional inferred propositions. The integration phase occurs when the textbase network forms a coherent representation of the connectionist manner. During this phase, irrelevant information is deactivated while nodes containing strategic important information are activated (Zwaan, 1994).

Fluent readers develop situation models to organize their memory representations of texts and experience better recall:

> The level of comprehension of a passage will depend on whether a reader is able to form a situation model around which the memory representation of the text can be organized. Comprehension is best when a text representation is organized around a strong situation model, creating context-dependent text representation. (Collins & Levy, 2008, p. 136)

An important issue in situation models is prior knowledge of a specific domain. In Surber and Schroeder's (2007) study of college students with either high or low domain knowledge, the researchers found that headings seem to improve recall of high-importance information and headings were more effective for high prior knowledge (PK) learners. Prior knowledge did not show an effect on attention to either high importance information or valuable subordinate detail (Surber & Schroeder, 2007).

Surber and Schroeder's study also illuminates another important concern of text comprehension. The majority of comprehension research includes either narrative passages or expository passages of less than 1,000 words (Surber and Schroeder, 2007). Passage length of a text appears to be an important variable. The construction integration (C-I) model is least successful with longer texts (Kintsch, 1998, p. 265). Surber and Schroeder offer reasons for this phenomenon:

> For lengthy text, strategic reading may be more directed toward 'getting finished' with an assignment rather than the construction of a coherent representation of the

> text. For example, Surber (1992) found that readers spend less than half as much time per word reading a whole chapter as groups who read a two-page excerpt from the chapter. This difference is probably not due to some greater "efficiency" of processing but rather a "loosening" of one's criterion for comprehension. (p. 487)

The length of the article in this study, a text on the physiology of human aging, approached 3,200 words. The passage length appeared to decisively mitigate gains from signaling (headings) even for college students with prior knowledge. Every subgroup sped through the reading quickly, spending a minimal amount of seconds on each page.

The length of the text passage in the Surber and Schroeder study appeared to override the gains of the signaling strategy associated with headings, and students appeared to forfeit use of a structure strategy like the one referred to in Sanchez et al. (2001) in which the presence of signals alone induced readers to use a structure strategy.

Since the results of the Surber and Schroeder article differed so drastically from articles that reported positive findings with either the situation (C-I) model or the structure strategy model, the differences in these studies must be explored.

The Surber and Schroeder study did not provide students with any training in recognizing the structure of expository or scientific texts like the Sanchez et al. (2001) study, the Cook and Mayer (1988) study, the Meyer and Poon (2001) study, or the Samuels et al. (1988) study. Although the relative lack of effect of the headings on a 3,200 word article suggests that the length of the article may be an overpowering variable to a naïve reader, the impact of word length alone may still be mitigated by other educational interventions.

Surber and Schroeder (2007) state, "The fact that recall for supporting detail was not affected suggests that headings were not effective at facilitating integration of supporting details

with main topics into a coherent mental representation" (p. 495). Structure training, if conducted, teaches readers to recall the important information of the text, the gist (Meyer & Poon, 2001). Participants trained in structure training do not necessarily perform better in recall of supporting details. Cook and Mayer (1988) clearly stated that the evaluation of their study "focused on recall of important information rather than overall recall, and problem-solving rather than verbatim memory" (p. 454).

Another assertion by Surber and Schroeder (2007) concerns the relationship of the absence of headings to high prior knowledge (PK) readers: "Interestingly, high PK readers without headings had overall recall scores that were lower than the mean of the other three groups" (p. 492). Although the cause of lower recall scores of readers who had higher degrees of prior knowledge remains uncertain, genre expectations of scientific text, by these readers may deserve scrutiny. Zwaan (1994) asserts that readers invoke different processing models based on the genre style. Genre expectations cause readers to allocate processing resources to meet the constraints of a given genre. For instance, expository texts "can be characterized by their top-level structures with most falling into one of the following: description, sequence, causation, problem/solution, and comparison" (Meyer, 2003, p. 210). Cook and Mayer (1988) assert that the reader's awareness of the underlying structure of a scientific text can guide the process of reading comprehension, and modest amount of text structure can improve reader's comprehension of text. In contrast to Meyer's list of top-level structures of general expository text, science texts exhibit specific structures typical to scientific textbooks such as generalization, enumeration, sequence, classification, and comparison/contrast (Cook & Mayer, 1988, p. 449). When encountering a scientific article with its headings removed, it seems plausible for an

individual with prior knowledge of scientific texts to face a contradiction based on the reader's genre expectations for that article, which results in decreased reading comprehension.

Expectation plays an important role in making cognitive inferences and elaborations to fill gaps of understanding and creating mental representations. Samuels et, al. (1988) states:

> Finally, this study illustrates the interactive nature of reading and writing. When the reader's knowledge and expectations of text structure match what the writer has put in print, reader comprehension and recall are maximized. (p.174)

The reader's expectation of text structure derives from how he or she learned to compose text structures in the form of paragraphs, essays, and reports throughout early education and culminating in college. The rules of text structure, including sentences, paragraphs, and essays, belong to the collegiate domain of composition, which traditionally was found in English departments, but also was spread throughout the university under umbrella initiatives such as Writing Across the Curriculum (WAC). Within composition courses, students learn to articulate their thoughts and reasoning through the conventions of academic writing.

Cognition and Writing Across the Curriculum

Writing shapes the intellect. In philosophical and psychological views, learning is an integration of new experience into "previous structures which may remain unaffected or else be modified to a greater or lesser degree by this very integration" (Piaget 1971, p. 4). As writing occurs, an individual connects ideas in an iterative, nonlinear process that orders, assimilates, reorders, expresses, transforms, and evaluates meaning. Writing parallels learning in its power to select and connect ideas through structure. Writing surpasses talking as a source of learning (Emig, 1994, pp. 91–92).

Students have to be taught the give and take between constructing, thinking, rethinking, revising, and generating new ideas in the creation of a written work. The process of writing and revising actually helps to generate new ideas. Writing, like thinking, is rarely a linear process, although sometimes it appears so to young writers (Bizzell, 1992, p. 185; Lindemann, 2001, pp. 23–24). Like thinking, writing requires the individual to consider and reconsider thoughts, words, and any potential responses of the reading audience (Bizzell, 1992, p. 186). The individual engages in recursive behaviors in which he or she goes "back to the sense of one's meaning in order to go forward and discover more of what one has to say. Seen in this light, composing becomes the carrying forward of an implicit sense into explicit form" (Perl, 1979, p. 11).

"Writing in every discipline requires (or should require) prewriting, drafting, rethinking, and revising," according to Bizzell and Herzberg (1985, p. 202) in their analysis of WAC textbooks. Prewriting includes idea-generating activities that provide preparation for drafting such forms of writing as keeping journals, notes, and outlines (Bizzell, 1992, p. 179). Prewriting is a stage of composition that helps the student examine what is known, recall ideas, relate old and new information, assess what the reader expects of us, and generally explore the problem from many angles. Prewriting helps students break out of sensory, verbal, emotional, or cultural preconditioning (Lindemann, 2001, pp. 93–110).

The opportunity to pause and think allows the writer to make connections that relate new information to old, as well as to assess the work from the viewpoint of an absent reader. Emig (1994) notes that,

> The slower pace of writing allows for and encourages the shuttling among past, present, and future. Writing connects three major tenses of our experiences to

> make meaning. The three major modes by which these three aspects are united are the processes of analysis and synthesis, combining these into fresh arrangements. (p. 95).

Increasingly sophisticated academic writing requires cognitive processes such as interpreting, thinking creatively and speculatively, generalizing, classifying, summarizing, recording, and reporting. At least partially, texts are judged on whether they reflect the use of patterns of thought appropriate for the specific context (Odell, 1992, p. 89). “Clear writing by definition is that writing which signals without ambiguity the nature of conceptual relationships whether they be coordinate, subordinate, superordinate, casual, or something else,” states Emig (1977, p. 94).

Both writing and the intellect have been shaped by the educational experiences that the student has experienced during secondary school. Writing instruction received in secondary school builds the foundation for the beginning college student’s current level of ability. The preparation of academic writing within secondary schools has been studied within the United Kingdom (Britton, 1975; Martin, D’Arcy, Newton, & Parker, 1976) and the United States (Langer & Applebee, 1987). Researchers found that this preparatory writing can be characterized by recurring features. In general, writing is used as a form of testing and not a form of learning. Accordingly, students respond by writing for the “examiner” audience (Martin et. al., 1976, pp. 38–40). In these circumstances, students realize that they are writing for someone who ostensibly knows better than they do (Martin et al., 1976, p. 45).

1. Students write to please the teacher. This phenomenon is expected within Perry's Position I (described in the first section of the literature review) in which students identify teachers as the authority that determines the rightness or wrongness of the subject. Instructors and their feedback profoundly influence what rules and standards the students adopt and carry forward to future writing situations (Britton, 1975).
2. The teacher represents the larger academic community and the embodiment of its standards. In the students' view, the teacher is the sole arbiter of standards on behalf of students, as well as the judge of their competency at acquiring the standards (Hubbuch, 1990, p. 41). McCarthy's students expressed the importance of adhering to the professor's guidelines, "First, you've got to figure out what your teachers want" (McCarthy, 1987, p. 125).
3. Students take a minimum of risks when writing for the examiner audience. Students attempt to hide their lack of understanding by avoiding situations that reveal uncertainty in applying composition rules, grammar, conventions, or that require them to make connections between new information and their own experience. They avoid drawing attention to awkwardness and limit their opportunities for new growth (Martin et.al., 1976, p. 47). Within Perry's scheme, this response is expected from students whose development could be considered Position I, basic duality. Hiding one's lack of understanding and potential mistakes is analogous to Adam and Eve attempting to hide their nakedness before

God. Perry uses the book of Genesis to illustrate this early and fundamental mindset of adolescents (Perry, 1970).

Within the secondary school model, students are using writing for three functions: transactional, expressive, and poetic (Britton, 1975). Transactional writing occurs most frequently in academic writing and describes reality from a neutral, objective stance. Expressive writing provides the writer an opportunity to speak from a personal point of view. The nature of poetic writing is to communicate ideas whose significance is unrelated to fact (Martin et. al., 1976, pp. 41–42).

Transactional writing dominates academic communication even in secondary schools. Some expressive writing occurs but at consistently low levels over the course of students' educations (Britton, Burgess, Martin, McLeod, & Rosen, 1975). Researchers contend that the practice of overusing the transactional form of writing results in limited amounts of speculative, theoretical, or persuasive writing. Writing instruction common during that time overemphasized the transactional model and did not foster writing that reflected independent thinking, but rather classificatory writing (Britton et al., 1975). Transactional writing limits the nature of thought processes that can be expressed because of its direct cause/effect structure, one-to-one relationships, and reductionist manner. Overemphasis on transactional writing precludes interpreting, reflecting, thinking creatively and speculatively, as well as recording, reporting, generalizing, and classifying (Martin et. al., 1976).

Based on the research reviewed (Britton et al., 1975; Martin, et al, 1976), beginning college students have been prepared to be transactional writers lacking in independent thinking,

uncomfortable with speculative, theoretical, or persuasive forms of thought, and entirely dependent on the writing standards set for them by individual instructors.

Despite the uncomfortable inflexibility of secondary students' indoctrination into academic writing, most students redouble the efforts to follow the rules as opposed to finding ways to circumvent rules or rebel against writing conventions. Considering ordinary social behavior of adolescents during secondary school, writing behavior seems unusually rule-compliant. In accordance with a cognitive stage of basic duality, Position I in Perry's scheme, students habitually do not seek freedom from rules in writing. They are committed to following rules, but are perplexed when asked to apply different rules in new situations.

In instances of contradictions between guidelines set forth by one instructor and those of another, complete cognitive dissonance occurs and the student becomes almost paralyzed. McCarthy (1987) describes the phenomenon:

> Writing development is, in part, context-dependent. In each new classroom community, the student resembled a beginning language user. He focused on a limited number of new concerns and was unable to move beyond concrete ways of thinking and writing the facts of the matter at hand. (p. 152)

New writers are extremely focused on rules of use and correct form (Perl, 1979). This focus appears to limit the ability to apply previously learned skills. McCarthy (1987) noted that her student worked at a more concrete level while preoccupied with interpreting new conventions. A college student's development as a user of language differs from normal stages of human development. While an adolescent in ordinary social situations is fluent enough within the rules and contexts of established norms to test boundaries and begin to actively define a

social identity, a developing writer at this stage is just beginning the process of assessing requirements in unfamiliar academic settings. McCarthy explains,

> Moreover, skills mastered in one situation, such as the thesis-subpoint organization in Freshman Composition, did not automatically transfer to new context with differing problems and language and differing amount of knowledge to be controlled. (p. 52)

To further complicate their experiences, students are likely to receive conflicting messages about the importance of rules from their instructors. Composition classes differ in their emphasis on form and content (Hillocks, 2005, p. 238). The range varies from the English Composition instructor in McCarthy's "A Stranger in Strange Lands," who stated "that she was less concerned with content of the student's five essays than she was with their cohesiveness" (McCarthy, 1987, pp. 135–136), to Lindemann's exhortation that "Not to say that we ignore commas . . . but be just as concerned about what students say as we are about how it is stated" (Lindemann, 1987, p. 8). In contrast, the writing instructor in McCarthy's study repeatedly stated that what would serve these students in their subsequent academic writing was the ability to write coherent prose with a thesis and subpoints, unified paragraphs, and explicitly connected sentences. In an interview she said, 'Ideas aren't going to do people much good if they can't find the means with which to communicate them'. (p. 136)

Students try very hard to conform to guidelines and concern themselves with structure and grammar, but still make mistakes. Regardless of their sensitivity to the errors they wish to avoid, they repeatedly make the same mistake. There appears to be a lack of connection between recognizing a rule and being able to apply it within a context. Students have problems integrating new rules within an unfamiliar conceptual hierarchy (Perl, 1979; Perry, 1970).

Students do not grasp the process of revising. When given the opportunity to revise their papers, students generally can only make minor changes (McCarthy, 1987). In Perl's (1979) study, the participant spent most of his time "proofreading rather than changing, rephrasing, adding, or evaluating the substantive part of the discourse" (p. 14). Students are unable to reorganize their essays in significant ways and, in fact, lack a "conception of editing that includes flexibility, suspended judgment, the weighing of possibilities, and the reworking of ideas" (Perl, 1979, p. 27). Bridwell (1980) concurs, finding that poorer writers either revised very little or "revised extensively, but typically only at surface or word levels" (p. 218). Bridwell examined both competent and struggling writers, and Perl studied beginning writers exclusively but found similar patterns in struggling writers.

In addition to the student's development as a writer within a social, cultural, and intellectual context, a student's regular intellectual development affects his or her writing. During late adolescence (the age of most young college students), narrative and descriptive modes of relating to the outside world are the most developed. Thinking abstractly, predicting the future, theorizing, and evaluating ideas based on logical principles are very recent experiences for these students, if at all.

> The abstractions and kinds of logic which seem "so natural" to use involve conceptual processes our students have only recently begun to exercise. They do not yet command securely the "logics" of the academic world, which took us four years of college and perhaps a few years of graduate school to master. (Lindemann, 1987, p. 69)

Academic writing requires that a student be able to see and illustrate how the specific parts fit into a larger whole (inductive reasoning) and how the whole of the essay maintains consistency and at the same time generates specific examples (deductive reasoning). In

composition classes, this principle is called “text coherence” (Lorch, 1993, p. 1071). One study found a significant relationship between knowledge of the requirements of a globally coherent expository essay and the ability to produce an essay in a study in which college and younger-age students connected individual sentences to the essay’s topic (Wright and Rosenberg, 1993).

Coherence and determining the underlying logical structure of an essay belies an entire developmental stage of thinking according to Vygotsky’s (1967) Thought and Language. Vygotsky wrote that the character of adolescent thinking was transitional and that observation of newly acquired concepts provided a window through which to see the extent to which these concepts could be formed, integrated within the adolescent’s schema, applied to new situations, and defined by the individual.

> The adolescent encounters another obstacle when he tries to apply a concept that he has formed in a specific situation to a new set of objects or circumstances where the attributes synthesized in the concept appear in configurations differing from the original one. The greatest difficulty of all is the application of a concept, finally grasped and formulated on the abstract level, to new concrete situations that must be viewed in these abstract terms—a kind of transfer usually mastered only toward the end of the adolescent period. The transition from the abstract to the concrete proves just as arduous for the youth as the earlier transition from the concrete to the abstract. (Vygotsky, pp. 79–80)

In other words, the use of language contributes to the formation of concepts as elementary mental functions that participate in specific combinations. Vygotsky (1967) describes this operation as “guided by the use of words as the means of actively centering attention, of abstracting certain trains, synthesizing them, and symbolizing them by a sign” (p. 81).

The assimilation of specific situations into dualistic structures and the revolution that occurs when students begin to reorder concepts into relativistic concepts represents an example of the type of obstacles that Vygotsky describes (Perry, 1970).

Writing and other instructors who require written assignments in their disciplines influence this development process. Langer (1992) explains that "writing (and the thinking that accompanies it) then becomes a primary and necessary vehicle for practicing the ways of organizing and presenting ideas that are most appropriate to a particular subject area" (p. 71). As established earlier, students write to please their teachers. As a result, the instructor can make a significant impact on a student's writing ability (Martin et al., 1976). A critical illustration of this influence is offered in Paulo Freire's (1970) Pedagogy of the Oppressed, the "banking" system of education in which the "teacher fills the student's head with the 'right' ideas" (p. 58). As a counterexample to the "banking" approach, Freire asserts that "problem-posing education makes them [students] critical thinkers" (p. 71).

At-risk freshmen come to college in need of the kind of "problem-posing" education described by Freire. According to a study by Andrea Lunsford (1980), basic writers (those judged to be in need of remedial work in composition) "seem to represent egocentric stage of cognitive development and the conventional stage of moral development, to conceptualize and generalize with great difficulty, and, most of all, to lack confidence" (p. 284). Lunsford explained the basic writer's "conventional stage of moral development" as commitment to maintaining and conforming to norms established by family, country, and/or other authority symbols. This conventional stage correlates to Perry's Position I, basic duality (Perry, 1970). Lunsford asserts,

The real challenge for us as teachers of basic writing lies in helping our students become more proficient at abstracting and conceptualizing and hence at producing acceptable academic discourse, without losing the directness many of them now possess. (p. 287)

> Writing is a social activity within an activity system. Students must be able to determine what constitutes appropriate texts. Students who cannot do this are deemed incompetent communicators (McCarthy, 1987, pp. 125–126) as they are unable to follow what Britton (1975) calls the "rules of the game" (p. 76). Herrington (1985) states, "writing can function as a way of introducing students to what it means to think and act in various disciplinary forums" (p. 119).

Mastering the requirements of both form and content requires significant cognitive work from the student and results in a commitment to the style(s) mastered. Required writing exercises shape the intellect of the beginning college student. Hayes and Flower (1980) assert that the writing occurs in a context created by the writer's long-term memory and the task environment. The writing process is composed of planning, translating, and reviewing. Planning includes setting goals, generating topics according to task criteria, and selecting and storing ideas. Translating is complicated as it involves using the memory and reforming it. Reviewing includes both editing and monitoring. These activities are complex and interrelated. In writing, students may confront knowledge problems, language problems, or rhetorical problems (Lindemann, 2001). Vygotsky (1967) explains the intellectual demands of late adolescents as a necessary prerequisite for mature adult thinking:

> The presence of a problem that demands the formation of concepts cannot in itself be considered the cause of the process, although the tasks with which society faces the youth as he enters the cultural, professional, and civic world of adults undoubtedly are an important factor in the emergence of conceptual thinking. If the environment presents no such tasks to the adolescent, makes no new demands on him, and does not stimulate his intellect by providing a sequence of new goals, his thinking fails to reach the highest stages, or reaches them with great delay. (p. 58)

As beginning college students interact within the college community, they will be influenced by the standards expressed by their peers and, more importantly, their instructors. As previously described, they take the rules as they understand them and commit them to their

schemas. The intense mental activity required in academic writing creates expectations of how academic discourse is supposed to occur. The relationship of writing expository essays causes an expectation that essays conform to the standards and requirements of expository essay (Wright & Rosenberg, 1993). If students expect “freshmen English” expository writing to be the standard, they will experience cognitive dissonance when confronted with other writing styles.

The rules and conventions of academic writing generally guide the development of paragraphs and a paragraph’s relationship to the overall structure of an essay. The paragraph represents an idea and includes support for this idea. These ideas can be connected with similar ideas through coherent text structure to support assertions that are broader than the individual ideas. Paragraphs represent a logical unit of thought.

Writing instruction focusing on paragraphs represents the best opportunity to observe the use of conventions and rules to determine composition standards as understanding of the text structure of a sentence is generally expected to be achieved prior to college and the more complicated structures of compositions to be mastered during college. This section explores in detail the difficulties instructors and students face when trying to reduce the function and behavior of paragraphs to these conventions and rules.

Paragraphs

Within beginning expository English classes, instructors emphasize the construction of the paragraph as the most important building block of the essay. Scholars debate the nature of paragraphs, their organization, and the placement of their topic sentences. The rules for paragraphs set forth by Alexander Bain’s (1890) “Seven Laws of Effective Paragraphs” in English Composition and Rhetoric stipulates that “the opening sentence, unless obviously

prepatory, is expected to indicate the scope of the paragraph" (p. 108). Bain influences writing instruction in secondary school and college composition today. Despite attempts at formalizing the process into sets of rules and procedures, professional writers rarely adhere to the methods and practices taught to students:

> Examining our own writing habits forces us to admit that we don't compose paragraphs as textbooks tell us to. Rarely do we consciously construct a topic sentence and then deliberately choose a method of developing it. We may keep a general plan in mind as we write, but actually drafting requires too much concentration to stop every few sentences and ask, "Now what will my next topic sentence say, and what method will I use for this paragraph? (Lindemann, 1987, p. 143)

Lindemann states that, "despite textbook pronouncements, anywhere from 50% to 80% of paragraphs written by accomplished professionals do not contain a topic sentence" (p. 144). In *Paragraph Development in the Modern Age of Rhetoric*, a study is presented in which 56% of 300 paragraphs were not developed by any textbook method and the remaining 44% followed only two of the textbook methods: reasons and examples. The study concluded that in contrast to the variety of methods that textbooks mentioned, writers used paragraphs developed by "additional comments, reasons, or examples, separately or in combination" (Meade & Ellis, 1970, p. 225).

Writing composition scholars have debated paragraphs for many years. One of the most controversial articles contended that professional writers used topic sentences only 13% of the time (Braddock, 1974). Braddock randomly selected 420 articles published from January 1964 through March 1965 from a population of works comprised of *The Atlantic, The New Yorker, The Reporter*, and *The Saturday Review*, as well as a corpus of 25 complete essays in American English selected by Margaret Ashida. Using content analysis, Braddock identified T-units. T-

units, originally devised by Kellogg Hunt, represent the shortest grammatically allowable structures into which a paragraph can be segmented. T-units include a main clause plus all subordinate clauses attached to or embedded within it (Hunt, 1965, p. 23).

In his article, Braddock noted that he experienced difficulty in defining a topic sentence. He consulted composition textbooks, but they lacked definitions and simple solutions. Braddock quoted Gorrell and Laird's (1967) definition as an example of the mixed messages readers receive about how topic sentences appear:

> Most paragraphs focus on a central idea or unifying device expressed in topical material. Occasionally, this topical material is complex, involving more than one sentence and subtopic; sometimes it carries over from a previous paragraph and it is assumed to be understood or is referred to briefly; but usually it simply takes the form of a sentence, sometimes amplified or made more specific in a sentence or two following it. The topic sentence may appear at the end of the paragraph as a kind of summary or somewhere within the paragraph, but most frequently it opens the paragraph or follows an opening or transition. (p. 25)

The best test of topic sentences, Braddock suggested, may be to construct a sentence outline of the major points of the essay, drawing the sentences from the sentences the author has written as far as possible and omitting transitional and illustrative sentences. In performing his content analysis, Braddock prepared a sentence outline of each of the 25 essays he selected and then determined which of the paragraphs in the essays had sentences that matched his expectations. Braddock's study found that only 13% of the paragraphs had topic sentences.

Within his article, Braddock expressed concern about misinterpreting the author's intent as he left out details, reduced the paragraphs to outlines, and then represented the ideas in the form of topic sentences. He committed to sharing his analysis of paragraphs to permit comparison with research colleagues. Braddock stated he believed that his outlines might be

helpful to other investigators who would like to forego the extensive effort of preparing their own. Braddock's gesture addresses the possibility of bias in his procedures. One of the mitigating procedures to control bias in content analysis is for the units of analysis to be made transparent to other researchers for replication.

Unfortunately, Braddock died in a motor accident while his article was in press and "The frequency and placement of topic sentences" was published posthumously. Consideration of both Braddock's method and his judgment at the paragraph level remain critical because no content analysis performed since Braddock's study replicated a percentage near 13%.

The Braddock study remains an infamous and highly cited article in writing and composition literature. One of Braddock's lasting contributions has been to encourage scholars to question the rules concerning how students are taught to write and how professional writers actually write. In "Students: Do experts really follow the rules you're taught?" Landrum (2007) cited Braddock's question, "Do topic sentences usually appear at the beginning of a paragraph?", and extended Braddock's line of questioning by asking students to pick an element of writing style that they thought or assumed was good writing according to the students' definition. Her questions included: "(1) what writing rule/convention have you always wondered about? and (2) do experts (published writers) follow that rule?" (Landrum, 2007, p. 3)

Landrum's students researched a variety of questions, such as the use of sentence openers and the use of pronouns that follow a singular antecedent. Landrum reported that her students began to realize that some rules of writing are merely the preference of an individual English teacher (Landrum, 2007, p. 14).

In researching 22 preservice teachers (college students) as they attempted to find the main idea in each paragraph of a social studies text, Donlan (1980), a professor at the School of Education at the University of California, Riverside, used similar methodology as Braddock's 1974 research. Donlan reported that his students had difficulty identifying the main idea or topic sentence in paragraphs when the topic sentence did not begin the paragraph. Donlan discusses this phenomenon:

> In this group of experienced readers, there was a general lack of agreement as to what the main idea was. On two of the paragraphs, there was no majority opinion on any of the sentences. If teachers, or in this case prospective teachers, find it difficult to locate main ideas, what about students? (p. 137)

Hillocks (2005) decries the obsession with form in teaching writing in "The Focus on Form vs. Content in Teaching Writing" and points to examples that continue the practice of "insistence on the use of topic sentences" and that include the definition of a topic sentence as one which "tells the main idea of a paragraph" (Lynch and Evans, 1963, p. 312). In these exercises, explanation of the rules are typically followed by exercises in identifying the topic sentences in brief paragraphs or exercises in selecting and writing appropriate topic sentences, and a list of rules about what constitutes a good paragraph (p. 313–315).

Popken (1987) offered criticisms of the Braddock 1974 study, explaining that the corpus Braddock selected from was too homogenous as the texts were drawn from five popular publications. Popken offered what he considered to be a corrective study to the Braddock study by selecting academic articles across seven disciplines: biochemistry, civil engineering, history, literature, physics, psychology, and sociology. Using propositional analysis and adopting procedures originally devised by Braddock, Popken identified the percentage of minor topic

sentences, the combined percentage of minor and major topic sentences in paragraphs, and the percentages of topic sentences in which one sentence is the topic of the first paragraph and influences the second. Like Braddock, Popken also struggled to define the topic sentence and ultimately decided upon the following qualities of topic sentences.

A topic sentence is a surface manifestation of an element at the top or macrolevel in the semantic hierarchy of a paragraph or group of paragraphs. In the first head-body pattern, the topic sentence carries one or more propositions that the content proves, explains, illustrates, elaborates upon or "carries out" in some way. A second pattern, the topic announcement, establishes a domain through a topic rather than a full proposition. A third pattern states a direction or intention for a paragraph or group of paragraphs to follow. Popken states that minor topic sentences have a domain of one paragraph only. This is what most people think of as topic sentences. Popken found that 54% of the paragraphs contained minor topic sentences. Popken had adjusted Braddock's results for purposes of comparison with his methods and found that 37% of paragraphs contained minor topic sentences. Braddock found that the use of minor topic sentences varies among disciplines: literature (71%), psychology (62%), sociology (58%), and history (57%). Traditional topic sentences, the kind that Popken describes as minor topic sentences, comprised only 37% of engineering paragraphs, 42% of physics, and 46% of biochemistry. Popken argued that writing in these genres requires a different type of topic sentence structure, but that the different type of structure qualifies as a topic sentence.

One of the difficulties in accepting Popken's logic derives from his methodology, which uses a more abstract concept of topic sentences. Popken asserts that a topic sentence can apply for a group of paragraphs over which the sentence has influence than the students who are trying

to simply identify the main idea of the paragraph in one sentence out of an indented block of sentences. While it may be a useful unit of analysis for Popken, this singular consideration of topic sentences and paragraphs probably underscores the lack of clarity that at-risk or beginning composition students face. Popken concludes that academic writers use major and minor topic sentences very frequently to create coherence that their special content demands. The content of academic research articles is "dense and made up of theoretical or empirical findings worked out extensively, explicitly, and methodologically, and constructed in a multilevel semantic hierarchy" (Popken, 1987, p. 224). Major and minor topic sentences signal to the reader shifts from one part of the semantic hierarchy to the other, and may help gather together complex propositions whose relationships might otherwise only be inferred.

Recently, Craig G. Smith (2008) replicated Braddock's 1974 study using a corpus of articles selected from American history and from the earlier 1987 study performed by Popken that replicated Braddock's study over seven major discourse disciplines. Smith used Braddock's model, including the T-unit. Smith specifically addressed the implication from Donlan (1980) that a gap exists between what students are taught and what actually exists in reality. If students are taught to look for topic sentences at the beginning of paragraphs, where topic sentences are rarely found, then it is no surprise that students have reading difficulties.

Using a method of discourse block analysis instead of Braddock's sections of paragraphs, Smith (2008) claimed that these units of analysis were functionally equivalent. Smith identified the discourse blocks. In Smith's procedures, each essay was carefully read and the thesis idea identified.

Smith found that 95% of the discourse blocks analyzed contained an explicit (non-implied) topic sentence. When considering all discourse blocks, 66% contained the topic idea at the beginning of the discourse block.

Two issues that raise concern in this study are that Smith only used 25 essays selected from two journals. *The American Heritage* and *American History Illustrated* each have a writing style that may be influenced by its particular editorial policies and/or editorial board. In "When is a Paragraph," Stern (1976) contends, "As every experienced writer knows, paragraphing helps establish a tone or 'voice'. (Editors know this too. That is why they frequently reparagraph a writer's prose to bring it into conformity with their publication's image; p. 257)."

In addition, Smith's decision to use discourse block analysis to determine the organization of the text in a more objective way (as opposed to determining the topic sentence of each paragraph) highlights the difficulty that freshmen might have with deciphering the organization of the text and identifying the topic sentence. Smith also agreed with Popken's finding that very short paragraphs skewed the results of the studies (Popken, 1987; Smith, 2008).

Ultimately, Smith (2008) found that 88% of humanities contained topic sentences, as well as 64% of hard sciences "although the frequency of explicit topic sentences is dependent on the stylistic 'whim' of the author" (p. 88). Smith concludes that it is entirely appropriate to teach students to look for the main idea at the beginning of the paragraph because often it will be there. Additionally, they should be taught that the topic sentence might be located at the end of the paragraph when the author uses inductive rather than deductive logic. In addition, a simple way to show how a topic sentence might occur in the middle of a paragraph is by demonstrating how a topic sentence readily follows background information, which appears at the beginning of the

paragraph. Students should also be prepared to encounter the main idea expressed twice in a paragraph (Smith, 2008).

The Braddock, Popken, and Smith studies did not use a second coder for intercoder reliability in a test that lends itself to tremendous subjectivity. Stern (1976) describes his repeated experiments having English teachers paragraph a 500 word expository passage taken from Cleanth Brooks and Robert Penn Warren's *Fundamentals of Good Writing* (1950, p. 250–251). The passage was divided into sections different from its original composition, and no indentations were present. Each English teacher is asked how many paragraphs the passage should be divided into and to note the points of division. Stern notes that only five students out of 100 that have participated in the experiment have paragraphed the passage as Brooks and Warren originally did. Stern also defends the other 95 participants by saying, "These results are hardly earthshaking. They prove, if they prove anything, only that different students have different intuitions about paragraphing and that many of these intuitions turn out to be equally acceptable, equally 'correct' " (Stern, 1976, p. 253).

Stern continues by explaining that Alexander Bain (1890), the originator of the "Seven Laws of Effective Paragraphs" in *English Composition and Rhetoric*, was a logician and not a teacher of rhetoric. He had not studied the nature of paragraphs as they existed within literature before he devised rules for them (Stern, 1976).

Stern (1976) supports Paul Rodger's proposition that paragraphs be understood within discourse-centered rhetorical stances developed "from the writer's personality and his perception of his reader as well as his perception of the subject matter" (p. 256). Stern concludes,

> In sum, today's paragraph is not a logical unit and we should stop telling our students it is. It does not necessarily begin with a topic sentence; it does not

> necessarily ‘handle and exhaust a distinct topic,’ as the textbooks say it must do… Shaped by the writer's individual style and by the reader's expectations as well as by the logic of the subject-matter, the paragraph is a flexible, expressive rhetorical instrument. (p. 257)

Constructing paragraphs by relying on a generic model of rules and conventions with the goal of having students apply this skill to various forms of academic writing appears difficult for both the instructor and the student. Other approaches forego the generic model and attempt to isolate the writing rules and conventions within specific academic contexts. Instructors teach students how writing occurs within certain disciplines so that the student simultaneously learns to communicate within the expectations of an academic culture while absorbing the patterns of thought endemic to the culture. Pedagogically, this approach creates difficulties of the “Which comes first, the chicken or the egg?” nature. Nonetheless, teaching academic writing as a function of how a genre operates has gained momentum. The next section explores literature about genre analysis and its implications for writing instruction.

Genre Analysis

Conventionally, genre is defined as a “set of formally definable text features that certain texts have in common across various contexts (Russell, 1997, p. 513). However, Russell argues that genres “are shared expectations among some group(s) of people” (p. 513). Genre refers to “routinized for now” ways of doing things within a collective context. Bazerman (1994) defines genre as “forms of life, ways of being, and frames for social action. They are environments for learning and teaching” (p. 1). Genres have operationalized many actions recognized to be of the same type, and experienced participants in an activity system do not need to choose tools each time they take action. Insiders in a profession experience ways of writing that become so routine

that they come to seem natural. According to Russell, genre "helps account for social-psychological stability, identity, and predictability" (p. 515). The use of language in learning a new genre is encountered at the level of conscious actions. Through continued interaction with others in the activity system, the ways of using the tool becomes a routine operation, often unconscious.

Genre Theory provides a mechanism to view assigned journal articles and analyze them for common traits, as well as dissimilar ones. "Genres predict, but do not determine, structure" (Russell, 1997, p. 522). However, even a pattern of structural features can assist students in learning the conventions of the genre.

Considerable work on this topic has been published as researchers have analyzed and shared the structures and conventions of academic writing. This section reviews a selection of this vast area of research in light of findings in the broad disciplinary areas of humanities, social sciences, and sciences.

Genre Analysis by Discipline

"All academic writing exhibits conventions of explicitness—that is every mode of academic writing has ways of announcing its own structure and directing attention to its main points" (Elbow, (1991) p. 144). Linton, Madigan, and Johnson (1994) explain that superficial and easily observable differences in texts suggest crucial distinctions in the assumptions different disciplines make about knowledge and knowledge-making (p. 71). Article genres perform specific communicative functions within disciplinary communities, which accounts for both emerging types of articles and variations in traditional types (Montesi & Owen, 2006, p. 143). Undergraduate students can learn to appreciate fundamental assumptions about language that

underlie differences in disciplinary styles. A collection of carefully selected samples can prepare students to attend to the ways language is used in their disciplines and thus aid them in assimilating the style of their chosen fields.

Humanities

A conventional practice in the humanities is to articulate the thesis at the start of an essay (Elbow, 1991, p. 144). Academic writing in the humanities tends to provide signposts in the form of explicit sentence-level transitions, as well as mini-introductions and conclusions as the argument proceeds. The use of headings and subheadings to provide navigation of the content is less common than in social and natural sciences (Linton et al., 1994, p. 67).

The strategic use of citations to establish credentials in the field or to display strategic judgment in using sources of prominence or centrality looks different in humanities than in the sciences. In sciences, it is appropriate to list citations without detailed discussion; however, in philosophy or literary criticism, a long string of unexamined citations is less common and is more likely to seem superficial. In the humanities, analysis of previous work is often used to anchor discussion by putting forth a “particular precursor for extended discussion, focusing on points of convergence as well as points where the present text will diverge” (Linton et al., 1994, 69).

The use of frequent or extended quotation is a discipline-specific feature, more characteristic of the humanities than the sciences. A page of a journal publishing literary criticism likely includes quotations on every page but such quotations are quite rare in cognitive psychology (Linton et al., 1994).

Students in composition classes encounter more models of writing and more practice in the humanities than social sciences or sciences. As a result, the model of composition learned is difficult to transfer to writing in social or natural sciences and is not easily transferable to writing in their other classes. In addition, the students are likely to infer that the humanities model is the general academic model (Linton et al., 1994).

Social Sciences

Although writing in the natural and social sciences also offers a preview of significant content, it is not usually through an explicit thesis statement early in the article. Rather, these articles begin with an abstract. Linton et al. (1994) explains:

> Sometimes there is a true thesis statement near the end of the introduction, more often what is stated in the introduction is a hypothesis, which focuses the issue yet preserves the possibility that the outcome may be unexpected. (p. 68)

The use of quotations in scholarly articles in both social and natural science is quite rare. In these disciplines, students are expected to do extensive research, become familiar with literature relevant to the problem they are addressing, but not to use the original language. Linton et al. (1994) states, “Even distinctly phrased, crucial insights are expected to be paraphrased, and block quotations are almost unknown” (p. 70).

Faigley and Hansen (1985) assert, “the conventional four-part organization of psychology reports specified in the *APA Style Sheet* embodies a world view about how knowledge can be verified, a world view that few English teachers share or are willing to assimilate” (p. 148). Within this world view are generic style structures that advance knowledge-sharing among the discourse community. For example, titles are defined as a kind of advance organizer in cognitive

psychology (Kozminsky, 1977). The titles allow the reader to preview content to determine if the text is relevant or to get an overview of the text as a text comprehension strategy (Lorch, 1989).

Natural Sciences

In "The structure of science information", Zellig S. Harris (2002) states, "there is a particular structure to science information in general, and to the information of each subscience in particular" (p. 215). Another convention of explicitness in the natural and social sciences is the use of headings and subheadings to divide the text and announce its content. The prescribed major subsections found in empirical reports (introduction, methods, results, discussion) illustrate "the writer's commitment to fundamental values underlying the empirical disciplines: the importance of shared, replicated methodology" (Linton et. al., 1994, p. 68)

Sciences differ from humanities in how they use the language of conviction. Typical composition courses give students blanket advice to avoid redundancy, eliminate qualifiers, and make direct assertions. Conclusions of empirical reports frequently use "hedge" words and phrases such as: "tend," "suggest," "may," "it is probably that," and "it is reasonable to conclude that." Linton et al., (1994) explains these rhetorical choices:

> Empirical reports typically relate the data of the study to the discipline's current understanding of a recognized problem; the author is faced with a rhetorical task that requires a delicate balance. The author must convince peers that the results have substantive implications but also the conclusions must not appear to extend beyond the data. Hedged wording implicitly recognizes the uncertain flow of the ongoing stream of empirical studies investigating complex phenomena. (p. 74)

By analyzing introductions of 48 scientific and social science articles, Swales, (1981) found a reoccurring pattern in which four rhetorical moves situate the new study within prior research conducted within the field. These fields include serve the following functions:

> (1) Establishing the field by showing centrality, interest, importance, topic prominence, standard procedure, stating current knowledge and ascribing key characteristics;
>
> (2) Summarizing previous research using strong and weak author orientations as well as subject orientations;
>
> (3) Preparing for present research by indicating a gap, question raising, or extending a finding;
>
> (4) Introducing the present research by defining the purpose or by describing the investigation being reported
>
> (Swales, p.22a)

According to Swales' model, the social science or natural science writer creates a context in which to place his or her own study by defining terms, constituting the general research area, establishing a historical context and presenting an overview of the field. Next, the writer raises issues not yet addressed fully by the literature. The contrastive connector (i.e. "however") is used in the thematic sentence to link new information and create a niche or "research space" (Berkenkotter et al., 1991, 216–217).

In a discussion of how reading and writing are inextricably related and reciprocally practiced within a disciplinary community, Bazerman (2000b) states:

> Scientific reading is drawn into that same structured web of doing and formulating that constrains and occasions scientific writing. Texts are read against a continuing disciplinary activity in the world and judgments about how that activity might be most successfully continued. (p. 237)

The scanning activity of these physicists reveals how deeply these schemas reside within an expert's subconscious. The subjects scan so rapidly over tables of contents that giving specific attention to each title would be impossible. Instead, the physicists focus on keywords within a title that trigger attention and stimulate the subject to question the title more actively. Three kinds of keywords exist. Each indicates a domain of organized knowledge within which the word is immediately and unconsciously placed. Domains include objects or phenomena, names of techniques, such as "remote sensing", and names of individuals or research groups. All physicists interviewed "expressed awareness of who was doing good work in their field, with the three theoreticians being certain about comprehensive knowledge of the most important actors in the field" (Bazerman, 2000b, 239–240).

Bazerman (2000b) studied experts as they read physics articles. Even within an audience of experts, difficulties are created when parts of articles do not readily fit against the comprehension schema. Readers deal with these lapses in comprehension based on their perception of how potentially significant the passage is. The reader (physicist) weighs the cost of working through the difficulty against the potential gain in situations where articles contain unfamiliar or difficult material (p. 244).

This section has explored how thought and research occurs within specific disciplines as well as the conventions the discipline uses to communicate knowledge.

The next stage of this analysis is the interaction of these pedagogical influences upon students' experiences as they work to internalize the rules of academic writing and reading, and the efforts of information literacy to increase the quality of experience for students. Specifically,

this literature addresses attempts to connect the student and the specific disciplinary culture that contextualizes the student's information need.

Information Literacy

Integrating information literacy into general education courses requires a consideration of innumerable theoretical possibilities and almost as many practical examples of combining the efforts of academic librarians and teaching faculty in general education. The scope of this review of information literacy is necessarily broad in addressing the following issues: expectations of faculty of their students in accessing and reading scholarly journal articles in their discipline, expectations of faculty concerning their students' prior preparation for primary research, perceived benefits of reading primary literature in undergraduate courses; the measurement of these benefits as educational outcomes, information literacy in the context of different academic disciplines, establishment of best practices in integrating information literacy into the classroom, and critiques of current efforts of academic librarianship in addressing the full platform of skills that comprise information literacy that are espoused by ACRL.

Expectations of faculty within general education courses

The extent to which faculty expect undergraduates to read journal articles in completing basic class requirements varies among individual instructors, disciplines, and institutions. Opinions about the most appropriate level to introduce students to primary research also differ. Catherine A. Wambach (1998) found that journal reading was required by 33% of the social science and humanities faculty when she surveyed 132 faculty members in mathematics, science, social sciences, and humanities at the University of Minnesota about reading and writing assignments. In 2002, Christopher Oldenburg surveyed psychology faculty from 84 colleges

listed among the “Best Liberal Arts Colleges” in *U.S. News and World Report* for 2001. Oldenburg (2005) found that 34.5% of introductory psychology courses used journals as class materials. In a study of science faculty at the University of Tennessee, lower division students were described as not understanding “the evolution of the research, discoveries, and subsequent publication” (Tenopir, 2002, p. 293) Because the students were not considered prepared, it was inferred that many science faculty did not require lower division undergraduates to read journal articles (Tenopir, 2002).

Assessing syllabi provides another lens with which to view faculty expectations regarding undergraduates reading scholarly journal articles. VanScoy and Oakleaf (2008) conducted a random sample of 350 first-semester, first-year students. Syllabi were collected for each course and section in which these students were enrolled. After conducting an analysis of the syllabi, VanScoy and Oakleaf found that “87% of the 350 students studied were required to find articles to complete their assignments” (p. 570–571).

If only 33% to 34% of social science faculty assign research articles (Oldenburg, 2002; Wambach, 1998), and there is a consensus among faculty teaching science courses that lower division students were not expected to read scholarly journal articles, how is it that 87% of first-semester, first-year students were expected to find articles to complete their assignments (VanScoy & Oakleaf, 2008)? It is possible for first-year students to encounter most if not all of their assigned scholarly journal articles within their first-year writing course. Dewald (2003) found that based on assignments in their syllabi, 70.5% of first-year students are assigned short research assignments that imply library research, and 23.5% of first-year students are assigned a significant research project.

Since those courses are most often taught by instructors from the English department, a possibility exists that students first encounter scholarly journal readings from the humanities tradition and not social sciences or sciences. If students' first experiences of research articles are shaped by English instructors, it is possible that they are not well prepared for assigned scholarly journal articles in psychology, biology, etc. Instructors in these fields often complain about their students' inability to comprehend scholarly journal assignments. Despite a large and emphatic declaration by general education instructors that students do not exhibit basic skills in comprehension and critical thinking, limited consensus exists about what this absent preparation would include. Some researchers have questioned the nature of faculty expectations to determine similarities.

Expectations of faculty concerning their students' prior preparation to primary research

"There is an apparent gap between the information literacy skills that faculty want their students to have and those that they actively support and develop" (DaCosta, 2010, p. 218). In general, more information exists about this gap than the skills that would have filled it. Faculty within subject disciplines do not necessarily know what specific skills a student lacks, they just know that the student does not produce research assignments or demonstrate understanding of assigned scholarly reading. Leckie (1996) argues that the "large disjuncture between the expectations of the faculty as the expert researcher and the capabilities of the undergraduate as the novice" arise from four major tensions (p. 203). These tensions result from contradictions between the faculty and the expert researcher model versus novice research skills, the research paper assignment versus the student's limitations, faculty assumptions, and the in-class experience (p. 202). Essentially faculty members acquired sophisticated research techniques and

a broad familiarity with research conducted in their field. They no longer possess the perspective of an undergraduate student exposed to the field for the first time with no knowledge of who conducts research in this field, the boundaries of the discipline, nor its modes of scholarly communication. Leckie also argues that many research assignments require significant familiarity with the topic and sophisticated research skills (p. 203). Recent research confirms that research assignment handouts continue to fail in guiding students. In a progress report of Project Information Literacy, Head and Eisenberg (2008) stated that most research assignment handouts only provided direction on the mechanics of the papers such as citation style and page length but little guidance on the actual research process.

Leckie (1996) also explains how faculty assumptions undermine research assignments.

> The expert assumptions are (1) that through general introduction about a large topic, students will gain some feeling for the dimensions of the entire issue, which they need before they can speak with any authority; and, (2) they will be able to focus on specific questions of interest. (p. 203)

In fact, students do not achieve any sense of familiarity with the boundaries of the issue and delay working on research papers because they cannot figure out how to narrow their topic or their reading sufficiently to meet the demands of the assignment. Fister (1992) emphasizes the importance of achieving relevant focus in assignments.

> Finding a focus is a major and critical phase in undergraduate research. Unlike expert researchers, students do not know enough about a field to see its holes; they can't latch on to interesting issues without first reviewing the literature to discover which methods are worth pursuing. The methods librarians frequently recommend to students for "narrowing" a topic, however, do not reveal interesting questions. (p. 168)

Leckie's last assertion emphasizes the need for using class time to guide students through their research processes instead of the default approach of simply assigning the paper without further direction. This last point is especially important when considering that most students are taught to research using a very general research model and a rhetorical model developed in freshman English composition. As Geisler (1994) points out, most students receive little preparation in the rhetorical style of the discipline in an introductory course.

> In most undergraduate courses of study, students deal with domain content in one kind of course and rhetorical process in another; lecture courses versus laboratory courses in the sciences and social sciences; lecture courses versus seminars in the social sciences and humanities; lecture courses versus studio or design courses in the arts, architecture, and engineering sciences. Thus, despite its acknowledged importance in expert practice, little has been done to show how the integration of domain content and rhetorical process can be achieved in the classroom. (p. 213)

Although a gap persists in the preparation of students to think and read critically, most faculty believe that such a preparation constitutes a desirable if not essential platform for students who major in the discipline. A discussion of the pedagogical advantages of understanding primary literature follows.

Perceived benefits of reading primary literature in undergraduate courses

Some instructors question the value of assigning scholarly journal articles within general education classes because of either a perceived inability of students to comprehend the material or the increased instructional effort in designing assignments that utilize primary literature. As a history professor, Pace (2004) asserts that part of the students' job in college is to "learn the specific forms of thinking that are needed in each field in which they take courses" and those different types of assigned readings such as primary and secondary research texts (p. 15). Pace

models different aspects of historical reading within his course by projecting passages on a screen and then changing the fonts to emphasize or diminish text based on importance.

Research suggests that the effort involved with integrating primary literature into undergraduate courses develops reading comprehension and critical thinking in students (Fortner, 1999; Henderson & Buising, 2000; Hermann, 1999). In science courses, primary literature provides students with an exposure to scientific discourse and research behind the textbook (Houde, 2000). Kuldell (2003) asserts that even challenging literature can be an effective tool if the articles are presented as a model for scientific inquiry and data presentation (p. 33). In Kuldell's study, students stated that writing lab reports and designing figures became easier after having discussed assigned journal articles. Another student said that talking about published scientific papers broadened his/her view of how genetics is applied.

Measurement of these benefits as educational outcomes

Fiegen, Cherry, & Watson (2002) describe a successful collaboration project in which the business librarian and two management professors created a pedagogical matrix of classroom assignments linked to information literacy standards and learning outcomes for the class. These researchers measured learning outcomes with pre- and post-test questionnaires comprised of identical questions. Every question was related to at least one learning outcome. Researchers compared student responses from pre- and post-test questionnaires and evaluated these responses on the basis of precision of response to the question. Students' responses improved in almost every area ranging from an increase of 28% in "Finding employment law and regulations" to 70% in "Finding background reading" (Fiegen et. al., 2002, p.314).

Another approach to assessing information literacy is evaluating students' academic work based on scoring rubrics based on course learning objectives and information literacy standards (Knight, 2005, p. 43). Student bibliographies were evaluated based on criteria for beginning, proficient, and advanced levels of achievement for each learning standard.

Many case studies illustrated successful integration and/or assessment of information literacy objectives within specific disciplinary contexts. The next section elaborates on examples of the most prevalent pedagogical practices: integration of information literacy standards with discipline specific standards, combining information literacy skills with specific course learning objectives using active and/or collaborative learning techniques, tailoring bibliographic instruction sessions, and creating specific Websites to support students in disciplinary research.

Best practices in integrating information literacy within disciplines

Different points of view persist in the ongoing dialogue between how information literacy is best taught and acquired within subject disciplines. Some researchers believe that having academic librarians focus on generalizable and transportable information literacy skills while the course instructor explains information literacy issues nested within the subject content provide the best preparation in information literacy (Grafstein, 2002). Researchers espouse the successes of team teaching with librarians and teaching faculty (Black, Crest, & Volland, 2001; Cheney, D. 2004; Iannuzzi, 1998). Others such as Owusu-Ansah (2004) exhort librarians to lead campus-wide charges for information literacy for every level of study. Support for the position of information literacy taught as concepts embedded in disciplinary contexts, despite who teaches these concepts also has proponents (Manuel, 2004, p. 280).

Information literacy is context specific. Often, students are exposed to formal information literacy programs only in their freshman English composition classes in a one-hour bibliographic instruction session at their library. Typically, these sessions introduce the student to resources in the library, illustrate how to use the library's catalog and at least one widely used database, explain the importance of plagiarism as well as try to explain the importance of using appropriate, scholarly resources for research and how to evaluate those resources for quality. For all that this one-hour session strives to include, there are pedagogical limitations to the effectiveness of this approach. The strongest limitation is the demand placed on the student to transfer these newly introduced information literacy skills to courses in other disciplines months and years after participating in the bibliographic instruction session.

> There are differences in the skills valued by faculty, within specific subject disciplines. It is not advisable to approach faculty with a 'one size fits all' information literacy plan or package. Specific skills will matter to certain disciplines at different times in a degree program and prove more relevant to the students if they are introduced at the appropriate times. (DaCosta, 2010, p.218)

Enhancing literacy as defined by ACRL standards with a broader view that encompasses both institutional general education and discipline-specific outcomes as well as regional accreditation mandates increases opportunities for students to acquire these competencies in relevant, meaningful contexts says Oakleaf (2010). Oakleaf goes on to describe seven learning standards in addition to ACRL that emphasize either information literacy or critical thinking skills that include collecting, analyzing, understanding, and interpreting data (p. 21).

Surveying best practices in introducing students to scholarly literature within specific subject disciplines also enhances opportunities for academic librarians to tailor information literacy instruction to existing successful pedagogical frameworks.

The following section reviews information literacy endeavors in three broad disciplinary areas: sciences, social sciences, and humanities. Within social sciences and humanities, information literacy practices in psychology and history are explored in detail because readings in these disciplines form the basis of this dissertation study of PLUS undergraduates as they encounter assigned scholarly journal readings in their general education classes. Information literacy in the sciences is included because scientific disciplines have been most active in integrating information literacy in undergraduate education.

The Sciences

The most developed information literacy practices in higher education are in the sciences. This disciplinary group articulates to a greater degree than humanities or social sciences what it means for a student to exhibit competency in information literacy. Specific information literacy standards exist for each level of undergraduate work and in each discipline.

The scientific community has the National Science Education Content Standards (NSSE), K–12 standards that parallel requirements in general education science requirements in institutions of higher education (Laherty, 2000). NSSE includes information literacy standards and are consonant with the ACRL standards. Laherty mapped the convergences and divergences between these two sets of standards. Beyond the general education courses in science addressed by NSSE, disciplinary communities such as the American Chemical Society (ACS) Committee on Professional Training (CPT) institute guidelines for higher level courses in scientific disciplines.

Science faculty show keen awareness of the state of information literacy in their students. In a study of University of Tennessee science professors and their experiences and expectations

of information literacy, science professors described information literacy in context and differing expectations of information literacy for different classes of students (Tenopir et al., 2002). These professors were also able to describe an “as-is” state of information literacy in the sciences. In addition, a consensus developed that a class should be offered on the research process and journal literature in perhaps as early as the sophomore year.

In 2000, the University of Virginia introduced chemical information into the undergraduate chemistry program to comply with the guidelines of the American Chemical Society (ACS) and to fulfill the university’s standards for information literacy (Lawal, 2001). At the University of Virginia, students taking Chem 182 – Principles of Chemical Reactions I receive a one-hour lecture and four hours of library and computer searching experience. As part of this instruction, students become aware of primary sources, participate in an active learning experience in which they work in groups, play-act the role of chemists who have synthesized a compound, and figure out what methods to use to share their new information with global and local colleagues (Lawal, 2001). Through this exercise, students learn how simple indexes and abstracts are compiled as well as the role of these compilations as finding aids for chemical literature. They become aware that indexes and abstracts cover more than periodical literature and, indirectly, learn the organization of *Chemical Abstracts* (Lawal, 2001).

Most use a lab report as a fundamental basis for the research article and how the research article communicates within a disciplinary community. Science disciplines emphasize understanding the meaning of the article. The student is expected to understand the article within a particular research and disciplinary context.

An understanding of reading and writing within the sciences as fundamental pervades the literature about incorporating information literacy into the undergraduate scientific curriculum. For example, Norris and Phillips (2003) write,

> Reading and writing do not stand in a functional relationship with respect to science, as simply tools for the storage and transmission of science. Rather, the relationship is a constitutive one, wherein reading and writing are constitutive parts of science. Constitutive relationships define necessities because the constituents are essential elements of the whole….Relating and writing are inextricably linked to the very nature and fabric of Science. (p. 226)

Many science instructors assert the importance of competent writing within the discipline as a requisite for competency in achieving learning objectives within the discipline (Brillhart & Debs, 1981). Instructors such as Kuldell (2003) have found that students benefit from examining good scientific writing when examples are offered before students attempt their own writing. DebBurman (2002) supports the integration of learning the conventions of good scientific writing early within the curriculum.

> Science is communicated within the scientific community through primary literature that uses a highly technical language. This language is a learning barrier for even the brightest beginning students. If we can provide effective ways for beginning students to develop the oral and written vocabulary needed to comprehend and communicate this jargon-filled primary literature, they will likely better engage in contemporary research, feel part of the scientific community and appreciate the research behind textbook information. (p. 155)

In the above statement, DebBurman also addresses another barrier that early college students face when reading scholarly journal articles, jargon. Kuldell (2003) first passes out to the class a copy of an article from professional literature. In class, the students read through the introduction and underline words or phrases they do not understand. Students are allowed to look up definitions in class. After all the students have had time to finish the introduction,

Kuldell breaks them into small groups where they discuss unfamiliar words and concepts. Kuldell explains any remaining unclear material. Afterwards, students reread the same section again and answer study questions. After finishing the introduction, students repeat the same process with each subsequent session of the article. Kuldell's technique was the most explicit in terms of addressing vocabulary within the information literacy research.

Kuldell's information literacy techniques are exemplary of science instruction. In another example, Kuldell (2003) revisits an article that her students have read for an assignment and focuses on the technical aspects of the study as well as the writing itself. Kuldell uses an example of a superbly written abstract. Kuldell and the students look at each sentence in the abstract and consider its purpose. Students are assigned reports that appear in *Science* and *Cell* so that they encounter different formats. Students see that "although there are common elements in scientific writing, there is more than one acceptable template" (Kuldell, 2003, p. 34).

Another technique for introducing students to professional literature is the jigsaw approach. "The jigsaw approach is a method of assembling a body of information from its diverse pieces, like a jigsaw puzzle" (Fortner, 1999, p. 261). Jigsaw activities acquaint students with various categories of scholarly literature. In an initial brainstorming session, students discuss primary literature in science and interpretive literature for various target groups. The jigsaw technique takes place within a context of group learning. Students belong to base groups and expert groups with each student belonging to one base group and one expert group. In the base group, the role of the student is learner. In each student's role as an expert in the expert group, the student teaches what he or she has learned in the base group. The student returns from the expert group to share the knowledge acquired within the base group, so that each student has

an opportunity to learn from each group. Students review an individual copy of a publication from a group of possibilities such as S*cience, Bioscience, Nature, Journal of the American Medical Association,* or *Climate Change*. On the day to debrief the category of literature, the experts meet to synthesize their publication findings. The expert group should achieve consensus about the most important points to be shared regarding their assigned publication. After the synthesis period, experts return to their base groups and work through a common set of debriefing questions (Fortner, 1999, p. 263).

Camill (2000) described a case-study approach, the interrupted journal case study, which "allows students to practice walking through the scientific method" (p. 38). After reading background and introductory material, students are asked to list what they think are the most important questions and hypotheses surrounding this issue. Students are also asked to design a realistic experiment that tests the hypothesis using provided information as the study site. Then students are asked to make predictions and examine the data. The last step is for the students to pretend they are professional ecosystem ecologists who are appearing in front of a congressional subcommittee and provide an evaluation of a proposal. This activity lasts for a 60- to 70-minute class period.

Social Sciences

Scholars in the social sciences have intermittently addressed pedagogical issues of teaching undergraduate students to interact with journal articles. In establishing best practices for the comprehension of assigned journal articles in psychology, Carkenord recommends verifying that the students actually read the articles by having students write a summary and critique of

assigned articles on an 8 x 5 inch index card that highlights the major points and conclusions of the article (Carkenord, 1994, p. 164)

Feldt and Moore describe a detailed and systematic approach to reading empirical research articles, which uses the SQ3R method. The SQ3R method (Survey, Question, Read, Recite/Write and Review) is a comprehension monitoring strategy developed to improve higher order learning through textbooks. The SQ3R method is recommended in several introductory psychology textbooks as a way to study. Feldt and Moore (1999) modified the SQ3R method for empirical research articles. The method begins with exposing students to a simple instructor-written article that was based on a class survey. In this article, headings and bold face are incorporated into the article to help students focus on important information. A second article consists of an experiment conducted in class. Students participate in a class exercise in which they examine the procedural protocols to determine effective research process. A third article requires the student to read a brief report in literature. Students work in pairs to create questions about the article. Each pair submits the questions and their written answers to the instructor. Exams include a short journal article to be analyzed independently by each student. Throughout the remainder of the semester, students are given articles with no headings and that may not follow the standard organization of empirical articles. Various universities continue to use SQ3R when teaching students how to read scholarly journal articles. *In How to Read Academic Texts,* Cage (2004), provides a brochure of sevens steps in reading journal articles. Cage explains how to ask questions while reading the article in a step-by-step manner. An example consists of reading the title of the article carefully and asking, “What does the title tell you about the

content?" "What do you already know about the subject?" "What do you expect to get from the article?"(Cage, 2004).

Buche and Glover (1980) successfully correlated the frequency with which students read journal articles with their participation in a minicourse in which undergraduate educational psychology students were given instructions and guidelines on reading journal articles. In the minicourse, one experimental article and one theoretical article were used for individual study and group discussion in which research terms were defined and organizational components of the articles were described and analyzed through group discussion. Research performed by Chamberlain and Burrough (1985) suggested that students tend to skim articles rather than read them in depth. Students tend to avoid the detail of method and results sections and the depth of theoretical discussions. To combat this resistance to research methods and statistics in introductory psychology courses, Larkin and Pines (2005) guided students through an actual research project (survey) in which they collected data and compiled statistics. After completing the research project, the students completed an online searching assignment using some of the keywords from the class research study. Larkin found that the hands-on research project increased self-efficacy in students' online searching (p. 45).

In some social science departments, faculty explicitly direct their students in interpreting scholarly journal articles. The sociology department at the College at Brockport in Brockport, NY posted a web page entitled *Reading Academic Journal Articles*, which provided generic advice on the nature of journal articles in social sciences, such as the definition of an academic journal, an explanation of the peer-review process, and shortcuts to reading journal articles.

The Humanities

Information literacy instruction in the humanities is considered underdeveloped with many of its scholars stating that they needed more bibliographic training (East, 2005). Possibly, one of the reasons is that the humanities model of scholarship differs significantly in the way research occurs in this discipline as opposed to social sciences and sciences. Keeran (2007) explains,

> Humanities research is primarily qualitative than quantitative, acknowledging multiple perspectives and paradigms about our cultures that reflect the diversity of the human condition. The evidence to support an argument is cumulative, allowing researchers to legitimately draw on past and present. As a result, the investigative methods differ from those of scientists and social scientists. (p. 1)

Within humanities, it is considered perfectly reasonable for researchers who read the same text to come to two very different conclusions based on analytical process, theoretical approach, or evidence. Researchers who study humanities scholars have noted that they favor informal techniques such as footnote tracing from current literature and review articles, following recommendations from colleagues, referring to their personal collections or bibliographic files, and browsing library collections. Humanities scholars prefer these techniques to abstracting, indexing, and bibliographic databases (Green, 2000). Research in humanities tends to emphasize depth over breadth. As a result, the researcher's work is apt to be continuous, extending over several years as the scholar gains increasing familiarity with the literature of his or her subject area (Green, 2000, p.203; Palmer & Neumann, 2002). Because humanities researchers become so well versed in the literature in their areas, most online database searches within their area of specialization show citations, most of which the researchers are already aware.

As opposed to research in social science, which more closely models science, research in humanities attempts to “retrace the steps of discovery and analysis at the heart of the research” (Green, 2000, p.204). There is a sense of participating in the research by reading it carefully. Green describes this scholarly activity as “trying to get inside the thought process of some other person via his or her writing” (p. 208). In addition, the research is the product; it does not merely report results of research. The monograph, scholarly article, or essay is expected to produce an impact on the reader beyond informing results.

Experts in humanities research do not have a single method for discovering primary and secondary sources. Other established patterns of humanities scholarship include: (1) Concepts and terminology that are less standardized than in the sciences, (2) a preeminence of proper names as access points, and (3) highly individualistic research processes and a lack of shared methods (Green, 2000, p. 208; Wiberley, 2003, p.122).

Wiberley and Jones (2000) studied 10 humanist scholars: anthropology (two), English (three), history (two), history of art (one), political science (one), and women’s studies (one) that were in the middle of their careers and three younger scholars who were assistant professors in English, German, and history (p. 422). Because humanities research includes text, images, audio clips, and artifacts, searching based on theme, technique, or material type remains important (Keeran, 2007).

Many of the information literacy efforts described in the previous section occur outside the library by experts in specific academic disciplines. In addition, faculty created them specifically for their own teaching sections. Therefore, academic librarians would encounter many obstacles in imitating these methods and making them scale to current bibliographic

instruction. Academic librarians continue to search for relevant pedagogy to increase information literacy as defined by ACRL.

Current efforts of academic librarianship in addressing the full platform of skills mandated by the ACRL Standards for Information Literacy

Researchers in information science have suggested a comprehensive approach to information literacy calibrated to the undergraduate programs of the university. In such a plan, "engaging the entire student population at one time or the other of their college attendance could ensure that comprehensiveness and diversification" (Owusu-Ansah, 2004, p. 4).

Problem-based learning has emerged as an alternative to the traditional bibliographic instruction that "flogged students through exercises" (Spence, 2004, p. 486). Spence asserts, "we cannot drag students through our experiences with libraries, research, and learning without killing the very desires we want to foster (p. 488). "Problem-based learning is a teaching technique wherein the learning takes place in the context of solving real-world problems" (Fosmire & Macklin, 2002, 2/11). These librarians, Michael Fosmire, a science librarian, and Alexius Macklin, the user instruction coordinator, implemented problem-based learning (PBL) by collaborating with the subject faculty to create opportunities to solve real-world problems such as debating the age of the earth with the local school board or other hot topics in the news.

Despite some efforts of academic librarians to create active and context-sensitive learning environments, much information literacy instruction continues to occur within a one-hour time frame, emphasizes the use of library-specific tools, and provides overviews of the available sources in the face of incontrovertible evidence that these methods fail. Teaching faculty in the sciences have created the most successful teaching models, while information literacy pedagogy

ranges from inadequate in the social sciences, with the exception of efforts created by teaching faculty, to virtually nonexistent in the humanities.

Conclusion

Academic librarians must move beyond traditional boundaries of bibliographic instruction to remain relevant to the students whom they currently teach. At this point, no one knows if students understand the scholarly literature they obtain from the library. We have no gauges to ascertain impacts of information literacy efforts conducted by librarians on students' learning. This situation arises from the complex and interconnected issues that comprise information literacy and the limitations of academic librarians to participate in the holistic educational processes of the students. Librarians have limited exposure to most of the students they instruct and have little understanding of these students' academic preparation and cognitive abilities. Understanding how students learn and how they struggle with language as they read and write can assist librarians in addressing problems that show up in research processes. Many students do not have a metacognitive appreciation of how they read or write, they simply imitate and become accustomed to the styles and expectations to which they are most frequently exposed. Text comprehension is much more complex than we choose to remember from our own educational experiences. Most students use linear strategies (such as temporal listing) as they attempt to understand relatively long (3,000 words) scholarly journal articles, even though that comprehension strategy has been discredited.

In order to explore underlying realities of what students encounter as they attempt to become information literate, the next chapter focuses on the attributes of the texts assigned for

general education classes and the actual experiences of students as they make sense of these readings.

Chapter 3

Methods

Introduction

This study explored the relationship between how students are taught to write in first-year college English classes and what those students are expected to read as part of the general education requirements of the undergraduate curriculum at PLUS (PLUS) and determined that a gap exists between the two. A gap between the preparation of students and the expectations of the teaching faculty negatively impacts students' information literacy. The performance standards for information literacy in higher education specified by ACRL (2000; Performance Indicator 1 for Standard Three) state,

> The information literate student summarizes the main ideas to be extracted from the information gathered. The outcomes of this performance include: *reading the text and selecting the main ideas* [italics added], restating the textual concepts in his/her own words and selecting data accurately, and identifying verbatim material that can be then appropriately quoted. (ACRL, 2000, p.11)

Through examination and evaluation of texts assigned in different disciplines, similarities and inconsistencies in composition structure appeared. The relative similarity of writing instruction examples used in the freshman English composition class, *Introduction to University Writing*, to underlying structures and style of scholarly journal articles is assumed to have a

direct relationship to a student's preparation for reading scholarly journal articles assigned in general education classes.

Specifically, scholarly journal articles were compared to writing instruction examples located in the textbook for the freshman English composition class, *Steps to Writing Well for Academic English* (Wyrick, 2008) for differences in academic composition styles. In addition, this study explored perceptions of these differences from the standpoint of college students.

Research Questions

1. What are the overall structures of both (a) student instruction composition and (b) scholarly journal articles assigned for reading in subsequent general education classes in the disciplines of psychology and history at PLUS?

    Text structures include several specific components: signal words that illustrate primary, subordinate, and parallel relationships between ideas; topic sentences to illustrate main ideas; and complexity of vocabulary. To explore these components, specific hypotheses were developed.

2. How can these structures be best identified? As the top-level structures are determined by their components, this research question addresses the components in all seven hypotheses.

The first hypothesis, H_1 proposes that there will be significant differences in the types of top-level structures (chronological, cause/effect, and compare/contrast) as defined in Meyer & Poon relationship between basic organization structures and their signal words. These signals indicate the hierarchical and heterarchical relationships between ideas.

The second hypothesis, H_2, examines the incidence of specific topic sentences per body paragraph as a component of text structure, while the third hypothesis, H_3, explores the placement of topic sentences in the instances where they occur.

The complexity of vocabulary is explored through hypotheses 6 and 7. Hypothesis 6 (H_6) asserts there will be significant differences in the overall complexity of the text as measured by the *Flesch Reading Ease* (Flesch, 1948), while Hypothesis 7 (H_7) contends that there will be significant differences in the overall complexity as measured by the *Flesch-Kincaid Grade Level Formula* (Kincaid, 1975).

3. What are the top-level structural patterns of composition within these two academic disciplines and how do they differ? The number and type/function of signals that indicate overall structure of the texts are examined through Hypothesis 4 and Hypothesis 5.

Hypothesis 4 (H_4) asserts there will be significant differences in the number of signaling devices or words that explicitly state the relational structure among main propositions. The fifth hypothesis (H_5) states that there will be significant differences in the type/function of signaling devices or words that explicitly state the relational structure among main propositions.

4. Are there differences in top-level structure used in general expository composition, such as in the writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and in those used in scholarly journal articles in the selected disciplines? This question is specifically addressed in the following hypotheses:

H_{1a}: There will be significant differences in the types of top-level structures (chronological, cause/effect, and compare/contrast) present in scholarly journal articles assigned in

Introduction to Psychology classes and writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008).

H_{1b}: There will be significant differences in the types of top-level structures (chronological, cause/effect, and compare/contrast) present in scholarly journal articles assigned in history classes[1] and writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008).

H_{2a}: There will be significant differences in the incidence of specific topic sentences per body paragraph between scholarly journal articles assigned in Introduction to Psychology classes and writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008).

H_{2b}: There will be significant differences in the incidence of specific topic sentences per body paragraph between scholarly journal articles assigned in history classes and writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008).

$H_{3a:}$ There will be significant differences in the placement of specific topic sentences per body paragraph between scholarly journal articles assigned in Introduction in Psychology classes and writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008).

$H_{3b:}$ There will be significant differences in the placement of specific topic sentences per body paragraph between scholarly journal articles assigned in history classes and writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008).

[1] The history class is Survey of United States History II, HIST 2010. It is one of three history courses that count towards the general education requirement in history.

H_{4a}: There will be significant differences in the number of signaling devices or words that explicitly state the relational structure among main propositions in scholarly journal articles assigned in Introduction to Psychology classes and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008).

H_{4b}: There will be significant differences in the number of signaling devices or words that explicitly state the relational structure among main propositions in scholarly journal articles assigned in history classes and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008).

H_{5a}: There will be significant differences in the type/function of signaling devices or words that explicitly state the relational structure among main propositions in scholarly journal articles assigned in Introduction to Psychology classes and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008*)*.

H_{5b}: There will be significant differences in the type/function of signaling devices or words that explicitly state the relational structure among main propositions in scholarly journal articles assigned in history classes and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008).

H_{6a}: There will be significant differences in the overall complexity as measured by the *Flesch Reading Ease* (Flesch, 1948) between scholarly journal articles assigned in Introduction to Psychology classes and in writing examples from *Steps to Writing Well for Academic English.*

H_{6b}: There will be significant differences in the overall complexity as measured by the *Flesch Reading Ease Formula* (Flesch, 1948) between scholarly journal articles assigned in history classes and in writing examples from *Steps to Writing Well for Academic English.*

H_{7a}: There will be significant differences in the overall complexity as measured by the *Flesch-Kincaid Grade Level Formula* (Kincaid, 1975) between scholarly journal articles assigned in Introduction to Psychology classes and in writing examples from *Steps to Writing Well for Academic English.*

H_{7b}: There will be significant differences in the overall complexity as measured by the *Flesch-Kincaid Grade Level Formula* (Kincaid, 1975) between scholarly journal articles assigned in history classes and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008).

5. Do these differences, to the extent they exist, create contradictions in how students are taught to write in freshmen composition courses and the composition of the journal articles they are expected to read in their required general education classes? This research question is addressed in Stage II, where students who have taken both freshmen composition courses and either Introduction to Psychology or history were interviewed. The transcriptions of the interviews were analyzed for themes that indicated contradictions.
6. Do the contradictions differ according to their discipline, whether psychology or history? A combination of statistical analysis of the structural features of the texts as well as the experiences described by the students in the Stage II interviews address this research question. The hypotheses include:

H_{1c}: There will be significant differences in the types of top-level structures (chronological, cause/effect, and compare/contrast) present in scholarly journal articles assigned in Introduction to Psychology and history classes.

H_{2c}: There will be significant differences in the incidence of specific topic sentences per body paragraph between scholarly journal articles assigned in Introduction to Psychology and history classes.

$H_{3c:}$ There will be significant differences in the placement of specific topic sentences per body paragraph between scholarly journal articles assigned in Introduction to Psychology and the history classes.

H_{4c}: There will be significant differences in the number of signaling devices or words that explicitly state the relational structure among main propositions in scholarly journal articles assigned in assigned in the Introduction to Psychology and history classes.

H_{5c}: There will be significant differences in the type/function of signaling devices or words that explicitly state the relational structure among main propositions in scholarly journal articles assigned in Introduction to Psychology and history classes.

H_{6c}: There will be significant differences in the overall complexity as measured by the *Flesch Reading Ease Formula* (Flesch, 1948) between scholarly journal articles assigned in Introduction to Psychology and history classes.

H_{7c}: There will be significant differences in the overall complexity as measured by the *Flesch-Kincaid Grade Level Formula* (Kincaid, 1975) between scholarly journal articles assigned in Introduction to Psychology and history classes.

Table 3.1 Hypotheses

1	There will be significant differences in the types of top-level structures present in scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
1a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
1b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
1c	Scholarly articles assigned in psychology classes vs. history classes.
2	There will be significant differences in the incidence of specific topic sentences per body paragraph between scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
2a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
2b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
2c	Scholarly articles assigned in psychology classes vs. history classes.
3	There will be significant differences in the placement of specific topic sentences per body paragraph between scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
3a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
3b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
3c	Scholarly articles assigned in psychology classes vs. history classes.
4	There will be significant differences in the number of signaling devices or words that explicitly state the relational structure among main propositions present in scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
4a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
4b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
4c	Scholarly articles assigned in psychology classes vs. history classes.

Table 3.1 Continued

5		There will be significant differences in the type/function of signaling devices or words that explicitly state the relational structure among main propositions present in scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	5a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	5b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	5c	Scholarly articles assigned in psychology classes vs. history classes.
6		There will be significant differences in the overall complexity as measured by the *Flesch Reading Ease* (DuBay, 1948) in assigned scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	6a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	6b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	6c	Scholarly articles assigned in psychology classes vs. history classes.
7		There will be significant differences in the overall complexity as measured by the *Flesch-Kincaid Grade Level Formula* (Kincaid, 1975) between assigned scholarly journal articles and readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	7a	Scholarly articles assigned in psychology classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	7b	Scholarly articles assigned in history classes vs. readings in *Steps to Writing Well for Academic English* (Wyrick, 2008).
	7c	Scholarly articles assigned in psychology classes vs. history classes.

Proposed Methodology

This study addresses the research questions and tests the hypotheses using a mixed-methods approach where content analysis is employed to examine the assigned readings students

encounter, and interviews are conducted to explore how students perceive and make sense of the academic writings assigned in Introduction to University Writing, Introduction to Psychology, and history classes at PLUS.

Stage I. Content Analysis

Review of Content Analysis Literature

Content analysis is an empirical method for making inferences about the communicative content of texts. According to Berelson's approach, "content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (1971, p. 18). Objectivity suggests that bias introduced by the research is minimized. To accomplish objectivity, content analysis is systematic, following explicit rules for the identification of message content and treating all messages in the same manner. These systematic rules allow the researcher to reduce the amount of content considered in these analyses to yield the most useful information. Weber (1990, p.41) explains,

> Even with the assistance of computers, however, a remaining difficulty is that there is too much information in texts. Their richness and detail preclude analysis without some form of data reduction. The key to content analysis – in fact, to all modes of inquiry- is choosing a strategy for information loss that yields substantially interesting and theoretically useful generalizations while reducing the amount of information analyzed and reported by the investigator.

In contrast to most content analyses that focus primarily on determining meaning exclusively, this study will emphasize the structural, genre-specific, and stylistic features of the texts that influence how the reader interprets meaning. Although content analysis of structural elements are less common, Hagge (1994) examined twelve professional style manuals to identify

and compare pages devoted to formal and nonformal writing components. Content analyses conducted by Braddock (1974), Popken (1987), and Smith (2007) studied the number and placement of topic sentences in paragraphs, but the definition of topic sentences differs in each analysis. All of these studies reference Braddock's initial complex and problematic definition. After explaining all of the possible definitions of topic sentences, Braddock ultimately defined topic sentences functionally. He identified topic sentences by reading through each section of seemingly related paragraphs, then selecting or reconstructing topic sentences (Smith, 2008).

In the content analysis stage, writing conventions were identified in disciplinary prose by comparing texts of journal articles across scholarly genres including a text for beginning expository writing. I chose from assigned journal readings from the *Introduction to Psychology* and history classes at PLUS. To make sure that these readings are representative of scholarly literature in the discipline, I compared the assigned journal readings against titles that have been identified as core titles by faculty who teach and research in these disciplines at PLUS. I also compared these titles against published core lists of journals within disciplines. Journal readings assigned in History 2010 at PLUS were compared to journal titles in *Reference Sources in History: An Introductory Guide* (2004) with 88% (15) of the 17 journal readings occurring in core titles. An example of text from assigned journal reading in history is found in Appendix A. Journal readings assigned in psychology classes came from journals listed as having high citation impact factors in the subcategories of psychology used the *ISI Web of Knowledge Journal Citation*. (Garfield, 2005). These categories include: Psychology-Experimental, Psychology-Developmental, Psychology-Educational, and Psychology-Multidisciplinary. Appendix B provides an example of text from assigned journal reading in psychology.

Selections from the required text of Introduction to University Writing, *Steps to Writing Well with Additional Readings* (2008) by Jean Wyrick (See Appendix C), will be reviewed as examples of the writing rules that are encountered by students in Expository English. Each reading was considered a professional essay (written by a professional writer). Three of the readings were used in a chapter to illustrate specific expository techniques. The other six selections came from additional readings in the textbook and functioned as supplementary examples.

Assumptions

Ability to find the topic sentence in a paragraph is analogous to finding the main point of a paragraph as described in the ACRL Standard 3, Performance Indicator 1. The relationship of the topic sentence to the paragraph and the essay is illustrated in appendix D, an example taken from Writing Academic English (Oshima & Hogue, 2006, p.57). For the purposes of this study, I rely on the definition of *topic sentence* derived from the course materials assigned in PLUS's Introduction to University Writing Course. In *Steps to Writing Well for Academic English*, Wyrick defines topic sentences as "important statements that support or illustrate the thesis . . . that occur near the beginning or end of the body paragraphs" (p. 171). In Chapter 3, Wyrick further defines the topic sentence:

> Although the topic sentence most frequently occurs as the first sentence in the body paragraph, it also often appears as the second or last sentence. (p. 53)

Another definition of topic sentences is offered in *Writing Academic English* (Oshima and Hogue, 2006), a workbook also assigned to students in PLUS's Introduction to University Writing course:

> The topic sentence states the main idea of the paragraph. It not only names the topic of the paragraph, but it also limits the topic to one specific area that can be

> discussed completely in the space of a single paragraph. The part of the topic sentence that announces the specific area to be discussed is called the controlling idea. (p. 4)

Operational Definitions

The terms used in the research questions and hypotheses will be defined using the terminology presented in the Introduction to University Writing textbook by Wyrick (2008) and B.F.J. Meyer's (2003) article on structure strategy. The first variable is topic sentence because of its importance in providing the reader direction in interpreting the meaning of the paragraph.

The placement of the topic sentence in a paragraph was labeled as first, second, middle, and last to fit Wyrick's description of the topic sentence. A dummy code "99" was used for paragraphs without topic sentences.

The second key definition is the "overall structure" of the text. Structure refers to the general organizational and logical plan of the work. Expository prose more or less follows a top-down structure in which general assertions are followed with specific examples (Meyer, 2003, pp. 208-210). See Appendix F for a diagram of Meyer's structure strategy.

For the purposes of this study, signaling devices include summary statements, pointer words, or words that explicitly state the relational structure among main propositions of the text, such as words presented in Table 3.2. Signaling devices are noted by both incidence and function. In cases where the paragraph does not contain a topic sentence, a dummy code "999" is used to distinguish paragraphs without topic sentences from topic sentences without structure signals. Organization structure of the composition instruction selection or the assigned scholarly journal reading is defined using one or more of the basic organization structures provided by Meyer & Poon (2001) and expanded to include signaling devices frequently used in scholarly

articles. During the course of this study, it became clear that many signals that frequently occur in scholarly journal articles were not included. Many signals have been added to the Meyer & Poon schema. The additions are noted in green.

Table 3.2. Meyer & Poon (2001). Five Basic Organization Structures and their Signals

Top Level Structure	***Structure Signals***
Description	For example, which was one, this particular, for instance, specifically, such as, attributes of, that is, namely, properties of, characteristics are, qualities are, marks of, partially, even in, in this case, especially, main
Sequence	Afterwards, later, finally, last, early, following, to begin with, to start with, then, as time passed, continuing on, to end, years ago, in the first place, before, after, soon, more recently, once, during the final decades, five years later, by the new century, as early as, subsequently, in that month, recurrent, already
Causation	As a result, because, since, for the purpose of, caused, led to, consequence, thus, in order to, this is why, if/then, the reason, so, in explanation, therefore, accordingly, accounted for, based on, concluded, consequently, contributed, due to, given, if, if anything, in closing, in conclusion, in general, in other words, in sum, must, observed that, on the grounds, overall, since, supported, that is, then, thereby, followed, suggest, hinges
Problem/Solution	Problem: problem, question, puzzle, perplexity, enigma, riddle, issue query, need to prevent, the trouble, possibility, Solution: Solution: answer, response, reply, rejoinder, return, comeback, to satisfy the problem, to set the issue at rest, to solve these problems, overall, resulted, to solve, to seek, tested, resolving, found, to explain
Comparison	Not everyone, but, in contrast, all but, instead, act like, however, in comparison, on the other hand, whereas, in opposition, unlike, alike, have in common, share, resemble, the same as, different, difference, differentiate, compared to, while, although, despite, against this, although, always, as opposed to , between, but/not, but/also, compared to/(with), consistent, contrary, consistent with, conversely, differentially, in fact, in spite of, less, much like, neither/nor, notwithstanding, like, on one hand, or, regardless, similar(ly), versus, whereas, while, yet.
Listing occurs with any of the plans	And, in addition, also, include, moreover, besides, first, second, third, etc., subsequent, furthermore, at the same time, another, including, besides

The determination of structure was compared to those composition structures taught to beginning college students at PLUS. Oshima & Hogue (2006) offer categories of expository writings. Chronological order "process essays" organize ideas in the order of their occurrence in time. They can also explain processes and procedures that occur sequentially. Cause/effect essays discuss the reasons for an issue and both the causes and effects of the issue. In comparison/contrast essays, the similarities and differences between two concepts are explained (Oshima & Hogue, 2006, p. 111).

This method mirrors the approach taken by Popken (1987). Differences include disclosing the actual titles (Popken did not list the journal titles.) and limiting my study to scholarly articles assigned to students in psychology and history. In describing his study, Popken writes,

> The following tables list the journal articles from the Introduction to Psychology and history classes and the essays from Steps to Writing Well for Academic English. the study consisted of 35 articles taken from journals deemed 'most respected' by college professors in of 7 disciplines (biochemistry, civil engineering, history, literature, physics, psychology, and sociology), which can be arranged into four traditional academic divisions (humanities, social sciences, natural sciences, and engineering). (p. 215)

Although Popken examined five articles per discipline, I reviewed a semester's worth of reading assignments for Introduction to Psychology (5) and American History (17). I reviewed three examples of expository essays from *Steps to Writing Well for Academic English* (Wyrick, 2008) for each of the categories described by Oshima and Hogue in *Writing Academic English* (2006), for a total of nine readings.

Table 3.3. Readings from Writing Well for Academic English

Title	*Author*	*Published*
The Jeaning of America	Carin C. Quinn	1978
My real car	Bailey White	1993
The teacher who changed my life	Nicholas Gage	1989
You call this progress?	Seth Shostak	1999
Some lessons from the assembly line	Andrew Braaksma	2005
Grant and Lee: A study in contrasts	Bruce Catton	1956
Two Ways of Viewing the River	Samuel Clemens (Mark Twain)	1883
To Bid the World Farewell	Jessica Mitford	1963
Understanding Chernobyl	Darrell Ebbing	1993

Table 3.4. Psychology Articles

Journal title	***Article title***	***Author***	***Year***
Journal of consulting and clinical psychology	Addressing heavy drinking in smoking cessation treatment: A randomized clinical trial	Christopher W. Kahler and Jane Metrik, Susan E. Ramsey, Peter M. Monti, Heather R. LaChance, David B. Abrams,	2008
Developmental psychology	The experience of anger and sadness in everyday problems impacts age differences in emotional regulation	Fredda Blanchard-Fields and Abby Heckman Coats	2008
Journal of personality and social psychology	Romantic red: red enhances men's attraction to women	A.J. Elliot, and D. Niesta,	2008
Journal of consulting and clinical psychology	Rate and predictors of divorce among parents of youth with ADHD	Brian T. Wymbs; William E. Pelham Jr., Brooke S. G. Molina; Elizabeth M. Gnagy.; Tracey K. Wilson,.; Joel B. Greenhouse	2008
Journal of experimental psychology: human perception and performance	Eye movements when reading transposed text: The importance of word-beginning letters	Sarah J. White.; Rebecca L. Johnson; Simon P. Liversedge, Keith Rayner	2008

Table 3.5. History Articles

Journal title	*Article title*	*Author*	*Year*
Journal of Black studies	Amistad and the lessons of history	Joseph K. Adjaye	1999
Journal of social history	Deserted his Majesty's Service: Military runaways, the British-American press, and the problem of desertion during the Seven Years' War	Thomas Agostini	2007
The William & Mary quarterly	A 'riotous and unruly lot': Irish indentured servants and freemen in the English West Indies	Hillary McD. Bekles	1990
Ethnohistory	Tituba's confession: The multicultural dimensions of the 1692 Salem Witch-Hunt	Elaine G. Breslaw	1997
The Americas	Workers' Health and Colonial Mercury Mining at Huancavelica, Peru	Kendall W. Brown	2001
The journal of military history	Escape from Andersonville: A study in isolation and imprisonment	Robert S. Davis	2003
The American historical review	"Gouge and bite, pull hair and scratch": The social significance of fighting in the southern backcountry	Elliot J. Gorn	1985
The William & Mary quarterly	Taking the trade: Abortion and gender relations in an eighteenth-century New England village	Cornelia Hughes Dayton	1991
The William & Mary quarterly	Evangelical revolt: The nature of the Baptists' challenge to the traditional order in Virginia	Rhys Isaac	1974
Journal of social history	The essence of commodification: Caffeine dependencies in the early modern world	Ross Jamieson	2001
The journal of American history	Apathy and death in early Jamestown	Karen Kupperman	1979
The journal of American history	Slavery and freedom: The American paradox	Edmund S. Morgan	1972

Table 3.5. History Articles (Continued)

Journal title	***Article title***	***Author***	***Year***
The journal of American history	Apathy and death in early Jamestown	Karen Kupperman	1979
The journal of American history	Slavery and freedom: The American paradox	Edmund S. Morgan	1972
The William & Mary quarterly	Under the banner of King Death: The social world of Anglo-American pirates, 1716 to 1726	Marcus Rediker	1981
Theology today	The eye of God: Religious beliefs and punishment in early nineteenth-century prison reform	Muriel Schmid	2003
Civil War history	Seldom thanked, never praised, and scarcely recognized: Gender and racism in Civil War hospitals	Jane E. Schultz	2002
The William & Mary quarterly	African guardians, European slave ships, and the changing dynamics of power in the early modern Atlantic	Stephanie E. Smallwood	2007
The William & Mary quarterly	'Pale blewish lights' and a dead man's groan: Tales of the supernatural from eighteenth-century Plymouth, Massachusetts	Douglas L. Winiarski	1998
The New England quarterly	Pilgrims in the wilderness: Community, modernity, and the maypole at Merry Mount	Michael Zuckerman	1977

Overview of Testing Procedures

Procedures for this study include: (1) Determining selections from the textbook, *Steps to Writing Well with Additional Readings* (Wyrick, 2008); (2) Selecting articles from the population of assigned journal readings; (3) Identifying and instructing the additional coder in the process of assessing the writing samples and filling out the coding sheet; (4) Recording the coded

assessment; (5) Reviewing the coded assessments for intercoder reliability. See Appendix G for example of coding sheet.

Specific steps for each coder echo the studies of Braddock (1974), Popken (1987), and Smith (2008). Each coder assigns a unique number to the article or selection and each paragraph is numbered within the text. The article or selection is first read for a general idea of the composition. A second reading to determine overall logical structure follows. The last stage entails a paragraph-by-paragraph analysis which will identify topic sentence, signals and the top-level structure linked to the signal. The incidence of each topic sentence, type of signal, structure related to the signal, as well as the number of signals for that paragraph will also be recorded. See Appendix G for example of coding sheet. Recording the number of incidences that exist for each variable of interest makes the method quantitative. Berelson states that the studied content must be manifest and directly observable (1971). As the recorded instances are directly traceable to the original documentation, this procedure should meet the test.

In order to assess reliability of the measurement, this content analysis used the services of more than one individual to code the assigned readings/scholarly journal articles. I coded as well as a second coder from the University Writing Center. The PLUS Writing Center provides a good source of coders because of the Center's close work with the Introduction to University Writing faculty and students. The Director of the Writing Center personally recommended the second coder, a master's degree-seeking graduate student in the English department. This graduate student tutored undergraduate students in English as part of his assistantship. The second coder was introduced to the measurement scheme and the definitions of the categories to employ a common frame of reference.

A pilot test was first conducted with an emphasis on discerning the structure strategy first, then identifying the topic sentence, then discerning the signals. It was very difficult for either coder to identify a single structure strategy. Topic sentences proved more problematic than expected. In fact, in history articles often contained two or more candidate topic sentences in a paragraph, while paragraphs in psychology articles sometimes lacked a topic sentence. After reading and attempting to code two articles, the coders met and determined that identifying an overall structure was not as important as originally thought. The coders also agreed to use the most general sentence of the candidate topic sentences would be the criteria for selecting topic sentences.

Three assigned journal articles/readings, each from Introduction to University Writing, Introduction to Psychology, and history classes, representing 12% of the paragraphs included in the total study, were coded by both coders. The intercoder reliability for these articles was 98% agreement on placement of topic sentences for both history and psychology articles and over 98% agreement for incidence of topic sentences. The coders selected the same signals within the topic sentences 80% of the time.

Ultimately, thirty-three articles and 1,280 paragraphs were coded at a level of detail that included numbering each paragraph and each sentence, identifying the topic sentence, and enumerating and typing each signal in the topic sentence (to a maximum of six signals). This process took an estimated six full weeks to complete.

The first hypothesis addresses the overall structure of the work. The structure was determined by noting the signals. If a majority of signals corresponded to those in the Meyer and

Poon diagram (2001), that structure is assigned. The structure assigned from the Meyer and Poon diagram will be mapped to the categories outlined in Oshima and Hogue (2006).

The other hypotheses will address structural components found at the paragraph level. They include the topic sentence, the number of signaling devices, and the type/function of signaling devices present, as well as the type of structure expressed by the signals within the paragraphs. Coding first occurred in a Microsoft Excel spreadsheet and then transferred to an *SPSS* file.

This phase of the study has potential for revealing valuable information about patterns and contradictions in the composition of journal articles as opposed to conventions of academic writing as set forth in the freshman composition course at PLUS, Introduction to University Writing. Although several content analyses have already been performed, a lack of standardization exists in the unit of analysis (topic sentence) and in the definition of paragraph or discourse units. In addition, the articles analyzed were limited to two journals in the Smith study (2008), the journals were unnamed in the Popken study (1987), and selections were skewed towards nonacademic writing in the Braddock study (1974). It is highly unlikely for the present study to repeat the findings of any one of these studies due to the research design. However, this study will likely confirm and elucidate specific patterns within specific journals that could be generalized within scholarly genres as well as provide a basis for further replication.

Plan for Analysis of Data

Each work was numbered and documented in an SPSS file. This file contains fields for organizational structure of the overall work, topic sentence at the paragraph level, as well as signals and their related structure at the paragraph level. Each row represents the topic sentences

identified in each paragraph, up to six signals used in the topic sentence; types of signals used, and related structure.

After the coding documents were completed and entered into *SPSS*, Chi-Square statistics were conducted for nominal categories such as presence/absence of a topic sentence in a paragraph by discipline, composition structure by discipline, *Flesch Reading Ease* score by discipline and *Flesch-Kincaid Grade Level* by discipline. Mann-Whitney tests were conducted for types of signals used by topic sentence per discipline, number of signals used in topic sentence used by discipline, and placement of topic sentence by discipline. Significance was tested at the .001 level. The stringent significance level provides a focus on the most indicative relationships.

Stage II. Interviews

A second stage of research includes interviews of students who have completed Introduction to University Writing and took Introduction to Psychology or history classes at PLUS within the following academic year. These students were asked to make sense of their experiences using a grounded theory approach. This research approach assumes that the goal of research is to understand realities as lived and experienced by our participants (Gurwitsch, 1974) by attaining a first-person description of some specified domain of experience (Thompson, Locander, & Pollio, 1989) and that data in grounded theory are the words of the participants as they “tell their own story in their own terms” (McCracken, 1988, p. 41). In the context of research regarding undergraduates’ experience of making meaning in reading assigned journal

readings, the most important answers will arise from the students who have recently made, or are in the process of making, the transition from textbooks to articles.

The methodology of the interviews (Sense-Making Methodology) places the locus of control with the participant. The individuals are allowed "to dialogue about how they make and unmake their worlds, how they see and struggle with the forces of power in their worlds, how they sometimes stumble about innocent of these forces, and how they sometimes collide with them" (Dervin, 1999, p. 733). These interviews will be confidential, and I received permission to use the actual taped responses and "thick descriptions" (Geertz, 1973, p. 3). The number of students in the sample was 22. McCracken states that, "it is more important to work longer and with greater care with a few people than superficially with many more" (1988, p. 16). Twenty-two students allowed me to fully explore the experiences of these students as they made sense of their journal reading assignments in the context of their courses.

Introduction to Psychology and history are general education courses at PLUS that frequently use at least one assigned article reading as a requirement for the class. In the Introduction to Psychology course, reading the journal article and completing a written assignment is one of two optional assignments, one of which must be completed. Some students opted for participation in another research assignment, but the students that participated in this research read at least one of the assigned journal articles.

I received approval from both The University of Tennessee and PLUS Internal Review Boards). These universities did not have a reciprocation agreement as of fall 2009. After obtaining Internal Review Board (IRB) approval, I recruited these students in their classes with approval from the instructor and by using email.

Research Design for Interviews

Students were interviewed in the library and shown an example of a journal article similar to one on a reading list they were assigned in class. This journal article was used as a prop to provide the student with a reminder of the features and structure of scholarly journal articles. The library setting and the journal examples were selected to create a familiar environment that supports natural inquiry, since many students perform their reading assignments in the library. The reason for performing the interviews in a natural setting was to enable students to access memories and relationships embedded in their contextual memories and to coax these experiences into the forefront of their minds during the interviews in order to produce rich descriptions of experience. "The Sense-Making approach assumes that sense-making behavior is situationally and contextually bound and rooted in present, past, and future time-space" (Dervin, 1983, p. 5). See Appendix G for Dervin's (1994) metaphor explaining how sense-making works.

These students have recently completed the Introduction to University Writing course and are in an ideal position to have encountered potential contradictions or gaps between the writing conventions they have just learned and those they were presented with in their assigned journal readings. In addition, they had many other insights that proved interesting.

Students were asked about their experiences reading assigned journal articles. A discussion guide was designed to ensure that all the topics were covered while allowing the process of discovery to unfold as the conversation developed and was based on Dervin's Sense-Making Model of situations, gaps, helps, hurts, and bridges (verbings) and employed the Micro

Element Interview (2004). Situations are the time-space context at which sense is constructed. Gaps are translated in most studies as 'information needs", or the questions people have as construct sense and move through time-space. Gaps are assumed to be what sense-making is about. They are seen as needing bridging (Dervin, 1983, p. 7).

The Micro Element Interview is a relatively new innovation in Sense-Making Methodology interviews. It is "a compromise between the Sense-Making Micro-Moment which reviews one situation in great depth and the Sense-Making Life-Line which looks at a time-span of situations" (Dervin, 2004, p.1). A key element of this interviewing style is the repetition of questions throughout the interview. Throughout a single interview, there are a maximum of 100 questions as each of the ten microelements is paired with every other microelement. The advantage of this technique is that it provides maximal opportunities to consider and reconsider responses from various points of view. In actual practice, there are often less than 100 responses per interview if the participant does not have an answer for one or more of the microelements.

For both the interviewer and the participant, the repetition can be tiring. However, Dervin (2004) states, the interview must have an "understanding fundamentally that there is no deep conscientizing without repetition and that repetition is a valuable tool in communicating (Sense-Making Methodology Tutorial #3: The Sense-Making Situated Micro-Element at http://communication.sbs.ohio-state.edu/sense-making/zennez672/zennez672smtutorial3).

The decision to use the microelement format as the interview technique, and the creation of the interview questionnaire occurred under the direction of Dr. Dervin during the Sense-Making Methodology Interview training that I took from June 2009 to November 2009. See

questionnaire in Appendix H. The interview started with a critical entry and then continued through a list of questions. The critical entry for these interviews began as,

> *What we're going to do in this session is talk about a journal reading assignment that you found to be difficult or problematic. And I just want to say that even professors and certainly I, often have difficulty reading and understanding journal articles. They're hard for everybody. But I'm interested in your perspective so that we can try to learn from a student's perspective. And make things more accessible. So I am interested in how you as an individual kind of moved through time and space and faced this difficult assignment. Could you tell me what the difficulty was for you?*

Once the participant articulated the difficulty, the following questions were posed to him/her. These are considered triangulation one questions:

1. What questions, muddles, or confusions did you have?
2. What ideas, conclusions, or thoughts did you have?
3. What feelings or emotions did you experience?
4. How did what was happening relate to your past experience?
5. How did what was happening relate to your sense of self, how you thought about who you are?
6. Did you see what was happening as relating in any way to power issues or power structures in your family or community or society in general? How?
7. In this situation was anything helpful to you? What and how?
8. Was anything hurtful or hindering to you? What and how?

9. Were there any other impacts or consequences in this situation? What?
10. If you could have waved a magic wand, what would have helped you [even more] in this situation? How would it have helped?

After these initial questions were answered, each answer was reposed in the context of the other questions. For example, in one interview the following dialogue occurred with the participant within the first few minutes of the interview,

"*What ideas or conclusions or thoughts did you have at this time?*

About the article?

Yeah.

It helped sum this stuff up, like you could tell it was a really good summary. It helped me summarize and understand what was going on fast and so that was helpful. I don't know what else." (10/p. 3)

After the initial round of triangulation one questions, the interview circles back to this response, and poses additional questions using the same elements presented in the first triangulation. In the second triangulation, the interviewer reviews the participant's response to question 2 (thoughts or conclusions), and then probes by asking an additional question about the response using another microelement, question 5, "*How did what was happening relate to your sense of self, how you thought about who you are?*"

"*You said I asked you about the ideas and you said it helped the article, it helped summarize stuff and it summarized it fast.*

Oh yeah . . .

About what was going on in the Aztecs and . . .

How does that help me, is that what you're asking?

How does it relate to – how you see yourself?

Oh, I think it helps you realize, I guess, studying methods like I learn better if something's summarized in front of me instead of a whole bunch of stuff or pages and pages of notes. If you just give it to me summarized I can retain it and I retain it better that way." (10/p. 7)

The interviews were tape recorded to help the interviewer concentrate fully on the participant. The taping of the interview also protects valuable source data, the participant's words, for further analysis. The interviews with students concluded when they ceased to provide new perspectives and "theoretical saturation" (Strauss & Corbin, 1998) occurred.

A participant's trust is essential to the qualitative long interview process. Protection of the participant's confidentiality allows the individual freedom to speak the truth about his/her experiences. The interviewer assured each participant that every individual's responses would be kept confidential. The identity of the participant was masked by assigning a transcript number. The interviewer presented herself as a supportive and non-judgmental individual who was interested in the student's experience. Participants were told that the interviewer was not hoping to hear any particular answer and expected to encounter a variety of responses.

As another step in ensuring trustworthiness, member checks occurred to guarantee that each person could see his or her perspective represented faithfully. Participants received emails of non-coded transcripts and asked if they had any comments or corrections. No participants commented that they saw needed changes.

Analysis of Interviews

Transcripts of the interviews were analyzed by identifying the variety of constructs that are recorded as part of the interviews as a thematic content analysis of the interview transcriptions. The thematic analysis is based on Dervin's taxonomy of situations, gaps, bridges (as expressed in verbings), and outcomes, which include both helps and hurts. Additional themes that reoccurred from different participants were also explored. Using the constant-comparison method, interviews were compared against those previously completed to identify similarities and discrepancies. Discrepancies between previous interviews and/or between previous interviews and a current interview will be addressed at the end of the current interview. Interviewers explore the issues with a participant that seem to have provoked differing responses so to gain clarity about the situation but not to influence the participant's responses (Strauss & Corbin, 1998).

Participants were given contact information from the reviewer and received a written copy of the uncoded transcription of the interview. Other than one communication from a student who verified that he received the transcript, no other comments were received from the participants.

Table 3.6 Interview Transcripts

Number	Gen Ed	Age	Gender	Class	Major	English Composition
1	History	19	Male	Sophomore	Undeclared	1009
2	History	19	Female	Sophomore	Undeclared	1009/1010
3	History	19	Female	Freshman	Psychology	1010
4	History	21	Male	Junior	Computer Science	Transferred
5	History	21	Female	Sophomore	Entreprenuership	Transferred
6	History	23	Male	Senior	Aerospace	Transferred
7	History	21	Female	Sophomore	Recording Industry	1010
8	History	18	Male	Freshman	Communications	AP credit
9	History	20	Female	Sophomore	Planning to transfer	Transferred
10	History	20	Female	Freshman	Pharmacy	1009/1010
11	Psychology	18	Female	Freshman	Undeclared	1010
12	Psychology	19	Female	Freshman	Undeclared	1010
13	Psychology	20	Male	Sophomore	Graphic Design	1010
14	Psychology	19	Male	Freshman	Undeclared	Transferred
15	Psychology	19	Male	Freshman	Computer Science	1010
16	Psychology	21	Male	Senior	Biology	1010
17	Psychology	18	Male	Freshman	Planning to transfer	1010
18	Psychology	19	Female	Sophomore	Undeclared	1010
19	Psychology	19	Male	Freshman	Psychology	Transferred
20	Psychology	20	Male	Sophomore	Undeclared	1010
21	Psychology	19	Female	Freshman	Undeclared	1010
22	Psychology	20	Male	Sophomore	Undeclared	1010

A third coder was used in the thematic content analysis of the interviews. This coder was an academic librarian from PLUS and was trained in thematic coding and Sense-Making Methodology (SMM). The third coder analyzed and coded 10% of the interviews and intercoder reliability was measured at 81% for SMM Category and 80% for SMM subcategories that were derived from the interviews. There were nine Sense-Making Methodology categories and 89 derived SMM subcategories to reflect the robust spectrum of responses obtained from the microelement approach.

There are few specific, concrete quantitative studies in this field and even fewer qualitative ones. This mixed-method study could be a starting point for other studies that explore contradictions, disconnections, and gaps in the experience of undergraduate students.

Ethics

The current safeguard for protecting human subjects in academic research is the Internal Review Board (IRB), which ultimately determines whether a given study meets the board's interpretation of federal regulations outlined by the Department of Health and Human Services. Members of the Internal Review Board should have varying backgrounds from within the university and at least one nonscientist to assure that an adequate review of proposals occurs (McMillan, Coley, & Knudson, 2010). Investigators submit written documents that describe and outline the proposed research as well as specify how the research participant's rights are to be protected. The IRB approves, modifies, or disapproves the research proposal according to its interpretation of federal regulations (Diener & Crandall, 1948).

The ethical treatment of human participants involves four primary areas: potential harm, lack of informed consent, deception, and privacy (Diener & Crandall, 1948, p. 7). Harm can be

difficult to predict and define, as not all harm is physical. People can suffer harm by losing self-esteem or by losing trust in others. A frequently used approach is to consider the potential benefits of research against its potential costs. Estimating accurate costs and benefits is unlikely before the outcome is determined. In addition, the individual suffers the risks, while the researcher accrues the benefits, so the individual may not be the recipient of the benefits (Diener & Crandall, 1948).

Summary

This study explored potential similarities and gaps between text structures found in assigned readings from the freshman English composition class, *Steps to Writing Well for Academic English* (Wyrick, 2008) to assigned scholarly journal articles in Introduction to Psychology classes and history classes. The project employed a two stage approach to investigate whether students receive adequate preparation for assigned readings in general education courses: analyzing the texts assigned from the syllabi in these classes and interviewing students who completed Freshman composition and currently attended a general education class in psychology or history. This method allowed the researcher to investigate the student's interpretation of the reading and compare the students' assessment to her own.

The structure strategy created by B.F.J. Meyer provided the initial framework for the content analysis. Significant additions to the basic structure table occurred in an attempt to extend the strategy for scholarly journal readings, but these changes were not sufficient. Kincaid and Flesch-Kincaid models provided alternative measures of text complexity.

In addition to the text analysis, Dervin's SMM Micro-element method allowed the interviewer and the participant to explore the student's experience reading the assigned journal

articles through a matrix of questions or confusions, ideas, learnings, feelings, sense of self, past experiences, power relationships, and personal impacts.

Chapter 4

Findings

Introduction

This chapter explores the findings. In general, findings supported the hypotheses. Significant differences were found between the composition structure of readings in the Introduction to University Writing textbook compared to assigned journal readings in Introduction to Psychology and history classes at PLUS. In addition, thematic analysis of the interviews of students found that they experienced gaps between their expectations of text composition and their experience reading assigned journal articles. These findings are explored by comparing results against hypotheses in the content analysis of academic texts. Analysis of the interviews will be discussed in terms of Dervin's Sense-Making Methodology (SMM) as well as thematic concepts that consistently arose during the interviews.

Stage 1: Content Analysis

Findings from Content Analysis of Assigned Texts

The findings from the content analysis will be discussed in order of the hypotheses tested. (See Table 3.1 for a table of all hypotheses).

Hypothesis 1

It was not possible to identify a single overall structural pattern in the assigned scholarly journal articles. However, an interesting hybrid pattern was evident in both psychology and history. This pattern combined cause/effect with comparison structures. Scholarly journal articles in History often used a combination of comparison with cause/effect structure with 29% of the structure signals present in topic sentences were comparison signals while 27% were cause/effect signals. The pattern was especially interesting because the comparisons were implied. There was a frequent comparison of the asserted cause of the effect compared to potential causes that were removed by the process of elimination. There was an implied argument that the true history is different from what may have been originally assumed. For example,

> Associating slave guardians with shipboard safety, the records *affirm* the tenor of Philips's account *yet* do *not* specify precisely what the safety assumed. (Smallwood, 2007, p. 684)

In this excerpt, "affirm" indicates a causation relationship between associating the slave guardians and safety, while "yet" and "not" signal a comparison between what is recorded and what can be known with certainty.

Scholarly journal articles assigned in Introduction to Psychology classes also used a combination of cause/effect structures with comparison structures. Causation signals comprised 28% of structure signals used in topic sentences, while comparison signals made up 24% of the signals. Psychology journal articles often employed a technique of positing testing procedures and results in a cause/effect format to make logical inferences from the results to a generalization

about cause and effect. Within the same sentence, comparisons were made between different conditions. For example,

> A relapse interview was administered to participants who lapsed to smoking to determine the circumstances surrounding the initial lapse episode, including whether individuals were drinking alcohol at the time.
>
> (Kahler, Metrick, Ramsey, Monti, LaChance, Abrams, & Brown, 2008, p. 856)

In this example, “to determine” signals causation and “whether” signals a comparison.

Because it was not possible to determine a single top-level structure that met the criteria for an overall structure strategy, it was not possible to compare top-level structures used by discipline. As a result, the H_1 hypothesis fails to be rejected in each instance ($H_{1a,}$ $H_{1b,}$ $H_{1c).}$

Hypothesis 2

The second hypothesis asserts that the incidence of topic sentences per body paragraph will differ significantly by scholarly discipline.

The incidence of topic sentences per body paragraph in scholarly journal articles was evaluated in light of their discipline and the means of each compared to the other disciplines.

Table 4.1. Incidence of Topic Sentence per Discipline

Discipline	Topic Sentence		
	No	Yes	Total
Expository English	9	93	102
Introduction to Psychology	84	217	301
History	10	848	858
Total	103	1158	1261

In *SPSS* software, the presence of the topic sentence in a paragraph was analyzed by discipline using a Pearson Chi-Square. C^2 was computed (2, N = 1261) = 212.49, p = .000 with an adjusted residual of .2 in English, 14.4 in Psychology and -13.3 in History. The hypothesis is supported in H_{2a}, H_{2b}, and H_{2c} as the evidence supports the assertion that the presence of topic sentences differs among readings for the writing textbook, *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal readings for Introduction to Psychology and history.

Table 4.2. Chi-Square: Incidence of Topic Sentence by Discipline

	Value	df	Asymp. Sig. (2 Sided)
Pearson Chi-Square	212.498	2	.000
Likelihood Ratio	187.132	2	.000
Linear-by-Linear	97.016	1	.000
N of Valid Cases	1261		

Hypothesis 3

The third hypothesis is that significant differences exist in the placement of specific topic sentences per body paragraph between scholarly journal articles assigned in Introduction to Psychology and history classes compared to writing examples in *Steps to Writing Well for Academic English* (Wyrick, 2008). Using a Pearson Chi-Square, C^2 was computed (6, N = 1270) = 86.43, p = .000; therefore, the H_3 hypothesis is accepted as there were significant differences in the placement of topic sentences based on discipline.

Table 4.3. Placement of Topic Sentence by Discipline, Chi-Square

Chi-Square Tests	Value	df	Asymp. Sig (2-tailed)
Pearson Chi-Square	86.428	6	0.000
Likelihood Ratio	90.797	6	0.000
Linear-by-Linear Association	8.259	1	0.004
N of Valid Cases	1270		

To explore the nature and magnitude of those differences between each discipline, the Mann-Whitney test was used to compare between independent samples. Placement of topic sentences between writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles assigned in the Introduction to Psychology classes, the H_{3a} hypothesis was analyzed using the Mann-Whitney test. The Mann-Whitney *U* was 13617, n_1 = 102, n_2 = 302, p=0.045 two-tailed. Accordingly, H_{3a} is accepted.

Table 4.4. Mann-Whitney Calculation Comparing Placement Topic Sentence Placement by Disciplines

	Mann - Whitney *U*	N (n1, n2)	Z	Asymp. Sig. (2-tailed)
English vs. Psychology	13617.000	102, 302	-2.003	0.045
English vs. History	43779.500	102, 866	-0.158	0.874
Psychology vs. History	113952.500	302, 866	-3.813	0.000

The placement of topic sentences between writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles assigned in history classes, the H_{3b} hypothesis was analyzed using the Mann-Whitney test. The Mann-Whitney *U* was 43799.50, $n_1 = 102$, $n_2 = 866$, $p = 0.874$ two-tailed. Accordingly, the evidence fails to support $H_{3b.}$

The H_{3c} hypothesis was analyzed using the Mann-Whitney test. The Mann-Whitney *U* was 113952.50, $n_1 = 302$, $n_2 = 866$, $p = 0.000$ two-tailed. The H_{3c} hypothesis is accepted as evidence suggests that the placement of topic sentences differs between scholarly journal articles assigned in Introduction to Psychology and history classes.

Hypothesis 4

The fourth hypothesis asserts that significant differences exist between the number of signaling devices or words that indicate the relational structure among main propositions of the topic sentences in readings from *Steps to Writing Well for Academic English* (Wyrick, 2008) compared to the number of signaling devices among the topic sentences of the scholarly journal articles assigned in Introduction to Psychology classes and/or the scholarly journals assigned in history classes.

The number of signals per topic sentence was analyzed by discipline using a Pearson Chi-Square. C^2 was computed (14, N = 1269) = 253.76, p = .000; therefore, the H_4 hypothesis is accepted as there were significant differences in the number of signaling devices found in the topic sentences based on discipline.

Table 4.5. Total Signals per Topic Sentence by Discipline, Chi-Square

Chi-Square Tests	Value	df	Asymp. Sig. (2-tailed)
Pearson Chi-Square	253.755[a]	14	.000
Likelihood Ratio	231.399	14	.000
Linear-by-Linear Association	98.965	1	.000
N of Valid Cases	1269		

To explore the nature and magnitude of those differences between each discipline, the Mann-Whitney test was used to compare between independent samples. The H_{4a} hypothesis was analyzed using the Mann-Whitney test. The Mann-Whitney *U* was 92345.5, $n_1 = 102$, $n_2 = 302$ *p* = 0.000 two-tailed. The evidence supports the H_{4a} hypothesis, as there appears to be significant differences in the number of signaling devices per topic sentences between writing samples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles in Introduction to Psychology classes.

The H_{4b} hypothesis was also analyzed with the Mann-Whitney test. The Mann-Whitney *U* was 41378.50, $n_1 = 102$, $n_2 = 865$, *p* = 0.874 two-tailed. Accordingly, the evidence fails to support $H_{4b.}$

The $H4_c$ hypothesis was analyzed with Mann-Whitney test. The Mann-Whitney *U* was 79190.50, $n_1 = 302$, $n_2 = 865$, *p* = 0.000 two-tailed. The H_{4c} hypothesis is accepted as evidence suggests that the number of signals within topic sentences differs between scholarly journal articles in history and psychology.

Table 4.6. Mann-Whitney Calculation Comparing Signals per Topic Sentence by Disciplines

	Mann-Whitney *U*	Z	Asymp. Sig. (2-tailed)
English vs. Psychology	9234.500	-6.126	0.000
English vs. History	43799.500	-0.158	0.874
Psychology vs. History	113952.500	-3.813	0.000

Hypothesis 5

In an analysis of structure type by discipline, a Pearson Chi-Square test was performed in which signal type (description, sequence, causation, problem/solution, comparison, and listing) was evaluated by its presence in the topic sentence.

There was only one signal type (problem/solution) that differed in its use according to discipline. C^2 was computed (10, N = 133) = 40.31, p = .000; therefore, the H_5 hypothesis is accepted, as there were significant differences in the number of signaling devices (problem/solution) found in the topic sentences based on discipline. No other signal device (description, sequence, causation, comparison, or listing) differed significantly in its use by discipline.

Table 4.7. Chi-Square: Structure in English Composition, Psychology, & History

	Signals					
	Description	Sequence	Causation	Problem/ Solution	Comparison	Listing
Chi-Square	16.287	10.710	17.018	40.306	5.319	14.056
Degree of Freedom	10.000	10.000	10.000	10.000	10.000	8.000
Asym Sig.	0.092	0.381	0.074	0.000	0.869	0.080

To explore the nature and magnitude of those differences between each discipline, the Mann-Whitney test was used to compare independent samples. The number of problem/solution signals within topic sentences between writing samples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles in Introduction to Psychology classes, the H_{5a} hypothesis, was analyzed using the Mann-Whitney test. The Mann-Whitney *U* was 6, $n_1 = 2$, $n_2 = 39$ $p = 0.010$ two-tailed. The evidence supports the H_{4a} hypothesis, as there appears to be significant differences in the number of signaling devices per topic sentences between writing samples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles in Introduction to Psychology classes.

The number of signals within topic sentences between writing samples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles assigned in history classes, (the H_{5b}) hypothesis was also analyzed with the Mann-Whitney test. The Mann-Whitney *U* was 9, $n_1 = 2$, $n_2 = 92$, $p = 0.000$ two-tailed. Accordingly, the evidence supports $H_{4b.}$

The H_{5c} hypothesis was analyzed with Mann-Whitney test. The Mann-Whitney *U* was 1619, $n_1 = 39$, $n_2 = 92$, $p = 0.167$ two-tailed. The H_{5c} hypothesis is not accepted as evidence fails to suggest that the number of problem/solution signals within topic sentences differs between scholarly journal articles in history and psychology.

Table 4.8. Problem/Solution Signals in Topic Sentences by Discipline

	Mann-Whitney *U*	N n1, n2	Z	Asymp. Sig. (2-tailed)
English vs. Psychology		2, 39	-2.576	0.100
English vs. History		2, 92	-3.515	0.000
Psychology vs. History		39, 92	-1.382	0.167

Hypothesis 6

The sixth hypothesis asserts that there will be differences in the overall complexity as measured by the *Flesch Reading Ease* formula between scholarly journal articles assigned in Introduction to Psychology and history classes and in writing examples from *Steps to Writing Well for Academic English* (2008).

Flesch Reading Ease values range (practically) from 0 to 100 with 100 being the easiest to read. The popular children's book *One Fish, Two Fish, Red Fish, Blue Fish* by Theodore Geisel rates 100 based on its simplicity and high percentage of monosyllabic words.

The scores for the articles/readings in this analysis ranged from 31.71to 88.06. English Composition readings and writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008) provided the lowest score of 88.06 while readings in assigned journal readings in psychology provided the lowest measure of reading ease, 31.71.

Table 4.9. Range of Reading Ease Value by Discipline

	Mean	Standard Error	95% Confidence Interval for Mean		Minimum	Maximum
			Lower	Upper		
English Composition	58.5667	4.22856	48.8218	68.3115	45.53	88.06
Psychology	36.312	2.04261	30.6408	41.9382	31.71	41.66
History	42.2124	1.4315	39.789	44.6357	34.95	54.91

An ANOVA test was computed with the result of a significant effect at the $p < .01$ level for the three disciplines [F (2, 28) = 17.33, p=.001].

Table 4.10. Flesh Reading Ease Value ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2134.461	2	1067.230	17.327	.000
Within Groups	1724.658	28	61.595		
Total	3859.119	30			

Because of the significance of the ANOVA test, further post hoc testing was computed using Tukey to compare each condition to every other condition. Post hoc comparisons using the Tukey HSD test that the mean score is 58.57 for Expository English, 36.31 for Introduction to Psychology, and 42.21 for history. The Tukey HSD test also indicated that the mean difference between the *Flesch Reading Ease* value for Expository English and Introduction to Psychology

(M = 22.25, SD = 4.38) was statistically different at $p = .000$ level. As a result, hypothesis H_{6a} is supported as evidence suggests that a significant difference exists in the overall complexity (as measured by the *Flesch Reading Ease* formula) between scholarly journal articles assigned in history classes and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008).

Table 4.11. Flesch Reading Ease Value Tukey HSD

Discipline	(2nd) Discipline	Mean Difference (1st-2nd)	Standard Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
1	2	22.25467	4.37754	.000	11.4231	33.0862
1	3	16.35431	3.23529	.000	8.3491	24.3596
2	1	-22.25467	4.37754	.000	-33.0862	-11.4231
2	3	-5.90035	3.99277	.317	-15.7799	3.9792
3	1	-16.35431	3.23529	.000	-24.3596	-8.3491
3	2	5.90035	3.99277	.317	-3.9792	15.7799

Table 4.12. Flesch Reading Ease Value Subset for alpha

		Subset for alpha = 0.05	
Discipline	N	1	2
2	5	36.3120	
3	17	42.2124	
1	9		58.5667
Sig.		.300	1.000

The mean difference between the *Flesch Reading Ease* value for readings in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles assigned in history classes (M = 16.35, SD 3.24) occurred at the $p = .000$ level. Hypothesis H_{6b} is accepted as evidence suggests that a significant difference exists in the overall complexity (as measured by the *Flesch Reading Ease* formula) between scholarly journal articles assigned in history classes at PLUS and in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008).

The mean difference between the *Flesch Reading Ease* value for scholarly journal articles assigned in Introduction to Psychology and history classes is (M = 5.9, SD 3.99) at the $p = .317$ level. This analysis was affected by the disparity regarding the number of scholarly journal articles assigned in the history class (17) versus the number of assigned scholarly journal articles in the Introduction to Psychology class (5).

Because of these findings, the Hypothesis H_{6c} is rejected, as evidence fails to suggest that a significant difference exists in the overall complexity (as measured by the *Flesch Reading Ease*

formula) between scholarly journal articles assigned in Introduction to Psychology and history classes. See appendix I for a graph of reading ease scores by discipline.

Hypothesis 7

The seventh hypothesis asserts that there will be differences in the overall complexity as measured by the *Flesch-Kincaid Reading Level* formula between scholarly journal articles assigned in Introduction to Psychology and history classes and in writing examples from *Steps to Writing Well for Academic.*

Flesch-Kincaid Reading Level measures the grade level of a text values range (practically) from 0 to 100. *One Fish, Two Fish, Red Fish, Blue Fish* by Theodore Geisel has a reading level score of 0. The scores for the articles/readings in this analysis ranged from 3.81 for an English Composition reading to 14.7 for a scholarly journal article assigned in a history class.

Table 4.13. Range of Flesch-Kincaid Reading Level Scores by Discipline

	Mean	Standard Error	95% Confidence Interval Lower	Upper	Minimum	Maximum
English Composition	10.144	0.89008	8.0919	12.197	3.81	13.19
Psychology	12.388	0.26112	11.663	13.113	11.53	12.85
History	13.014	0.33702	12.2997	13.7286	9.6	14.7

An ANOVA test was computed with the result of a significant effect at the $p < .01$ level for the three disciplines [$F (24.5, 3.19) = 7.69$, $p = .002$]

Table 4.14. Flecsh-Kincaid Reading Level ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	49.025	2	24.513	7.686	.002
Within Groups	89.300	28	3.189		
Total	138.325	30			

Because of the significance of the ANOVA test, further post hoc testing was computed using Tukey to compare each condition to every other condition. Post hoc comparisons using the Tukey HSD test that the mean score ranged from 10.14 (10^{th} grade, sophomore in high school) for readings in *Steps to Writing Well in Academic English* (Wyrick, 2008) to 12.39 (12^{th} grade, senior year in high school) for scholarly journal articles assigned in Introduction to Psychology classes to the highest range of 13.01 (13^{th} grade = freshman year in college) for scholarly journal articles assigned in history classes. See Appendix J for a graph of Flesch-Kincaid reading level by discipline.

Table 4.15. Flesch-Kincaid Mean Reading Level by Discipline

		Subset for alpha = 0.05	
Discipline	N	1	2
1	9	10.1444	
2	5		12.3880
3	17		13.0141
Sig.		1.000	.762

The Tukey HSD test also indicated that the mean difference between the *Flesch-Kincaid Reading Level* value for Expository English and Introduction to Psychology (M = -2.24, SD = 0.99) was statistically different at $p = .08$ level. As a result, we fail to reject hypothesis H_{7a} as evidence suggests that a significant difference does not exist in the overall complexity (as measured by the *Flesch-Kincaid Reading Level* formula) in writing examples from *Steps to Writing Well for Academic English* (Wyrick, 2008) and scholarly journal articles assigned in Introduction to Psychology classes.

Table 4.16. Mean Differences in Flesh-Kincaid Reading Level Tukey HSD by Discipline

(1st) Discipline	(2nd) Discipline	Mean Difference (1st-2nd)	Standard Error	Sig.	95% Confidence Lower Bound	95% Confidence Upper Bound
1	2	-2.24356	.99610	.080	-4.7083	.2212
1	3	-2.86967	.73619	.002	-4.6913	-1.0481
2	1	2.24356	.99610	.080	-.2212	4.7083
2	3	-.62612	.90855	.772	-2.8742	1.6220
3	1	2.86967	.73619	.002	1.0481	4.6913
3	2	.62612	.90855	.772	-1.6220	2.8700

The mean difference between the *Flesch-Kincaid Reading Level* value for scholarly articles assigned in Expository English and history classes is (M = -2.87, SD .74) at the $p = .002$ level. Hypothesis H_{7b} is rejected, as evidence does not suggests that a significant difference exists at the $p = .001$ level.

The mean difference between the *Flesch-Kincaid Reading Level* value for scholarly journal articles assigned in psychology and history classes is (M = .63, SD .91) at the $p = .772$ level. Because of these findings, Hypothesis H_{6c} is rejected, as evidence suggests that no significant difference exists in the overall complexity (as measured by the *Flesch-Kincaid Reading Level* formula) between scholarly journal articles assigned in Introduction to Psychology and history classes at PLUS. This analysis was affected by the disparity regarding

the number scholarly journal articles assigned in the history class (17) versus the number of assigned scholarly journal articles in the Introduction to Psychology class (5).

Stage 2. Analysis of Interviews

The interviews illustrate the range of responses experienced by students who completed freshman composition and enrolled in either Introduction to Psychology or history. Content analysis of these interview transcriptions provided themes to be further explored in terms of contradictions between preparation and experience as well as reactions, coping skills and emotions. The theoretical or metatheoretical lens used to examine these findings is Brenda Dervin's Sense-Making Methodology.

Scholars frequently analyze Sense-Making Methodology studies by interpreting their findings in terms of the Sense-Making Methodology Triangle (situations, gaps, outcomes). While this analysis will address commonalities and differences in situations, gaps, and outcomes, it will concentrate on two other elements of the Sense-Making Triangle: verbings and bridges. A *verbing* perspective looks at communication from the point of view of process. In this perspective, it is accepted that conditions are constantly created, maintained, and changed as an individual communicates with others and engages in self-reflective communication (Dervin, 2003, p. 12). *Bridges* are constructed by individuals in the form of ideas, attitudes, beliefs, feelings, intuitions, memories or stories in order to reach across a discontinuity (gap) from the individual's current context and situation.

The concept of bridges calls attention to constructivist terminology and principles incorporated within Sense-Making Methodology. Both constructivism and Sense-Making Methodology assume that knowing is constructed by each person; however, SMM extends the

nature of knowing as both constructed and deconstructed by structure, culture, and person in mediation and struggle. A similar type of extension is made for ontological assumptions about reality. Constructivism views reality as orderly, fixed, and continuous, while SMM sees it as orderly, fixed, and continuous *as well as* chaotic, floating, and discontinuous. Both perspectives see human beings as orderly centered conscious within each person, although SMM also sees human beings as chaotic, decentered, and unconscious (Dervin, 2003, p. 75).

SMM's integration of constructivist principles allows for an analysis of interviews that combines the descriptive struggles of college students as they bridge intellectual and emotional gaps with insights from developmental psychology gained from interviews with college students over the past 40 years. This analysis will explore dimensions in students' intellectual development using Baxter-Magolda's Epistemological Reflection Model and William Perry's scheme. Drawing on college development theory is intended to provide vocabulary and perspective that enable the writer to explain her findings in language that encourages dialogue between academicians of differing disciplines as well as other professionals who support the experiences and struggles of college students. It is not intended to extend theoretical findings in the developmental psychology of college students. The theoretical framework of this analysis is Sense-Making Methodology and the disciplinary focus is communication.

Situations

Situations were generally curriculum-bound as the articles were linked to specific courses. However, some students read the articles to complete assignments or because the reading was on the syllabus while others read the scholarly journal readings only to participate in this study. All of the students were taking general education courses (either Introduction to

Psychology or American History–Pre-Civil War). While some of the psychology students were entertaining the possibility of majoring in psychology, none of the students taking history courses expressed an interest in majoring in history.

The academic status of the students ranged from freshman to senior. Most of the interviews were conducted from April to early May. By this time, the freshmen often expressed frustration with themselves, their academic performance, and low intellectual self-esteem. In contrast, seniors were optimistic and confident.

Preparation for reading and interpreting articles varied substantially among students. Several freshmen in the psychology class stated that they had never read a scholarly journal article. A student discusses his lack of preparation for reading scholarly journal articles in

(Audio Excerpt1. Profile of Student Experience).



History students had generally read more than one article by the time the interview took place even if they were freshmen. Some students mentioned having to read journal articles for their freshman English composition classes, but others did not have to read any scholarly journal articles in freshman English composition classes. Students who had been exposed to scholarly journal articles before were much more comfortable with them. The most prepared student from the Introduction to Psychology course, a first-semester senior, had already completed a biostatistics course and a biological literature course during his biology major. Most students had not been exposed to scholarly journal articles in high school.

Several students expressed resentment about having to take general education classes. They did not take the classes or assignments as seriously as those they encountered in their

major. Students expressed low expectations for both the rigor and the learning outcomes of general education courses for both courses. In some cases, students surpassed mere resentment in attitude and voiced their hostility to general education classes and reading assignments. Older students were more appreciative of what they learned in their general education curriculum than their younger counterparts, but they were still likely to criticize the workload.

> Like for the class I think the class is pointless because I'm not a history major. I don't care about history. I mean, it's good to have it, but why force somebody to learn it? It's just a general education class. Then the articles, why put more stress in my life just by having to read something that at one time I had nothing to go about it for and that was just a difficult read in general? (3 /p. 8)

> I'm just trying to complete a paper because it is a general education class. History can be interesting, can be exciting, but it's not. I don't have that much time to put towards history as I do towards something I plan on doing permanently.

Okay.

> If this had been a computer paper I would have almost definitely talked to my professor and looked any of the links up. It's important to find this other information out." (4 /p. 13).

Journal Articles as Assignments

Students appreciated and responded to quizzes about their assigned journal readings. If an article was not linked to a particular expectation of a quiz or paper assignment, the students gave very little thought to reading the assignment. Some stated that they simply did not read the assignment; others said that they skimmed it right before class.

> Well, it was on the syllabus. You had to read it. It was a requirement. And then he gives quizzes on them so he gives us plenty of time to read them and we take a

quiz on them. (6 /p. 1)

"It was an assigned reading. I had to read it over and over again though.
So the first encounter was the initial assignment? And then you re-read?
To help, I re-read a couple of times to help me for my later essay." (3 /p. 1)

"It was our last online quiz. We had to read the article." (9 /p. 1)
What got better after the quiz? You know, in terms of understanding it better?
After the quiz, I could process everything that actually, I could put it as a whole instead of sectioning it out into the quiz. After that, I actually understood everything so it became like a whole." (9 /p. 5)

Dualism (Perry, Magdola)

Younger students (generally freshmen) struggled in their attempts to characterize the article in black and white terms. They struggled to find "the bottom line" of the article's meaning and then to decide if they agreed with it or not. One student explained that because she agreed with the article, she "felt like she was a pretty good person." These students were trying to make sense of the articles in terms of their moral understanding.

Well, at least it shows that I actually do know right from wrong, or like moral wise. (9 /p. 19).

The fact that I'm not willing to lie. I tend to, I know it sounds bad, but as a teenager, I kind of tend to lie a little bit and for me to not have to lie about something like an HIV test it feels pretty nice so." (11 /p.8).

Students discussed their own shortcomings as young scholars and as individuals in light of the articles they read.

There's a lot of stuff I should've been doing this year that I wasn't doing. I guess there are a lot of things people should be doing that they're not doing right now. I guess more of an ethic. I guess if you look at it, it's a lot of things morally I shouldn't been doing this semester. And I been choosing, I guess, what I want to

> do instead of what I should be doing this semester. And people I guess are choosing. I don't know if I can say that, I guess, they should be getting tested, but because they don't, I guess they don't want it to get out or don't want anybody to know they're choosing not to be. (21 /p.7).

Morality played an important role with older students as well. These students, especially the seniors, used the theses in the article to consider the moral implications of their personal ideas and theories. Older students also articulated grappling with their own sense of social responsibility.

> So it's more about understanding that circumstances are going to affect, like your morals may come in conflict with reality sometimes. (4 /p.7)

Gaps

The students talked of gaps in their understanding of the article, gaps in understanding what was necessary for succeeding in college, and gaps in understanding the actions of their peers. Over the course of the interview, often the students would shift into talking about the gaps they felt in their own philosophies and understandings of the world.

The clearest examples were gaps and confusions that students had with the article. In interviews with psychology students, students focused on their confusions about the content of the article, the use of statistics, the vocabulary, as well as how the article was constructed. Several freshman psychology students stated that they were not adequately prepared to understand the psychology journal articles because they did not have enough psychology knowledge at this point in their college career. In interviews with history students, students experienced gaps in understanding quoted material using earlier versions of the English language. Some students mentioned having difficulty understanding events and cultures that seemed alien.

Students connected gaps they experienced in reading journals articles to difficulties they were having in their personal lives. Gaps concerning identity, values, and relationships were frequent and important to students. Some students could not get beyond these affective gaps in order to consider other conceptual gaps in the scholarly literature. They described themselves as stuck, and they had no idea what steps might be helpful to them.

Gaps in Educational Preparation

Younger students complained that the articles jumped around a lot in terms of composition structure. They felt that the article texts were surprisingly repetitive and indirect. The repetition and indirectness seemed to violate their expectations of effective composition. They complained that it was hard to discern the main points. Students frequently talked about identifying and learning the main points. In Audio Excerpt 2, a student complains that there is just too much information presented for him to be able to find the thesis.

Audio Excerpt 2. Too Much Information



Other students complained that they were not able to glean the structure of the paper because the text lacked the necessary signals (indentation of paragraphs and quotes, composition of paragraph and overall composition structure).

> *So when you started reading this article, what kind of confusions and questions did you have at this time about reading the article?*
>
> What was the point of it? It wasn't even worth me reading because it was like it was just a whole bunch of stuff jumbled on a piece of paper.
>
> *And why do you say it was jumbled?*

> I don't know, because of the format of it. I don't know if all of it was like that but there was no indentation. There was nothing. It was just like here's a paragraph of things that it doesn't even seem like it has complete thoughts.
> (3 /p. 2)

> It was a lot of really jumbled facts and it wasn't very clear. I don't know. It was a little difficult to read, but I mean basically the, I guess the main point that I got from it was that people who, people who have attachment disorders are people who are more keyed in to themselves.(1 7 /p. 2)

> You're more conditioned to read as continuous thought. I mean when there's a break in your consciousness and move to another thought. You use a period to end the thought of a sentence. You use the comma to end, to make a pause. You use a paragraph to separate that thought from the next . . . This text, unless you're looking over the paper to make sure that they cited it correctly, you're not going to benefit from reading all the names and stuff they write down to refer to the journal article . . .That almost feels like starting a new paragraph. (16/p. 24)

Decoding Citations within Text

Students had trouble with American Psychological Association's (APA) citation style. Several interviewees expressed difficulty in reading and comprehending the meaning of sentences because of the insertion of parenthetical references. Students complained that they were losing the flow of the sentences' meanings and their own concentration even when they tried to skip the citations. The interruption of parenthetical references is not an obstacle for experienced readers of a discipline's literature. Professors that I have spoken to remark, "Why don't they just skip over them?" and that it is easy to ignore the parenthetical references while the reader assesses the meaning of the sentence or paragraph. Unfortunately, the ability to skip portions of the text and refocus at will appears to belong to experienced readers and not to novice ones. Novice readers of scholarly journal literature in psychology struggle to maintain their focus

when faced with these seemingly minor intrusions in the content. Audio Excerpt 3 and excerpts from transcripts illustrate this point.

Audio Excerpt 3. Trouble with (APA) Citations



> Well, like I think it was like the citations. They were kind of throwing me off a little bit but I kept trying to find where it was a citation in the actual article. It was a little clustered so that kept throwing me off. (22 /p.2)
>
> A lot of parts had a lot of citations in it which made it difficult to read because you have to skip over all the citations first and then finish the sentence. (13 /p. 4)
>
> *And the first one where you have seen APA style instead of MLA?*
>
> That was some kind of trickery.
>
> *What?*
>
> It was kind of difficult because in English, in the English courses we used MLA instead of APA.
>
> *What about it was difficult?*
>
> I mean I used to, I know how to use MLA. For the APA, I had to do some basic research, how to cite it, how to do it correctly. (13 /p. 3)

One student asked if a psychology article could have footnotes instead of citations.

> I was thinking, man, they need to put less citations. Is there a way we can just put, like, a number in there like a footnote?" (22 /p. 7)

Students are not willing and sometimes not capable of finding the original article text through written instructions to retrieve the article via the library's website. They also complained when

the professor embedded the article within the course software because often the articles did not include complete bibliographies or endnotes.

Obstacles to Learning

Students seemed self-aware of their specific learning obstacles and described them readily as obstacles in their attempts to understand the articles.

> Again, I'm a slow reader. I've come to realize this fact the last couple of years just in watching my friend read. We'll both be reading. He'll sit down and he'll go, 'Oh, this looks interesting' and I'll sit down next to him or something and start reading with him, and I'll constantly be like well don't scroll down yet, so it turns out it does help me a lot with the time to do research than it does most students. (4 /p. 15)

Students pointed to a lack of motivation as well as a lack of preparation as detracting from their ability to comprehend the article. Motivation was a powerful factor in determining the students' success in understanding the article.

> *Did you have any feelings or emotions or what feelings or emotions did you experience as you read it?*
>
> Just kind of a surprise and then a very deep sort of a kind of a desire to continue reading the article. We did a few more of these assignments earlier in the year and I found mostly articles like ah, okay, I guess I'll read it but this one I was actually, I was genuinely interested in it as I read through it." (8 /p. 4)

A willingness to persist in spite of the difficulties inherent in reading the article was evident in many students. Students spoke of completing the article in terms of a struggle or conflict. Less motivated students described their struggles to complete the assignment in terms of overcoming their lack of motivation. The least motivated students remained unengaged and justified their lack of effort by pointing to the article's or assignment's shortcomings. The less

motivated students who completed the article described their experience in terms of overcoming an article and being proud of themselves for their efforts. One of the rewards of completing the assignment was the feeling of satisfaction they had because they knew they completed a difficult assignment. Very motivated students concentrated on how they could incorporate the knowledge gained into their ever-growing knowledge network.

The least motivated students focused on protecting the status quo of their original belief systems.

> *What ideas or thoughts did you have as you read the article?*
> Just that people who don't like to open up to other people would be more likely to not want to participate in a group therapy session. Basically that's the only point I got.
>
> *Were there any learnings or inspirations?*
>
> Not really.
>
> *Nothing that you see differently as a result of?*
>
> No absolutely not. (17 /p.3)

Other students described being emotionally involved with the readings. For instance, one student stated,

> When you're emotionally attached to your reading whether it's anger-anger is related to making you read-or excitement is even better, or sadness, you know, you still, you absorb the information much better first of all. And second of all, I read a little faster that way. (4 /p. 24)

Struggling with Numbers

Students, in general, had difficulty with the numbers and graphs in psychology articles. Several students (mostly freshmen) simply gave up and tried to make sense of the article while ignoring the numbers and graphs.

> I think like somewhere there's a whole section full of numbers and I just sat there and I looked at it and I was like I don't understand this. If they could've maybe spread those out and said more about each of it, about each part of the numbers maybe. So I just looked at the numbers and I skipped over it because I had no idea what was going on. (11/p. 6)

Some students (mostly male and freshmen) focused almost completely on the numbers and graphs to make meaning of the article with varying levels of success. One student, in Audio Excerpt 4, described how she depended on the graphs and illustrations to help her make sense of the article.

Audio Excerpt 4. Graphs Help



Several of these students complained that the numbers were not as complete as necessary to interpret the article.

> Well, mainly it was in the data they were presenting like they'd present lowercase letter "b" or an "r" then a decimal number next to it, and I just remember I kept on thinking how did they calculate this, what scale is this on, what is this trying to represent? I didn't understand that kind of thing. And I didn't even bother with the graphs because, like I said, I had so much trouble with the data. I looked at the graphs, and the graphs were just a representation of the data, and I just didn't know what it was trying to tell. (15/ p. 2)

An unusually prepared student who had taken a biostatistics class and a biological literature class was able to evaluate the statistics presented in the article critically. A freshman, who maintained that she was "good at math", stated she had trouble reading documents that combined both words and numbers (21/ p7). She felt that she could only use her mathematical reasoning and her verbal reasoning separately.

Once students seemed to get the gist of the argument, they often struggled with how the procedures and testing methods related to the research hypothesis.

> I would say the first time reading it I was, it was just trying to make sense of it basically . . . enough so I could write a paper and just trying to get the bare necessities out of it, where the second time I was actually trying to delve into the words and meanings and especially results and conclusions. (16/ p. 9)

Bridges (Verbings)

Relating to Others and Identifying with Self

Students talked about how their feelings and ideas were been changed by reading the article. Students related to the articles in a surprisingly personal way. In fact, identification with the individuals that were subjects of the article was the most predictive factor of a student's engagement and depth of understanding the article.

Engaged students were able to visualize themselves in the situations explored in the scholarly journal articles despite differences in time, gender, culture, and age. Introspection was a hallmark of making sense of the journal article. Students, such as the individual in Audio Excerpt 5, had to weave the theses and evidence presented in these articles within their personal cognitive and affective frameworks to comprehend them.

Audio Excerpt 5. How Much Bigger The World Is



Students who did not identify with the article could barely talk about the articles, usually had only one idea of what the central argument of the article was, and would specifically state that the article did not apply to them. Students who did take the time and effort to integrate the article into their worldview of personal experience and attitudes often remarked that they

planned to pursue the topic of the article further in their own research and in discussions with their friends and peers. They talked about planning to use the information in the article in their futures. In one instance, a particularly well-prepared student talked at length about how the argument presented in the psychology article fit into the paradigmatic assumptions of the discipline of his major. In addition, this student expounded on the discourse differences between biology and psychology.

Younger students seemed to blend their struggle to make sense of the articles with their personal struggle to achieve identity. These struggles made them intensely introspective and questioning. These students seemed unsure and disturbed about their experiences. Their responses ranged from "I feel dumb" to "What does it say about me?" A female freshman student stated,

> Um, well, after going through all this I'm kind of finding out new stuff about myself to be honest. I didn't realize I was this outspoken about things. Does that make any sense? (11/p. 12)

The intellectual complexity of the scholarly journal articles as well as the students' ability to identify with people outside their own experience resulted in a deeply reflective and sometimes self-critical questioning of self.

> *How does the definition of calculations kind of relate in any way, tie you to your sense of self?*
>
> It makes me want to find some kind of definition of who I am. It's always the first thing I look for when I do something is I'm very scientific and mathematically inclined, and I always kind of establish the parameters of a problem before I attack the problem itself.
>
> *And where will you find that definition of who you are?*

I think that's probably the question right there.

Where will you look?

> I don't know myself. I don't know where to look. Like I said, I usually, I try not to rely on others as perceptions of myself because perceptions can be wrong. (15/p. 18)

In many situations, the students expressed wanting to change something in their current situation or to reconsider their future intentions based on the newly acquired knowledge.

A female college freshman who read an article about people who opted out of HIV testing discussed the profound affect that reading the article had on her. In the following passage, the student illustrates that she is questioning herself and society and considering how she can make an impact on an important social issue.

> At first made me question, 'Am I doing everything I can to protect myself?' And it made me, after knowing that I have a friend who wouldn't want to be tested . . . It made me wonder, like, 'Am I doing my best to prevent the virus from spreading in my community?' Because me and my friends do a lot of community work in speaking with young children because we like to be around kids . . . But it makes me wonder, are we? . . . We never approached the situation of HIV or just STD's period when we're speaking with children. We speak to middle school and high school. And kids are starting [to have sex] younger and younger, they're starting to approach the situation of eventually having sex with someone so it makes me wonder if this summer when we meet with the kids, should we approach the situation? Of course, then we would have to ask their parents, can we talk to them about it first. But it makes me wonder, 'Am I doing everything I can to educate people about the wide spread of STD's?' and I don't know, just making sure that we stop the spread in my community. I'm sure it is, but whatever I can do to prevent the situation I'll try to. (21/pp. 5–6)

Another student who spoke about reading *Gouge and Bite, Pull Hair and Scratch and Fight* (Gorn, 1985) explained that thinking about the article helped her to realize that she needed a better way to deal with stress.

> Well, yes because, like, currently I'm going through some problems, and I need to find a better way to cope with stress, actually. So I guess that would be what I would get from that. . . . I empathize with it because I need to find a better way for myself also. So I did come from that same stamp when, like, I need to find a better way to cope with my problems as they did, too, so they needed to find a better way, and I also need to find a better way." (7/p. 9)
>
> *How does one, you or them, how do you find a better* way?
>
> Well that just depends on the person and your circumstances. Like I don't know what they would have to do to find a better way to settle a dispute because I'm not living back then, but it all depends on that person because they might not see what they're doing as a problem, but it is a problem so. Like I see my, like I know I have a problem, so I know that I need to get help with it so that's what I'll do so.
>
> *Do you see either them or you as having options?*
>
> Um, like there's always an option. Some people are so far into what they do so they don't feel like they have an option. They feel like they don't have a way out but if a person wants to change what they're doing they can do that. Like it's possible.
>
> *And this idea that you had that they could find a better way or they need to find a better way, did that help you in any way?*
>
> Like now it has just saying what I said, like I need to find a better way. It has helped me because it makes me focus more on myself and realize some things about me also. (7/p. 10)

For all but the least motivated students, their depth of emotional response and willingness to incorporate into their personal philosophies was surprising. Given the comments of many instructors, it appears that they are exhibiting this level of understanding during class discussions or in their assigned papers, and I suspect that their professors do not realize the profound impact that their classes and assigned readings have on the students.

Theorizing

Students also engaged in social theorizing about the nature of other people and relationships. They frequently used the theses of the articles to extrapolate to both their social circles and broader society. The students were budding social theorists in construction of social structures and were often keenly aware of implications of social class in both historical and contemporary society. The students were surprisingly aware and often articulate about power relationships in interpreting both current and historical events. In this phase of their lives, they appear to be actively constructing, deconstructing, and reconstructing their worldviews.

Younger students were less likely to respond to questions about social power, but older students were comfortable explaining their theories. Younger students were more likely to respond to questions about social power that were asked in terms such as, “How do you see the world working about this issue?”

By the time students were seniors, they had robust social theories that they enjoyed articulating. They seemed relaxed and easily applied their social theories across a wide array of dimensions.

> Social constraints and power structures are set up for a reason. They exist for a reason. That doesn’t mean they should exist forever. Nowadays, a good example, to get us off topic from the paper, but a good example nowadays is gender roles. They’re very different now than they used to be. Women are legally existent for one. It’s a big difference. Things like that. And I deal with people every day who say women are perfectly equal to men. And then I deal with people every day who say women are perfectly equal to men but they’re still different. Then I deal with people who say there’s no difference. Things like that. And every day that I deal with somebody instead of just going with the thing I said the day before, I actually do reevaluate the question and weigh any new evidence I have and it comes into things, you know, you’re talking about power structures, that was the question, right? (4/p. 16)

Given the relatively few articles read, the diversity of social theories was greater than expected. Theories ranged from trusting technology to the viability of the American Dream to the ethical implications of mandatory HIV testing.

Theorizing: Literacy and Power

Students connected the power of literacy to their everyday lives relatively easily. The first student quoted below discussed how highly educated individuals use the social power of legal contracts with their notorious practice of obfuscation to take advantage of less sophisticated parties.

> Well, that's how you get the ignorant people, which is most of the society, to get them to do what you want to do. It's just like a lawyer, and if you have a contract you know the contract is 5–8 pages and why? Why is the contract 5 to 8 pages for? You know what I'm saying? So yes, it does have something to do with power and you know, stuff like that.
>
> *That's the complication part?*
>
> The complication, yeah. The complication of reading you see it, I believe that it has something to do with power.
>
> *And what do you think it might be?*
>
> What it might be? Well, I know if I'm very educated and I know that you're not very educated it's really easy to manipulate people through words or a contract because you know that they probably can read and they probably won't understand it but if I make it sound good they'll sign anyway. (6/p. 7)

In the following dialogue, the participant explains how being able to access and verify information by herself empowers her. In addition, she states that if she had been limited herself to the information that had been provided to her, she would have been at such a disadvantage. She would not have been able to understand the information.

> *So how does that relate in how you experience power and you know self-power?*

> I guess like the power that I have to go and look up things, I guess, like find information on my own rather than relying on someone else's information isn't as helpful as me going out on my own and doing it. . . . Like when someone else is in power which they give you the information that they think you need, they give you all the materials that they think you do, but you have the power which, I don't know, if I took the power in my own hands to go and research and get this stuff because if I wouldn't have been able to understand it at all. I would have still been stuck there and since I took the opportunity to go and look at other places. (3/pp. 17–18)
>
> *This article, this process, you'd been reading the article and the things that you did on your own, did it, were there other questions that arose during this process?* I know like when I was looking at in it, like which information was true or not because there was a lot of stuff out there that somebody just put up there just to put out and I would account for things.
>
> *And how could you tell?*
>
> Um, I don't know. Like one website, it was talking about things like I could compare the two." (3/p. 18)

One student, who talked about how she struggled to understand the history article she was assigned, described how the process of researching would help her make better decisions for herself.

> It helped me better, like, make decisions for myself.
>
> *What are you using to make better decisions for yourself?*
>
> More information like more research, take the time out to research it or understand it in detail and then make an educated decision about something. . . . I feel like it helped me find myself and better myself also. Just, like, you know, the researching, finding other ways.(10/p. 12)

Another student had been taught to evaluate scientific literature critically. Using his statistical knowledge, he was able to compare a psychology article against criteria used in biology journals to judge if the methodology in the psychology article was sound.

> So it was interesting to read something that wasn't, that I guess a lot of people don't see as very, well, I would say a lot of people in the medical profession hold as less scientific and see it in very scientific terms. I mean they ran an analysis of variance . . . I mean, several tests that were processed correctly and even a lot of times they get those wrong in biology journal articles.
>
> *Really? Tell me about that.*
>
> Well, analysis of variance, they'll say that there's significance when you know there's almost always significance, but it's to determine what's the power and does this significance mean anything? And so they actually went through all of it and did it here where in a lot of biology articles, especially in big journals that you read, people just overlook it and it's actually wrong. They don't take independent samples." (16/p. 6)

Theorizing: Trusting Technology

Despite the expectations that this generation of college students prefers to socialize through technology and rely on Internet technology for almost everything, some students do not share their generations' implicit trust in technology. These students feel different from their peers as well as wary of the social change occurring around them.

> "*Did it raise any questions about like social constraints?*
>
> I guess that it would just be that whole trusting the computer without a doubt and they're feeling that the teacher can't handle the situation as well as the computer could." (20/p. 8)
>
> "*Did you have any questions about them trusting computers more than people?*
>
> Just pure confusion on that. I mean, the people have gone through similar things and they've had the same exact experiences as the kids are having but they trust the computers over the adult in their life. That kind of bothered me." (20/p. 11)
>
> *"And how did it bother you? I mean can you explain more about the bother?*
>
> I guess, I mean, like, I said, it was just the way I was raised to kind of trust your elders when they tell you, 'You don't need to be doing that' or 'That's going to come back and bite you', stuff like that, you know.

And what do you question? What is your question?
Oh, about just their willingness to trust computers that kind of worried me as far as we're going to be going down the road.

So, what I have is your kind of your confusion and your distrust of this whole thing?

I mean, I don't necessarily distrust it, but I mean I'm just more likely to learn from people around you rather than technology.

So how did those kinds of feelings relate to you in sort of a broader way?

In a broader way, it just kinds of makes me examine the people around me and look at them closely and wonder if they trust the people around them or rather they go home and learn something new from the computer rather than those around them, stuff like that. . . . Like, I mean, growing up I've always been one of the people that people would turn to when they need help or need somebody to listen to them and stuff so it kind of makes me feel like I'm kind of inadequate, you know. I mean. I'm putting it plainly.

Being replaced by the computer, your friendship skills. What does that say to you in terms of power?

Again, just technology right now equals power in this day and age we're in." (20/p. 12-13)

Another student, who was a computer science major, read the same article, but concluded that he thought a computer program might be a better analyst for him than a human.

Just not really interested, just kind of I guess curious. I mean, people have been misinterpreting my emotions pretty much all my life. I'll just be sitting there, just sitting quiet reading a book and I guess somebody will just look at my face and be like 'are you angry?' I'm like, I'm reading a book. Where did you get angry?

Yeah?

Just people been misinterpreting me for awhile and it just makes me want to think why.

Why are they misinterpreting you?

It could be the long hair.

> *Why do people tend to misinterpret you? Would you be better interpreted by a program?*
>
> Possibly, yeah.
>
> *And what thoughts do you have related to that?*
>
> Some people are stupid. (15/p. 14)

Theorizing: American Dream

Students responded very differently to the perceived opportunity to improve one's life circumstances in the United States, but many students had opinions. One student disparaged what she considered a false dream of achievement.

> I feel like in poor society, like, the government sometimes takes from the poor society instead of helps them and which it puts, like, them in a bad position already, like, they tell them that they can achieve anything but in return they give them nothing. Like they sell them a false dream, I guess. So that's just how I feel. (7/p. 5)

Even students who believe that such advantages exist in the United States are willing to state that those opportunities do not exist for every citizen. They are willing to believe that an individual without means has a better chance of achieving success and upper mobility in the United States than in other countries.

> It kind of reinforces my opinion that the American Dream exists even if not everybody gets it, that being that everybody you know, everybody, you know, people talk about, you've seen movies about it and stories about it, it's heavily fanaticized about that you can come to America with nothing or you can be born in America with nothing and die with everything because our class equalizer is money. (4 /p. 9)

Re-reading

Most students mentioned that they read the article more than once to make sense of it. Sometimes students mentioned that they "felt dumb" and got upset. Other students described an approach where they would dissect the article methodically to understand it.

Students would try to understand the article by breaking down the meaning of the main points of the paragraph that relates to the ACRL 2000 Standard 2, III (2000, p11).

> Oh, the first time I read it, it did not make no sense to me so I went back and re-read it and kind of just broke it down paragraph by paragraph and started to become clearer about what they were trying to do. I guess in my biggest confusion came in the actual procedure that they did in the program like, there's a chart of it, but I don't know, it just didn't really make sense on what, how did they determine what to test on that? (20/p. 3)

Once students read the article first, they seemed to have a more defined expectation for where the important information in the article would be.

> Well, for this class I usually read the article and then I go back and re-read it I guess, if that makes any sense.
>
> *What do you get out of re-reading it?*
>
> Just a clearer understanding. I may have missed something when I read it the first time, and I read it a second time I catch it. (7/p. 16)
>
> I guess, starting taking those quizzes and reading the articles I just read everything twice because I knew I wouldn't understand it. Like, I knew I wouldn't understand it completely unless, I knew I would be missing things reading the first time and then if I went back and read it again I would really understand it. (9/p. 17)

Some students were surprised at the necessity of reading the article more than once in order to comprehend it.

> Well, it's harder for me to understand because usually I could just go through something one time and comprehend it. Like, I'm pretty good at, like, reading something one time and comprehending it. This I had to read more than once to exactly understand what was going on and who was who and what they were talking about.(10/p. 18)

Assessing Peers

Students expressed low expectations of their peers' work ethics in the Introduction to Psychology and American History. There was a consensus that most students did not do the reading unless an assignment or quiz existed. Students were emphatic in their stated opinion that many of their classmates were not doing the work expected in a college class.

> Not everybody is always willing to go that extra mile so one of the reasons why I do not always want to go the extra mile is because I'm afraid that I'll get halfway down a path and find a brick wall where if someone else has not bothered to go the extra mile so now I've put all this effort in and get nothing out. (4/p. 13)

Motivation and Reading

Although students are motivated to read assigned journal articles when they are faced with a quiz or a paper, they are more likely to continue to read on the topic after the assignment if they have an intrinsic interest in the topic.

> Okay, this is very different because, of course, this is something I chose to read. I mean I had five choices and I really, at first I was going to go based off the longest ones and then I was like, 'Okay, let's get something that I guess I would possibly be interested in,' and . . . I guess I always, I guess I'm not, I'm not comfortable always with reading about STDs, but then you need to know about it. . . . So I was like, 'Why not read this one?' and come to find out this one was the shortest one. So, it's a win-win situation here. And so I guess I chose, this was a choice to read instead of when I'm doing a research paper I have no other choice but to read it. I guess when I had a choice this year to choose something to write about and I never, I guess making people aware of STDs or something, I never

> thought to write about it. So I guess this is a topic that I plan to look more into now since I'm going to be talking to the kids at home about it. (21/p. 6)

Appreciating Truth

An unexpected finding was that students repeatedly stated that their high school curriculum had kept the truth from them. This opinion was especially strong for history students. They felt that the history that they learned in high school had been sugar-coated. They appreciated reading the primary sources as well as secondary sources such as journal articles because these documents gave them a picture of what real life was like in American history.

> He forces you to focus on why they happened or either why they happened or what the person, the people, or the region at the time actually felt about them happening. So we constantly get these primary documents. This one's actually much farther from primary document than anything that we're used to. We get all of, I've read letters from Civil War soldiers that Dr. [name omitted] found. I've read newspapers; I've seen flyers published. Things like that. So whatever we're covering it really focuses on a more human aspect of history than just, you know, this happened, that happened and because of those two things this happened, that kind of thing. Stuff that I've been hearing since high school that I'm tired of hearing. I came to college to hear something new. So that's why I took two classes with him. (4/p. 4-5)

Students expressed concerns with how history had been presented to them in their secondary education. They articulated an awareness of how they had only received selected portions of history.

> Did this help me? Yeah, I mean it's good to know your history. Like I tell people all the time, the stuff they taught us in high school, I didn't learn anything in high school. I learned more my freshman year in college than I learned in high school, my personal experience. But yes, this did help me. It's good to know your history and I'm amazed by it, you know what I mean, like how much stuff that they kept from us in the K through 12 program. (6/p. 9)

> I just didn't, like high school wasn't that detailed because, like, we were forced at one point of view about things, I guess you could say. (3/p. 4)

Some students noted that it was strange to them that they did not hear about some of these events in early history courses.

> I just thought it really strange that I hadn't heard anything about this before because it sort of seemed like that would be something that would come up in another history or that would be something and there would be some sort of evidence towards in a previous history course or something. But I'm just reading this and I was like, 'oh my gosh', I never knew that something like this was happening in my own backyard, if you will. (8 /p. 3)

In some cases, the students expressed shock and distaste for what they learned in the journal article. Female students tended to be appalled by accounts of violence.

> There was one that I didn't like. It was the last one and it was talking about how the lower class were fighting each other and how wrestling began. And I didn't like the fact they would Gouge and Bite, Pull Hair and Scratch each other's eyes out. That was pretty gross. (5/p. 2)

> I think it was the rough and tumble one, the Gouge and Bite, Pull Hair and Scratch and . . . and fighting one. I honestly think it was like really barbaric how they did what they did and fought how they fought. Like, they plucked out eyes and tore out tongues and sliced noses and things like that." (7/p. 1)

> Talking about the brutality of everything like eye gouging, and I specifically remember eye gouging because it was the grossest thing, but I just remembered the, like, intense stuff of it." (9/p. 1)

Male students, however, said that they understood the violence even though they did not condone it. One article that many students talked about was Elliot Gorn's *Gouge and Bite, Pull Hair and Scratch and Fight* (1985), a graphic and gruesome account of male fighting rituals. Several male students drew parallels to contemporary phenomena such as Fight Club and mixed martial arts (MMA). Male outlets for maintaining or acquiring dominance (such as social mobility as a result of education) were rare or nonexistent.

> Of the gouging, conclusions and thoughts about the gouging: I found it interesting. I thought it was really interesting that you know, about the fights and then I tried to relate those fights to what's going on today with the whole MMA fighting and how we as Americans actually enjoy fighting as far as boxing, enjoy MMA fighting which is more combat. (6/p. 2)

> Well, I think fighting is a release, you know, so if there is a social constraint or power type of issue, I mean, that can be somewhat expressed and released through fighting. Especially in males. (6/p. 10)

> I guess when I think about how the article was sort of talking about, like, that's how men prove themselves, I can see that and I can kind of relate to that. I don't think that's how a man should prove himself as I said before, but I can understand why that would be the case. (8/p. 7)

Outcomes

Students described a range of outcomes from their experiences reading assigned journal articles. Many of the outcomes pertain to an expanded understanding and identification with other individuals who differed from them in time or in circumstance. They exhibited an ability to imagine themselves in similar situations to the people they read about in the past, present, or future. In addition, students described a process by which their original perspectives were transformed by the experience of reading the assigned journal articles.

Increased Empathy

Students struggled to consider past phenomena in light of current social practices.

> Because I can somewhat understand how they would go about that . . . Just, you know, during that time like our professor said there was really, like, no sports, baseball, that there wasn't, you know, sports to become a fan to so, you know, you became a fan of fighting. (6/p. 3)

One student said that it was his part of his reading practice to try to imagine the situation from the eyes of the person who had actually experienced it.

> I guess I had a moment of introspection when I was reading about those attachment styles and I would kind of compare it to myself and decided. . . . Any time I read anything, especially a psychological study, I try to put myself in the interviewee's shoes and think how would I answer the question that they were asked. (16/p. 6)

This student discussed the distress that she might feel if she was tested for HIV and received an HIV positive result. She talked about feeling the shame of that diagnoses and its social implications.

> The only thing that I guess made me, that hit a sensitive peak with me, was the fact that people were not wanting to be tested. Because I guess they didn't want their reputation ruined. And for me, like, say in worst case scenario, that I contracted something or anything . . . the fact that someone else knows it but me, like my doctor know it or something like that. That's making me on edge because I was like, 'Okay, it's going to be in my file.' I mean, I just . . . I would be completely embarrassed if anybody found out and I guess I would seclude myself from society or feel that I was being judged. But for me that would just be earth-shattering if I knew I contracted anything. I wouldn't know how to deal with it right away. (21/p.9)

Another history student put herself in the place of a woman whose husband had left to fight in the Civil War.

> I remember this article that, like, women, they used to write letters a lot and then the price of postage skyrocketed so they, let's see, so women they would be really discouraged. They wouldn't know if their loved one was alive or dead or how they were doing if they missed them or anything. (5/p. 7)

Not all students felt positively about their identification with people in earlier times. One student identified with the way slaves were treated on slave ships and began making parallels to how he was treated in junior high and high school.

> I kind of compared myself to them.

And when you compared yourself to them what came to mind?

> It made me feel bad. . . . I have to change myself. I think learn not to, not let people to control me and make my own, and make them do stuff to me now I want to do. . . . Well they couldn't really stand up for themselves because if they did they would get whipped or something because see they couldn't get help. (1/p. 13-14).

Enlightenment

Another unexpected finding was the students' description of increased self-awareness they experienced as a result of reading the articles. The same expression occurred repeatedly, "opened my eyes" as students described the phenomena.

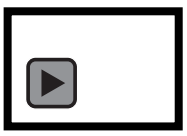
> One freshman described her experience grasping the importance of the experiences of Aztecs after struggling to make sense of the reading. She stated, "And, like, all of their stuff makes sense and so it was I just opened my eyes until I knew their way of thinking about things." (3/p. 4)

A senior explained that his experience reading psychology articles changed his ideas about what would be necessary for him to succeed in becoming the type of doctor he wanted to be.

> It opened my eyes to the fact that I need to focus more on psychology and the fact that I plan on being a doctor. So, I mean, I think that plays a big role. (16/p. 16)

In an audio excerpt (Audio Excerpt 6), this student discusses how reading the article helped him clarify the role of psychology in his medical career.

Audio Excerpt 6. Psychological Aspects of Medical Career.



I refer to this group of findings as “enlightenment”, a term that includes meanings of increased awareness and knowledge as well as a transformation of prior thinking about a concept that significantly redefines an individual’s mental landscape in regards to that concept.

One student did not know how to define the impact of this experience other than self-awareness, but he was able to describe the importance of experiencing it. This student, a first-generation college student, was able to contrast the experiences of his high school friends with his own.

> This changed my understanding of history, of this period in history. . . . Maybe, I’m not sure of the right word for it so I’m just going to get started and see if it comes up. It changes self-awareness. . . . I feel like college has had a huge impact on me, on that, especially when I see my friends who haven’t been to college, who haven’t read these journal articles written by some people who may have never done anything physically positive for society but just exchange ideas. Not that [exchanging ideas]isn’t positive, I feel like that’s extremely positive for this time, but when I talk to friends who just, you know, went to work at the sawmill where their dad worked or things like that, I realize that the world is a much smaller place to them. (4/pp. 26-28)

Enlightenment also occurred when a student realized that he or she could do something new or understood new concepts. This enlightenment resulted in self-confidence in the student.

> Kind of like how this is set up, like how the picture is and being able to see, you know, the bridge and the gaps and it just kind of helps me make more sense kind of than, like, pictures or something, like, other things that represent it.
>
> *Okay. Okay. So you were able to see kind of how the information is represented?*
>
> Yes.
>
> *Okay. And did seeing those graphs or models, did that, did that give rise to any other questions?*
>
> Well, it made me, it would kind of help me refer back to the original information and try to make more sense of it, you know, but I know how it’s kind of laid out

> and what the basic points were and how those basic points connected. I could take the larger bit of information and being able to match it up.
>
> *And what conclusions and ideas did you derive from this process?*
>
> You know, the conclusions out of the paper basically, like, um, I'm trying to think of a way to describe that, I'm sorry. . . . Just knowing how things work, just making those connections so I can get the conclusion out of the study I guess.
>
> *Okay. And how did you feel when you were doing that?*
>
> I felt a little bit successful being able to make sense out of it.
>
> *Okay. And how did that help you, the feeling successful?*
>
> It gave me, you know, a little bit of encouragement that I can go on (12/p.17).

Helps

Helps took various forms. In some cases, quizzes and assignments related to the assigned journal article were described as very helpful. Students also appreciated the ability to look up source documents.

Quizzes as a Help

Students appreciated quizzes and papers as a feedback mechanism for their understanding of the article. Often, the grade and/or comments received on the assessment were seen as giving students the feedback that they, in fact, had correctly understood the article. Even advanced students, such as seniors, still wanted the verification or approval from their instructors that they had grasped the material as the instructor intended.

In the first example below, the student described how the quizzes helped her focus her reading and organize her understanding of the reading.

> Besides realizing that I needed to take my time reading slowly, um, I guess I kind of evaluated the way, like, things happened in order. It helped me after I took the quiz. I realized that everything has to go in, I put it in a specific order. Oh, I don't know how to explain this. I just lay things out more clearly like an outline kind of. . . . I do put it and list it so I understand it better so I can go step by step.
>
> *Okay*.
>
> And that, because taking the quiz I had to go back and, like, read it and then I put it together so it's, like, I guess it helped me realize how to organize my reading. (9/p. 9-10)

Quizzes help the student realize that reading the assignment once was usually not sufficient. Generally, the students suspected that they did not identify the main points of the articles. They need the interactive process that a quiz provides to crystallize the most important issues in the article. Audio Excerpt 7 illustrates how a student used a quiz to help her refine her comprehension strategy.

Audio Excerpt 7. Quizzes Help



Hyperlinked Bibliographies/References/Citations

Students appreciated the ability to trace the citations to source documents. Sometimes they wanted to verify if the author had remained true to the original context. Other times they wanted to explore the issue further to satisfy their own curiosity. They wanted this functionality to be quick and easy to use because they did not want to invest a lot of time chasing down this type of information. They simply wanted to be within easy reach of complete citations and have easy access to full text.

> I probably would have, instead of getting the article itself from my D2L page, I would have talked to the teacher and got the link to the article online so I could find an endnote, the journal format from those websites that have journals are much more navigable as far as finding, tracking the information. You know, you can follow up sources, things like that, so I probably would have gotten the link from the professor and tried to go a little deeper into the court cases and things like that. (4/p. 12)

Researching on the Internet

Students emphatically stated that they used Google and Wikipedia frequently to find a source and/or to find background information on the Internet that supplemented their understandings of scholarly journal literature.

> I think often that if it wasn't for the Internet I would do a lot less research because it's opened up doors, of course. I don't have to go to a library and trudge through a table of contents or a card catalog or countless documents to find something. I can use Google and keyword searches and things like that. And I wonder how this guy, the authors of this article, found all these court cases. They actually had to sit down and read the court records. That's why they're historians, and I'm not. (4/p. 13)

Hurts

There were relatively few hurts described by the participants despite continuous repetitive triangulation about the concept of hurts. For the most part, American college students, although they may be considered wimps by other generations, rarely admit to experiencing hurtful situations that they cannot overcome. Exceptions center around the presence of graphs and calculations in scholarly journal articles.

A female freshman admitted that her inability to understand a graph made her feel less intelligent by saying the graph, "Did make me feel kind of incompetent that I could not figure

out a graph to be honest. Felt kind of, I don't know, less intelligent I guess we could say." (11/p. 15)

A male freshman computer science major that described himself as being mathematically inclined was also frustrated by the presentation in the way numbers and graphs were presented as compared to how he was taught to interpret numbers in his math classes.

This student asked for better meta-information about the relationships of the calculations provided.

> Well, I would have preferred having some kind of scaling on how they were using the percentages and just like a brief account of what calculations they used on attaining their numbers. (15/p. 4)

This student explained how he tried to use the numbers available to discern the underlying logic of the experiment.

> Just being able to compare the different numbers that they had. They had what I assume was a numerical representation of depression; which again, how they come up with how somebody is .5 depressed versus .6 depressed versus .4 depressed. But it helped to be able to compare somebody then saying that at this point this guy was .9 depressed but at this point he was .2 depressed just didn't seem like it was better. (15/p. 6)

The hurts described by this student (transcript #15) seemed sensible and valid to the researcher. In fact, once students began to expand on the micro-elements their perspectives generally appeared logical. In many interviews, students illustrated depth in their self-appraisals of their efforts, questions, confusions, feelings, learnings, and other experiences. From these interviews, it appears that a wide range of life-worlds surface and interact within the student, among his or her classmates, and affect the process of reading assigned scholarly journal articles.

Summary

In summarizing the findings of the statistical analysis, I return to consideration of the original research questions. In spite of the acceptance of most of the hypotheses set forth, I am still unable to answer the first research question, "What are the overall structures of both a) student instruction composition and b) scholarly journal articles assigned for reading in subsequent general education classes in the disciplines of Psychology and History?" Determining the top-level structures of scholarly journal articles to a dominant structure (the basis of the structure strategy) was highly problematic. The readings included in *Steps to Writing Well for Academic English* were labeled with their top level structures in the text. The assigned scholarly journal articles in the Introduction to Psychology and History classes often used more than one structure.

The findings suggest that the original research question must be modified because of its initial presumption that there would be a singular overall structure used in each scholarly journal article. Scholarly journal articles included in this analysis had more than one overall structure.

The second research question, (How can these structures be best identified?) also remains problematic as using the structure strategy method created by B.F. Meyer did not address situations in which the text contained numerous and embedded structures. Based on experience coding the articles and the experience and subsequent discussions with the second coder, we believed that we were in the best position to guess a specific structure *after* reading and understanding the article, that most of the articles were difficult to reduce to a single structure, and that any top level coding of the articles were at least partially misleading as there were usually one or more competing, plausible structures to consider. Ultimately, assigning a top-

level structure did nothing to help either coder understand the article and turned out to be an added procedure.

The third research question, (What are the top-level structural patterns of composition within the two academic disciplines and how do they differ?) can be partially answered by focusing on overall patterns in using the structure signals, the use and placement of topic sentences and a consideration of computed complexity by using the Flesch algorithms. The Flesch reading difficulty scales were added to the analysis after it was clear that the structure strategy did not provide a summary evaluation of the articles and readings in the analysis.

Findings here suggest that there are significant differences in composition style and structure at the paragraph level both between assigned readings in Introduction to University Writing and the scholarly journal articles assigned in the other two disciplines as well as between the scholarly journal articles in the disciplines of psychology and history. For instance, evidence suggests that the placement of topic sentences differ significantly between writing examples in *Steps to Writing Well for Academic English* and scholarly journal articles assigned in Introduction to Psychology and history classes. In addition, the Flesch reading scales provide evidence that there are significant differences in readability at the article/ reading level.

Between the two readability scores, the Flesch Readability Formula (1948) and the Flesch-Kincaid Reading Level Formula (1975), the Flesch Readability Formula (1948) provides the best predictor of difficulty for the readings in this study. The fourth research question, (Are there differences in top-level structure used in general expository composition, such as in the writing examples from *Steps to Writing Well for Academic English*, and in those used in scholarly journal articles in the selected disciplines?) is answered as there are differences in

composition structure at the paragraph level, but there is no answer for questions regarding top-level structures in scholarly journals because the term top-level structure loses its original meaning.

The fifth research question, (Do these differences, to the extent they exist, create contradictions in how students are taught to write in freshmen composition courses and the composition of the scholarly journal articles they are expected to read in their required general education classes?) is addressed in two parts. The first is, "Are there contradictions in composition structure between examples found in freshmen composition literature and composition structure of scholarly journal articles?" The answer to this question is a resounding "Yes!" There are significant differences in presence and placement of topic sentences within paragraphs. There are significant differences in the number of structure signals found in the topic sentence that indicate relationships of subordination, causation, and other relationships.

There are significant differences in the level of complexity between the examples provided in Introduction to University Writing and scholarly journal articles assigned in Introduction to Psychology and History classes at PLUS. These significant differences create contradictions between conventions taught in English composition classes and the experience of reading assigned scholarly journal articles. The second part of this question focuses more on the contradiction between preparation and experience as faced by the student (or not) and is explored in detail in the analysis of interviews. All of the students in this study experienced gaps in understanding or in preparation for reading assigned scholarly journal articles although their individual experiences varied.

The last research question, “Do the contradictions differ according to their discipline, whether psychology or history?” has been answered by several tests of independent means in which history and psychology were compared directly to each other and significant differences were found.

In conclusion, both stages of analysis provided evidence of significant differences between the preparation students receive in classes where they are taught academic English and subsequent expectations of their reading comprehension ability by professors in history and psychology classes who assign scholarly journal readings in general education classes.

Text structure varied considerably among assigned scholarly journal readings and examples from the textbook Steps to Writing Well for an Academic English. Significant differences existed in incidence in topic sentences, placement of topic sentences, use of combined high level structures, and text complexity.

Interviews with students revealed gaps in expectations of what was supposed to be accomplished by reading scholarly journal articles, What students were expected to know and feel as a result of reading the scholarly journal articles, and why the scholarly journals are composed with such strange conventions and vocabulary?

Chapter 5

Discussion

Findings in Relation to Theoretical Framework

The theory of cognitive dissonance provided the over-arching theoretical structure of this study. Cognitive dissonance by students and often described by gaps, obstacles, or hurts using constructs from Dervin's Sense Making Methodology. The ability of students to overcome these gaps, obstacles, or hurts resulted from factors such as the individual's ability to tolerate ambiguity long enough to resolve or develop strategies to "make sense" of dissonance. The ability of students to tolerate ambiguity directly relates to The Scheme of Intellectual Development in the College Years by William Perry (1970).

In reviewing the findings of the content analysis of the assigned readings, clearly many significant differences exist in style, complexity, and structure. The degree to which these textual differences result in cognitive dissonance depends on the preparation and ability of the reader. Once a student becomes exposed to these disparate traditions of academic writing, his or her expectations will change. Hopefully, the educational interventions such as more awareness of genre analysis and instruction about the writing conventions different disciplines will require reconfiguration of students'schema

Pedagogical Implications by Sub-Audience

Teaching Faculty in Psychology or History General Education Courses

There are several approaches to reducing the gaps between the preparation of students in their English composition courses and the expectations of the teaching faculty regarding the students' reading ability in future general education classes in history and psychology. Professors teaching the history and psychology classes might tell students when the article is first assigned that the style of writing is more difficult than they have encountered in English composition classes. Also, professors may tell the students that previous students have had to read the articles at least twice to achieve a basic understanding of the content. In some cases, students have to read and re-read certain passages more than twice. Students will need to understand that reading a journal article is an iterative process in which understanding increases in bits and parts, similar to working a jigsaw puzzle.

As many students described how they ultimately had to analyze each paragraph carefully to get the main point, the instructor might consider having students summarize each paragraph by main point for the whole article, noting where they have questions.

Quizzes help students during their process of comprehending the journal articles. The quizzes in this study were open-book, but were difficult enough to require the students to read the assigned scholarly journal article carefully.

Students in this study appear to appreciate having their effort in reading journal articles tied to graded assignments because they want credit (even partial credit) for the difficult work they have performed in obtaining (sometimes partial) understanding of the content. Students in

this study also appreciated the feedback they received from instructors because they recognized that they needed guidance in acquiring the comprehension skills necessary.

General education classes at PLUS, like many other institutions, are comprised of students ranging from freshman to senior status and over disparate ages. These students vary in their development and in their understandings of their world and themselves. Younger students in this study focused on interpretations that affirmed their morality, while older students displayed more critical questioning of "why things worked the way they did" and sometimes challenged what they learned in prior educational experiences, such as high school classes. The range of maturity in students should be considered in their interpretation of assigned scholarly journal articles. In general education classes, assigned scholarly journal readings may best be limited to one or two assigned articles covered in detail and assessed based on demonstrated comprehension of the main points of the article with some consideration to questions students are able to raise based on what they perceive are the broader implications of the article's findings.

In general freshmen students should not be advised or allowed to take Introduction to Psychology unless they are considered extremely well-prepared (as demonstrated by high school grade point averages and ACT scores) *and* have completed their general education requirements in mathematics. Psychology requires more critical thinking and mathematical skills than is generally assumed.

Students need explicit help in navigating APA style as students in this study were not capable of separating the conventions and form of the article from the content. A limitation in following the conventions led to reduced ability to comprehend the main points in the article. This finding may be a surprise to professors who have internalized the APA style through years

of scholarship and teaching. They may be expecting students to be able to disregard or look past conventions and citations to get the gist of the argument. As gap between professors' expectations of reading scholarly journal articles in APA style may differ from students' actual abilities, this issue is an ideal candidate for further research.

An encouraging finding from this study was that even students, who showed limitations in understanding the article and/or were reading a scholarly journal article, still grasped some of the article's findings and implications. Students in this study used introspection and empathy to relate the issues they encountered in the article to their own lives and often showed increased interest in the subject matter as a result of reading the scholarly journal article. John Budd (2008) asserted the power of introspection in building a coherent phenomenology essential to information literacy. Budd (2008, p.322) state, "Each of thinks about the world around us and inside us in individual ways, filtered through individual experiences." Aiming instruction at the level of individual thoughts instead of skills and facts to be acquired increases the likelihood that students recognize their own limitations in understanding. Students' capacity and patterns of comprehending reading assignments through the lens of introspection could be exploited effectively in assignments. For instance, having students journal their experiences has become a common pedagogical practice. Such an assignment could be modified to be an individual response to an assigned scholarly journal reading. Dervin (2009) uses a version of this method that she calls SMM Q/ings. The assigned journal article is formatted so that every line of text is numbered. The reader responds within the document by inserting "Q" for questions that they have about a point in the article; "I" for ideas that come to mind as they read; "H" for instances in the text that helped the reader understand the text; "C: for comments and "S" for difficulties.

The full question/comment/idea, etc. is inserted into the text using a different font color. The re-formatted, SMM Q/ing is sent to the instructor who then comments on the students' inserted questions, ideas, helps, difficulties, and comments. This process is dialogic and increases the students' metacognition in understanding a scholarly journal article.

This phenomenon suggests that students benefit from their initial experience reading scholarly journal articles, despite their limited skill at comprehending them. Initial experiences with reading assigned scholarly journal articles provides students with a tentative foundation that they can build upon and further refine during their college experience. In the spirit of ""If a thing is worth doing, it is worth doing badly" (Chesterton, 1910) if we, the academic community, want students to read scholarly journal articles with competence and diligence so that they can truly become information literate, we need to give them the opportunity to acquire the skill of comprehending scholarly literature by guiding them through their steps and missteps.

Faculty Teaching Freshman Composition Classes

The goal of freshman composition is for students to write in accordance with the standards of academic writing. Unfortunately, such standards exist only within the context of specific disciplines and differ from one discipline to another. Ideally, students would be exposed to at least one example of writing in the humanities and one example of writing in the social sciences. The students would be asked to read and respond to the journal article using Dervin's SMMQ'ing technique. Students could write a response paper to the journal article that would also serve as practice for composition.

Academic Librarians

The pedagogical implications for librarians require a paradigm shift in the way librarians see themselves as contributing to the academic culture and to information literacy efforts. Librarians need to help students find and create meaning from scholarly journal articles as well as other library resources. Librarians need a stronger relationship with the faculty for whom they teach information literacy courses. Both the academic librarian and the teaching faculty will have to work to explain scholarly conventions within the discipline being researched. Academic librarians may need to help students understand the journal articles as well as retrieve them. Bronshteyna and Baladad (2006) provide an excellent example of combining paraphrasing exercises within information literacy instruction to provide students with practice thinking critically about the information source and articulating their thoughts using parenthetical citation.

Academic librarians, from inside the classroom or the reference desk, should encourage students to limit the journal articles they plan to read to articles that are two or less levels above the student's current reading level.

Considerations for Further Research

The expectations of teaching faculty of students' ability to read assigned scholarly journal articles as well as their expectations for students' preparation in academic writing need to be surveyed. In addition, the percentage of teaching faculty who assign scholarly research articles in general education, sophomore, or major level courses needs to be identified. Studies which examine the actions and thoughts of students as they read the articles could provide additional

insight into the specific challenges of students based on age, preparation, and general scholastic achievement.

The gap in expectations from general education instructors and composition instructors should be examined at the institutional level to insure that there are common understandings among faculty about how a student is expected to progress through the college education. This issue is beginning to be addressed in Information Science literature, (Gullikson, 2006; DaCosta, 2010). Conducting surveys and focus groups with teaching faculty could help librarians as well as academic departments.

It appears that there are a growing number of assessments to determine if institutions of higher education are meeting state, national, and other external benchmarks, but few that assess internal coherence within an institution's curriculum. Assessment of internal coherence often takes place within departments in terms of majors. General education requirements are decided by the state and syllabi are assessed to ensure that courses provide certain educational outcomes. There are currently no assessment measures that consider whether or not general education courses and majors work together to provide a holistic undergraduate education.

One of the most significant weaknesses in the undergraduate education at PLUS is the lack of proper sequencing. It is possible for students to take important general education courses in their senior years. In these cases, students may lack important fundamental skills throughout their college career, but manage to scrape by. Other times, students might fail courses in their major because they did not acquire the necessary skills in the general education courses. Comprehending scholarly journal articles is one of the important skills that teaching faculty

expect from their students (Gullikson, 2006). However, current curriculum design does not assure these skills have been acquired.

A more robust study of students and their experiences using in-depth qualitative interviews and connecting these interviews to quantitative data that includes high school preparation, prior college courses and grades, current college courses and grades as well as longitudinal data such as retention, 6-year graduation rates, and post-baccalaureate placement in jobs and/or graduate programs would be ideal.

Limitations of this Study

The ability to identify the topic sentence of a paragraph as the operational definition of understanding the main idea of a paragraph seemed quite logical at the beginning of this study. In fact, this practice was specifically directed in Chapter 8, The Reading-Writing Connection, in *Steps to Writing Well with Additional Readings* (Wyrick, 2008, p.171). However this pairing presented problems in instances when neither myself, the first coder (a graduate student in English and a tutor for PLUS's Writing Center), nor the English Literature Subject Librarian (who holds a PhD in English and taught Freshman Composition courses for years) could identify, let alone agree on, what constituted a topic sentence in scholarly psychology journal articles. This problem points to a flaw in the research design as well as a larger pedagogical issue. If academic librarians who hold at least two graduate degrees each and an English graduate student and employee of the writing center struggle with the composition of scholarly

journal articles in psychology, realistic expectations of freshmen in understanding this type of literature are going to be difficult to establish.

The assigned scholarly journal readings in history were easier to comprehend in general, but the topic sentences remained difficult to identify. In this situation, the problem was the operational definition of identifying the topic sentence as evidence of grasping the main idea of the paragraph. In the history articles, it was common to find a sentence that expressed the main idea in general terms as well as at least one sentence that restated the main idea in specific terms. Both of the potential topic sentences expressed the main idea of the paragraph. Based on the definition of topic sentences by (Fowler, 1983, p.57), the topic sentence was determined to be the more general of the two candidate sentences.

The issue of more than one topic sentence did not affect the measure of hypothesis 2, H_2, because the issue was incidence of a topic sentence. However, the existence of more than one potential topic sentence per paragraph in the history articles meant that hypothesis 3, H_3, concerning the placement of topic sentences within the paragraph was equivocal. Again refining the definition to the candidate topic sentence that had the most general scope resolved the issue. This issue has a pedagogical implication that cautioning readers that the main idea is often expressed more than once in a paragraph in scholarly journal articles in history might aid students in identifying the main idea.

The B.J.F. Meyer's structure strategy for reading comprehension, famously successful in elementary and secondary schools (Meyer, B.J.F, 2001, 2009), disintegrated when applied to scholarly journal articles. The strategy (at least as implemented within this study) could not accommodate scholarly writing that combined structures. To mitigate this failing,

Flesch and Flesch-Kincaid reading algorithms were used. Both of these formulas are based on easily measurable components such as sentence length and syllables per word; however, the complexity of scholarly writing exceeds vocabulary and sentence length and entails an embedded logic that I was unable to isolate or measure. Unfortunately, it was precisely the logic that I was unable to pinpoint that needs to be conveyed the most.

Another limitation of using the Flesch-Kincaid Reading level formula is the algorithm's inadequacy in measuring the complexity of scholarly journal articles in psychology. The Flesch-Kincaid Reading Level Formula (1975) did not appear to address the conventions of the psychology articles written in APA format. The psychology articles received ratings ranging from 11.53 to 12.85 which correlate to the reading levels of a high school junior (11.53) and college freshman (12.85). These rating*s* appeared too low based on the difficulty experienced and articulated by actual college freshmen. Both the second coder and myself found the psychology articles more difficult than the history articles which have a mean Flesch-Kincaid Reading Level of 13.01 (analogous to a first-semester college sophomore).

The Sense-Making-Methodology (SMM) interviews provided surprisingly rich insights into the experiences of the students as they read assigned scholarly journal articles as well as their individual thought processes and worldviews. While thematic commonalities existed among the interviews, it was often the individual and idiosyncratic slants on these commonalities that yielded the deepest and most fascinating revelations. The coding categories were developed to preserve as much of the uniqueness of individual response as possible while at the same time linking to the broader shared experience. In essence, these coding categories described the multifaceted experience of students very well, but did not meet the accepted standard of mutual

exclusiveness called for in qualitative research studies. The coding categories were so specific that it was very difficult to get any acceptable level of inter-coder reliability and items had to be re-coded by assigning broader terms to responses to achieve reliability rates in the 80th percentile.

If I were to face this particular dilemma again, I would continue to preserve the richness of individual response and scrap the inter-coder reliability. Inter-coder reliability as an objectivity measure of multifaceted and subjective experience is necessarily contrived. My claims of validity for my findings would be based on a combination of manifest content (Berelson, 1971) and the documented questioning procedures used in the SMM Microelement technique. The questions asked and the responses of the participants are available for the reader's analysis and allow for differences of interpretation between the researcher (myself) and the reader.

Objectivity constitutes an important measure of research quality. Berelson (1971) states that content analysis must also be objective. By objectivity, Berelson asserts that the intrusion of bias into the research process should be reduced as much as possible. Although objectivity in grounded theory remains a subjective and self-conscious experience, Strauss and Corbin (1998) describe techniques to "control intrusion of bias into analysis while retaining sensitivity to what is being said in the data" (p.43). These techniques include: comparing incident to incident, obtaining multiple viewpoints of an event by determining how the actors in a situation view it (the SMM Microelement technique fully, perhaps exhaustively, explored elements in light of each other element) gather data on the same phenomenon in different ways (such as reading a journal article and then interviewing a student who has read the article) (Strauss and Corbin,

1998, pp. 43-44). The research design of this study embodied all of these considerations. This constant-comparative analysis required that I consistently step back and ask the questions that Strauss and Corbin, (p.45) pose, “What is going on here? And “Does what I think I see fit the reality of the data?” throughout the interviews and analysis of findings.

Conclusions

Members of the academic community no longer use the same conventions of language to communicate their scholarship and have not for decades (Bazerman, 2000a, 2000c; Becher & Trowler, 2001; Elbow, 1991). Yet, universities hold on to an outdated concept of “university writing” that is taught by providing students examples of five point essays written at the tenth grade level. Based on the experience of this study, it appears that the publishers of such composition textbooks have to regress to tenth grade writing standards to find a common ground for academic writing. Perhaps this level of writing represents the last of the shared conventions of university scholarship, but it certainly does not prepare students for the expectations of reading and writing within academic disciplines.

This study has offered a critique of the current practice at PLUS of teaching students to write using a very generalized and simplified model of expository essays and then expecting them to read scholarly journal articles that contradict that model. Unfortunately, the current practice provides models generally written on a tenth-grade level with generic and not scholarly conventions to students who primarily respond to intellectual activity from a dualistic perspective (Perry, 1970). These students, who struggle to internalize the *right* way to write an

essay as freshmen, experience tremendous difficulty taking the freshmen five point essay model and applying it to scholarly articles in different disciplines. At this stage of their psychological development, students eschew the type of ambiguity that exists in nuance and unstated assumptions. This system of introducing students to academic writing practically guarantees failure.

While not offering a specific alternative solution to this gap, this study does identify and explore factors that contribute to the gap and the impact experienced by students. The solution(s) are most likely to be found in expanded dialogue between teaching faculty from different academic disciplines and academic librarians and in increased experimentation in pedagogical practices such as including paraphrasing exercises in information literacy instruction (Bronshteyn and Baladad, 2006).

An articulation of disciplinary assumptions and communication conventions from an insider's view, but expressed in outsider's language is necessary. This articulation requires the collaborative interaction of teaching faculty and academic librarians as well as increased exposure of the librarian to core journal articles within the discipline. This content analysis required reading ten scholarly journal articles in psychology and seventeen scholarly journal articles in history. This level of exposure to disciplinary genres is necessary, but not sufficient to aid students in comprehending assigned scholarly journal articles in these disciplines. The next step would be to interview members of the teaching faculty in these disciplines and ask why information is presented the way it is to ascertain the logic behind the conventions. Without reading the articles and becoming aware of conventions and styles that seem alien, I would not know what to ask. Unless they are asked specifically about the nature of the conventions of

scholarship within their discipline, teaching faculty would be unlikely to anticipate the difficulties that readers, like myself, outside of their discipline face.

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Appendices

Appendix A. Coded example of assigned scholarly journal reading in history

Paragraph 1

13 sentences

1st sentence is Topic Sentence

"On March 31, 1757" is signal phrase whose function is sequence.

Paragraph 2

6 sentences

Last (6th) sentence is Topic Sentence

Signals used are "Evidence" signals problem/solution "Different" and "But" signaled compare /contrast structure; "Questions" and "Unresolved" signal problem/solution structure

DESERTED HIS MAJESTY'S SERVICE: MILITARY RUNAWAYS, THE BRITISH-AMERICAN PRESS, AND THE PROBLEM OF DESERTION DURING THE SEVEN YEARS' WAR

By Thomas Agostini **Middle Tennessee State University**

On March 31, 1757, an advertisement appeared in the *Pennsylvania Journal* announcing the disappearance of Robert Aensworth. At aged twenty-seven, Aensworth was an immigrant from Ireland who worked for some time as an indentured servant in Trenton, New Jersey. After an apparently unremarkable term of service, the young Irishman took a job as a free laborer several miles to the north in Hunderton County, New Jersey. Here, in 1756, he encountered a recruiting party of British regulars from the 44th Foot led by a Lieutenant Barly. Aensworth evidently volunteered and served for a time as a redcoat, but he soon found military life repellent. At the risk of several notoriously severe punishments, including scourging by the cat of nine tails as well as the death penalty, the former servant deserted from his unit. It is not known how long Aensworth evaded pursuers after his disappearance, hut they caught up to him near Trenton, New Jersey. Once taking him into custody, they placed "a Pair of Handcuffs" on his wrists and confined him in Richard Maybury's house. That night, facing the fearsome prospect of his imminent punishment, Aensworth vanished yet again. Somehow he managed to slip out of his restraints and sneak through the front door of the house undetected. Once outside, the artful Irishman "mounted and rode off" on a horse that was left naively outside the Maybury home "saddled and bridled." The last time anyone saw Aensworth, he was "crossing the Ferry to the Pennsylvania Side." In despair, his officers placed a notice in a Philadelphia newspaper describing his escape and offered the sum of five pounds in Pennsylvania currency for his capture.'

Aensworth was one of nearly two thousand soldiers named as deserters in surviving issues of newspapers printed in British colonies from Nova Scotia to Georgia between 1755 and 1762. Like items placed in the papers for runaway wives, servants, slaves, apprentices, and other fugitives, deserter advertisements reveal a transatlantic society where diverse individuals sometimes used mobility to escape intolerable personal or economic relationships. These advertisements provide, on occasion, wonderfully rich and detailed data on troops. This information is invaluable to scholars because many of the contemporaneous muster rolls, the traditional sources that scholars would use to ascertain the compositions of units, simply do not survive from the era of the Seven Years' War. As a result, previous studies of soldiers relied on other existing documents like personal correspondence, court martial testimony, diaries, and pension records. Evidence gleaned from these sources occasionally allowed these historians to uncover details like the motives that different troops had for absconding, the ways the army tried to deter desertion, and the types of discipline that regular and provincial officers employed, but these studies left three critical questions largely unresolved.

Appendix B.



The Experience of Anger and Sadness in Everyday Problems Impacts A Differences in Emotion Regulation

Fredda Blanchard-Fields and Abby Heckman Coats
Georgia Institute of Technology

The authors examined regulation of the discrete emotions anger and sadness in adolescents through older adults in the context of describing everyday problem situations. The results support previous work: in comparison to younger age groups, older adults reported that they experienced less anger and reported that they used more passive and fewer proactive emotion-regulation strategies in interpersonal situations. The experience of anger partially mediated age differences in the use of proactive emotion regulation. This suggests that at least part of the reason why older adults use fewer proactive emotion-regulation strategies is their decreased experience of anger. Results are discussed in the context of lifespan theories of emotional development.

Keywords: emotion regulation, everyday problem solving, emotions, lifespan development

Paragraph 1
Sentences 8
Topic sentence is 1st sentence

Do everyday problems elicit different emotions and different emotion-regulation strategies across the adult lifespan? The present study investigated this tendency in the context of participants' self-reported everyday problems. There were three major goals of the present study. First, we attempted to identify age differences in the experience of discrete emotions in response to everyday problem situations—in particular, anger and sadness. Second, we examined age differences in emotion-regulation strategies used in everyday problem situations. Third, and most important, we examined age differences in the degree to which emotion-regulation strategies are related to the discrete emotions of anger and sadness. To the best of our knowledge, this last goal has not been satisfactorily addressed in the literature. To understand age-related differences in emotion regulation, we must first examine the growing research on age differences in the experience of emotions.

Age Differences in the Experience of Emotions

Focusing on emotions from a global perspective, researchers consistently find that older adults report experiencing more positive affect and less negative affect (Carstensen, Pasupathi, Ma Nesselroade, 2000; Charles, Reynolds, & Gatz, 2001; Gross 1997; Labouvie-Vief & Medler, 2002; Mroczek & Kolarz, There are far fewer studies examining age differences i experience of discrete emotions. Of those studies, the most esting developmental differences have emerged when exam anger and sadness.

Paragraph 2
Sentences 3
Topic sentence is 1st sentence

There is growing evidence that older adults are less like report the experience of anger, and when they do so, it is lower in intensity (Birditt & Fingerman, 2005; Chipperfield, & Weiner, 2003; Gross et al., 1997; Schieman, 1999). In cor the experience of sadness does not necessarily decrease wi, and may increase (Birditt & Fingerman, 2003; Lefkowitz & german, 2003). Moreover, some studies have shown that acults are more reactive to sad situations than younger indivi (Kunzmann & Grühn, 2005). In contrast, individuals at the b ning of the adult lifespan display a different developmental p. Adolescents are more likely to report a higher intensity and tion of anger when describing a stressful situation with memb their social networks (Birditt & Fingerman, 2003). They report more intense anger than sadness when reading ab conflict with a friend (Whitesell & Harter, 1996).

Given the developmental differences in the experience o ness and anger, the present study focused on examining differences in the felt experience of these two discrete emo

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This study was supported by National Institute on Aging Grant R01

Appendix C. Sample essay from *Steps to Writing Well for Academic English* (Wyrick, 2008).

Chapter 28

Exposition: Causal Analysis

The Teacher Who Changed My Life

Nicholas Gage

Former investigative reporter for the *Wall Street Journal* and author of seven books, Nicholas Gage is best known for *Eleni* (1983), the story of his mother's life and execution in 1948 during the Greek civil war. The story of this murder and Gage's subsequent search for her killers was made into a well-received movie in 1985. The story of Gage's family, *A Place for Us: Eleni's Children in America* (1989), contains a version of the following essay, which also appeared in *Parade* magazine. Gage's recent books include *Greece: Land of Light* (1998) and *Greek Fire* (2000).

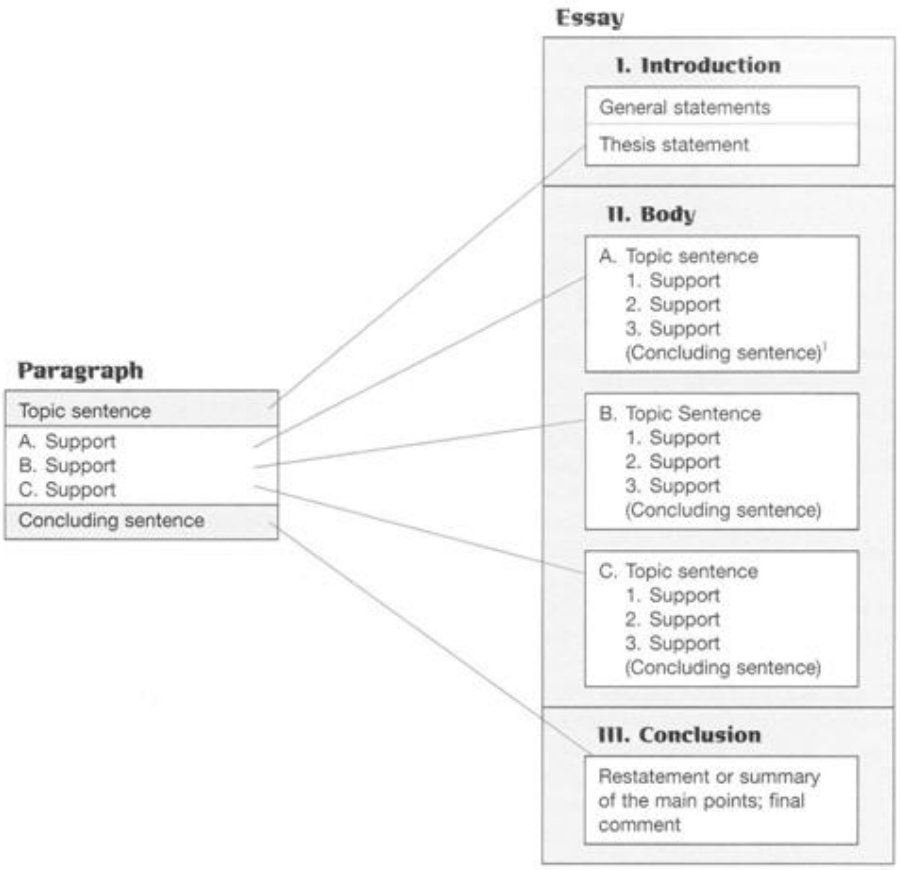
1 The person who set the course of my life in the new land I entered as a young war refugee—who, in fact, nearly dragged me onto the path that would bring all the blessings I've received in America—was a salty-tongued, no-nonsense schoolteacher named Marjorie Hurd. When I entered her classroom in 1953, I had been to six schools in five years, starting in the Greek village where I was born in 1939.

2 When I stepped off a ship in New York Harbor on a gray March day in 1949, I was an undersized nine-year-old in short pants who had lost his mother and was coming to live with the father he didn't know. My mother, Eleni Gatzoyiannis, had been imprisoned, tortured, and shot by Communist guerrillas for sending me and three of my four sisters to freedom. She died so that her children could go to their father in the United States.

3 The portly, bald, well-dressed man who met me and my sisters seemed a foreign, authoritarian figure. I secretly resented him for not getting the whole family out of

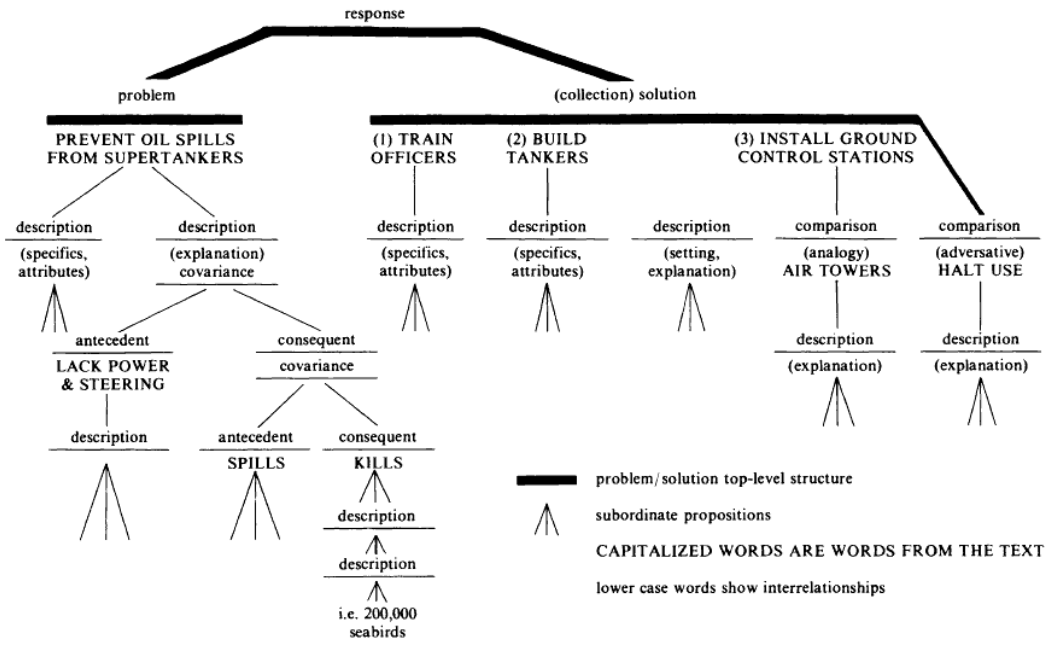
Paragraph 1 ***2 Sentences***
1st sentence is Topic Sentence *"In fact" signals compare/contrast structure*

Appendix D. Model of an essay from *Writing Academic* English
(Oshima & Hogue, 2006, p.57)

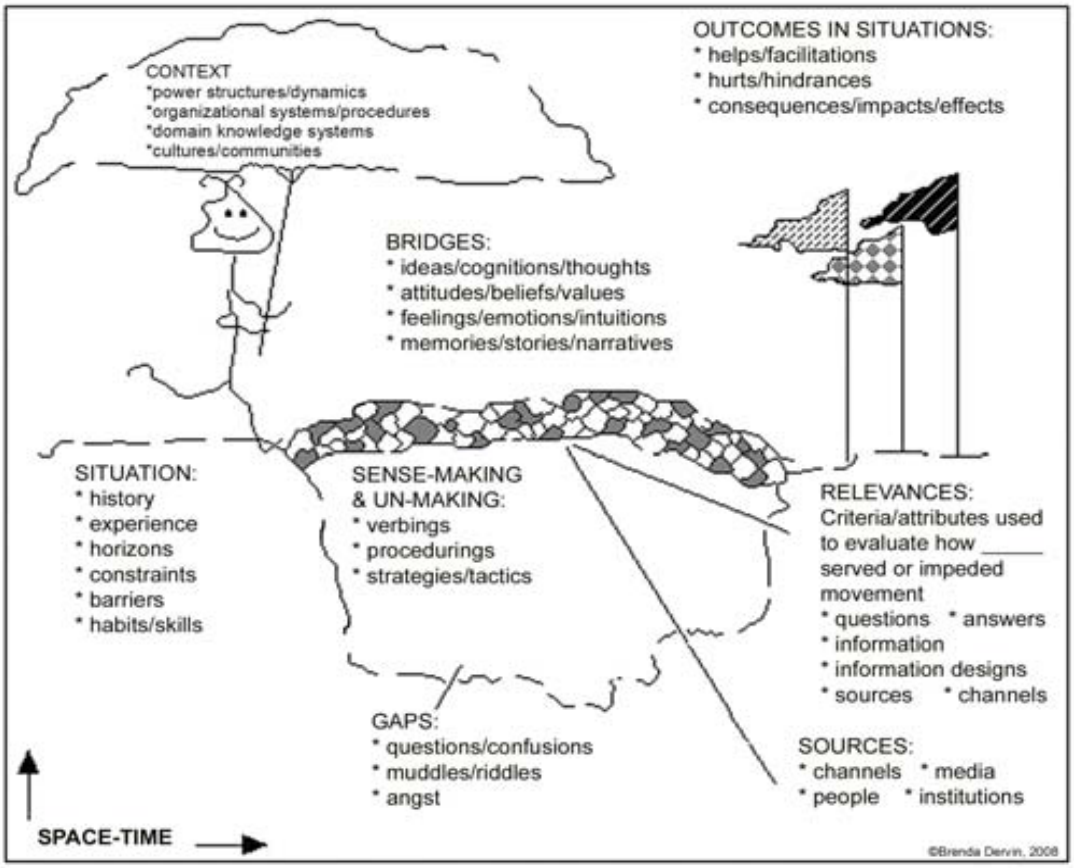


Appendix E. Example of Structure Strategy from *Reading research quarterly* (Meyer, Brandt, Bluth, 1980)

Figure 1.
Top-level structure and subordination of subtopics of the supertanker passage.



Appendix F. Sense-Making Metaphor from A SENSE-MAKING METHODOLOGY QUESTIONNING PRIMER by Brenda Dervin, © 2009 version 3



Appendix G. Example of coding sheet for assigned scholarly journal in psychology

Article Title:	The Experience of Anger and Sadness in Everyday Problems Impacts Age Differences in Emotion Regulatio					
Author:	Blanchard-Fields and Heckman Coats			Coded by Rachel Kirk		
page 1						
Organizational Structure of Article: (Circle One)				Chronological, Cause/Effect/ Compare/Contrast		
				Other		
Paragraph Analysis						
Paragraph Number	Number of Sentences per Paragraph	Topic Sentence (Yes/No)	Placement of Topic Sentence (Ex. 1st, Last, 2/4, 3/5)	Signal or Signal Phrase (List word, phrase, heading, etc.)	Corresponding Signal Function (Use Meyer & Poon Table)	Total Number of Signals Per Topic Sentence
1	8	Y	1st	Problem	Problem/Solution	3
1	8			Different	Comparison	
1	8			Different	Comparison	
2	3	Y	1st	More	Comparison	1
2	3	Y	1st	Less	Comparison	
3	6	Y	1st	Less	Comparison	2
3	6			Lower	Comparison	
4	2	Y	1st	Given	Causation	2
4	2			Differences	Comparison	
5	4	Y	1st	Better/ than	Comparison	1
6	3	Y	1st	Specifically	Description	3
6	3			Problem	Problem/Solution	
6	3			More than	Comparison	
7	4	Y	1st	Both	Comparison	3
7	4			Less	Comparison	

Appendix H. SMM Micro-Element Questionnaire

SMM INTERVIEW TYPE: MICRO-ELEMENT INTERVIEW
FOCUS: Experience with Assigned Journal Article

*Micro-Element SMM Interview *with level 1 and level 2 Sense-Making triangulation of each element

This spring, you took _____. I would like you to think back to an assignment in that class which you found the the material (journal readings) you had to read was difficult or problematic for you.

Even professors have difficulty reading and understanding journal articles. They are often very difficult for everybody. I am interested in hearing your perspective so that we can try to learn from a student's perspective. I am interested in how you as individual moved through time and space and faced this difficult assignment.

SECTION 1:
CRITICAL ENTRY: BRIEF DESCRIPTION

a. NAME: *Please start by describing the JOURNAL ARTICLE you have chosen -- what it's called.*

b. FIRST ENCOUNTER: *[NAME]?* What led to the first encounter -- what were the circumstances?

c. MOST MEMORABLE OR LAST ARTICLE: *Describe your most memorable encounter with [NAME] [or, if you can't select one most memorable, then use the most recent]. What happened? What was going on in your life at that time?*

SECTION 2: TRIANGULATION LEVEL 1:
Now we are going to go back to this journal article - you tell me more about what was going on for you. I will be taking notes here because we will need to return to your answers in the next section of the interview. When you were in this period of your life when… [REPEAT SITUATIONAL CONTEXT]

a. QUESTIONS: *What questions, muddles, confusions did you have at this point in time when [REPEAT DESCRIPTION SITUATION] was going on?*

b. IDEAS: *What ideas, conclusions, thoughts, did you have at this point in time? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

c. LEARNINGS: *What learnings, inspirations did you have that this point in time? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

d. FEELINGS: *What feelings or emotions did you experience at this point in time? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

e. SELF: *How did what was happening at this point in time relate to your sense of self, how you thought about who you are? [REMEMBER TO REPEAT DESCRIPTION AS NEEDED]*

f. PAST EXPERIENCE: *How did what was happening at this point in time relate to past experiences in your life? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

g .POWER: *Did you see what was happening at this point in time as relating in any way to power issues or power structures in any way -- your own power, power in your family, community, state, nation, or even globally? How? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

h. HELPS: *At this point in time was anything helpful to you? What and how? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

i. HURTS: *At this point in time was anything hurtful or hindering to you? What and how? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

j. MAGIC WAND: *If you could have waved a magic wand, what would have helped you [even more] in this situation at this point in time? How would it have helped? [REMEMBER TO REPEAT DESCRIPTION SITUATION AS NEEDED]*

SECTION 3:
TRIANGULATION LEVEL 2 OF ALL ELEMENTS ELICITED IN TRIANGULATION LEVEL 1

This section of the interview can proceed with tape recording alone (i.e. no more cards are needed). However, the interviewer must remember to state clearly what element is the focus of a particular level 2 triangulation. Also the interview must adapt language to fit the particular triangulation focus.

Now we are going to focus on each of the questions, or ideas, or feeling and so on you had in this situation. And, we are going to focus in particular on the [media focus] and how it was related to things for you. Going back to the first question [or idea, or....whichever element was first].....

FOR SMM Element #1 [QUESTION in participant's words]

a. L2 SELF: *Did your questions about (RESTATE QUESTION] relate in any way in your mind to how you thought about your sense of self? How?*

b. L2 POWER: *Did questions about (RESTATE QUESTION) relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*

c. L2 QUESTIONS: *Did questions about (RESTATE QUESTION) relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did questions about (RESTATE QUESTION) relate in any way to thoughts, conclusions or ideas you were having? How?*

e. L2 FEELINGS: *Did questions about (RESTATE QUESTION) relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did questions about (RESTATE QUESTION) help you in any way? How?*
g. L2 HINDERS: *Did questions about (RESTATE QUESTION) hinder or hurt you in any way? How?*

FOR SMM Element #2 [IDEAS in participant's own words]

a. L2 SELF: *Did [***IDEAS in participant's own words***] relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did [***IDEAS in participant's own words***] relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did* **IDEAS in participant's own words** *relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did* **IDEAS in participant's own words** *relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did* **IDEAS in participant's own words** *relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did* **IDEAS in participant's own words** *help you in any way? How?*
g. L2 HINDERS: *Did* **IDEAS in participant's own words** *hinder or hurt you in any way? How?*

FOR SMM Element #3 [LEARNINGS in participant's own words]

a. L2 SELF: *Did [SMM ELEMENT] relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did* **LEARNINGS in participant's own words]** *relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did* **LEARNINGS in participant's own words]** *relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did* **LEARNINGS in participant's own words]** *relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did* **LEARNINGS in participant's own words]** *relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did* **LEARNINGS in participant's own words]** *help you in any way? How?*
g. L2 HINDERS: *Did* **LEARNINGS in participant's own words** *hinder or hurt you in any way? How?*

FOR SMM Element #4 [FEELINGS in participant's own words]

a. L2 SELF: *Did* **FEELINGS in participant's own words** *relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did* **FEELINGS in participant's own words** *relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*

c. L2 QUESTIONS: *Did* **FEELINGS in participant's own words** *relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did* **FEELINGS in participant's own words** *relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did* **FEELINGS in participant's own words** *relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did* **FEELINGS in participant's own words** *help you in any way? How?*
g. L2 HINDERS: *Did* **FEELINGS in participant's own words** *hinder or hurt you in any way? How?*

FOR SMM Element #5 [SELF in participant's own words]

a. L2 SELF: *Did* **SELF in participant's own words** *relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did* **SELF in participant's own words** *relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did* **SELF in participant's own words** *relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did* **SELF in participant's own words** *relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did* **SELF in participant's own words** *relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did* **SELF in participant's own words** *help you in any way? How?*
g. L2 HINDERS: *Did* **SELF in participant's own words** *hinder or hurt you in any way? How?*

FOR SMM Element #6 [Past experience in participant's own words]

a. L2 SELF: *Did [***experience in participant's own words** *] relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did [***Past experience in participant's own words** *] relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did [***Past experience in participant's own words** *] relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did* **Past experience in participant's own words** *relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did* **Past experience in participant's own words** *relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did* **Past experience in participant's own words** *help you in any way? How?*
g. L2 HINDERS: *Did* **Past experience in participant's own words** *hinder or hurt you in any way? How?*

FOR SMM Element #7 [HELPs

a. L2 SELF: *Did [HELP] relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did [HELP] relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did [HELP] relate in any way to questions or muddles you were having? How?*

d. L2 THOUGHTS: *Did [HELP] relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did [HELP] relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did [HELP] help you in any way? How?*
g. L2 HINDERS: *Did [HELP] hinder or hurt you in any way? How?*

FOR SMM Element #8 [HURT

a. L2 SELF: *Did [HURT] relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did HURT] relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did [HURT] relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did [HURT] relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did [SMM ELEMENT] relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did [HURT] help you in any way? How?*
g. L2 HINDERS: *Did [HURT] hinder or hurt you in any way? How?*

FOR SMM Element #9 [MAGIC WAND

a. L2 SELF: *Did [MAGIC WAND ELEMENT] relate in any way in your mind to how you thought about your sense of self? How?*
b. L2 POWER: *Did [MAGIC WAND ELEMENT] relate in any way to how you were experience power issues or power structures in your family, community, or society? How?*
c. L2 QUESTIONS: *Did [MAGIC WAND ELEMENT] relate in any way to questions or muddles you were having? How?*
d. L2 THOUGHTS: *Did [MAGIC WAND ELEMENT] relate in any way to thoughts, conclusions or ideas you were having? How?*
e. L2 FEELINGS: *Did [MAGIC WAND ELEMENT] relate in any way to emotions and feelings you were having? How?*
f. L2 HELPS: *Did [MAGIC WAND] help you in any way? How?*
g. L2 HINDERS: *Did [MAGIC WAND ELEMENT] hinder or hurt you in any way? How?*

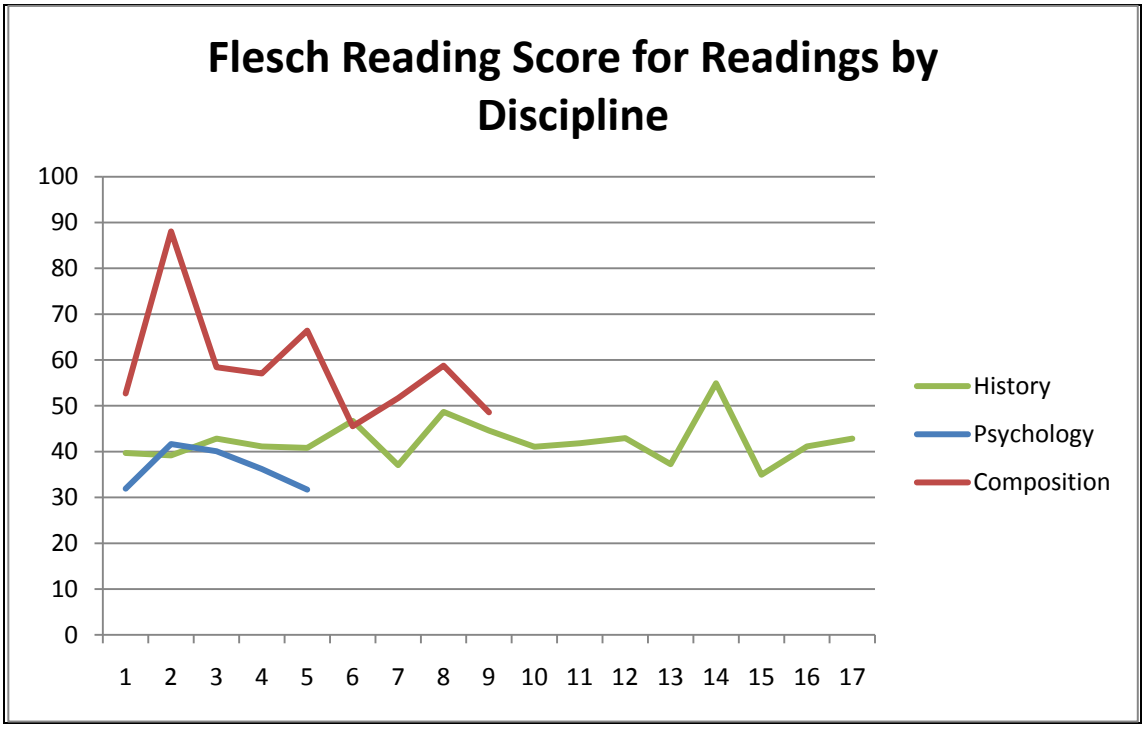
SECTION 5:
LOCATING THE INFORMANT IN TIME-SPACE

Finish the interview by asking these questions which locate the informant in time-space:

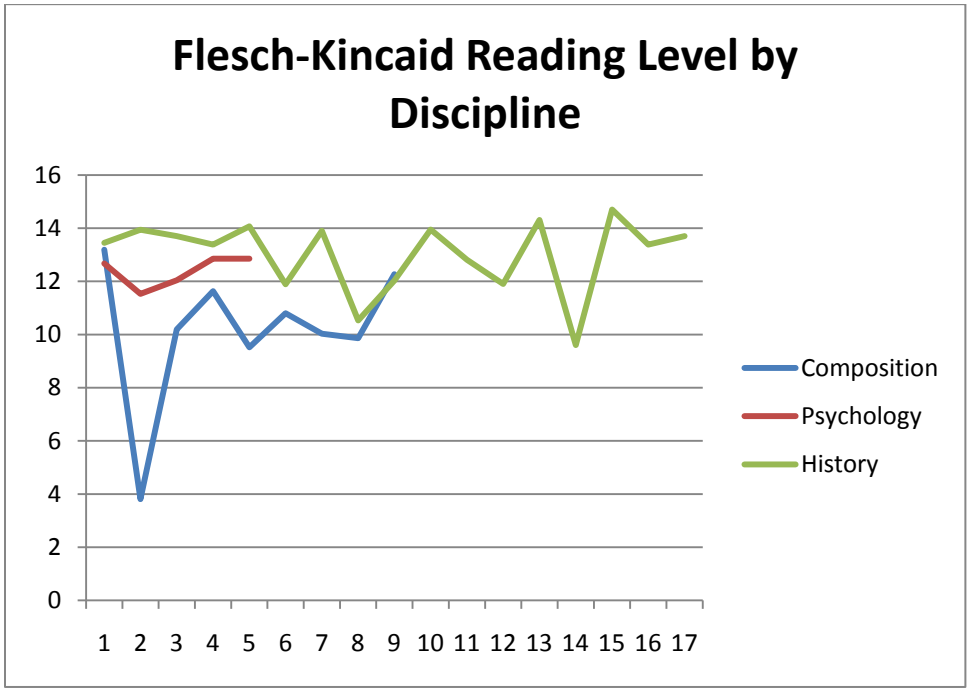
ENGLISH 1009, 1010 OR BOTH?
a. SELF OR OTHER: Was interviewee self or someone else?
b. IF OTHER: Relationship to self? (e.g. sister, mother, friend, spouse, etc.)
c. WHERE RESIDE: In what residential zip code interviewee resides?
d. YEARS EDUCATION: How many years education?
e. ETHNIC HERITAGE: How interviewee describes own ethnic heritage?
f. YEAR BORN: In what year was interviewee born?

g. GENDER: Male or Female
h. MARITAL STATUS: married, divorced, separated, single
i. HAVE CHILDREN: no, or yes (if yes, how many?)
j. KIND OF JOB: What kind of job does interviewee have? Working at what kind of place? (e.g. secretary for a small printing plant; sales manager for large publishing house)
k. KIND OF JOB(S) PARENTS HAD WHILE GROWING UP: What kind of jobs did he/she/they have? Working at what kind of places?
Critical Entry: Other stuff that could have helped
Microelement
Triangulation 2
Critical Entry: Course as a whole/ what could have helped you get more out of the course?
Microelement
Triangulation 2
Critical Entry: So we have talked about the course in general and how it could have been more helpful to you. In talking about the journal articles in particular, what would have made it more helpful?
Microelement
Triangulation 2

Appendix I. Reading ease scores by discipline



Appendix J. Flesch-Kincaid reading level by discipline



Vita

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Rachel received her Masters Degree in Information Sciences from the University of Tennessee in 2002. She received her Masters Degree in Accounting (MAC) from the University of North Carolina at Chapel Hill.

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