**Writing to Learn: WAC Applied to Analyze Writing in Academia**

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**Introduction**

The research conducted for this academic article was done with the intention of analyzing the conventions of language, structure, and reference use across two articles from selected fields in each of three selected disciplines. The three disciplines chosen were the humanities, natural sciences, and the social sciences. Samples from the fields of sociology, history, and environmental science were selected to be analyzed.

Each discipline has unique characteristics that define why these categories exist. The humanities tend to interpret the works of others and analyze the human condition. The social sciences examine society and the formative nature it has on politics, arts, and every day human organization. The natural sciences often employ the use of the scientific method, focusing on the intention of discovery and knowledge creation. Within these disciplines, the focuses of the study were sociology, environmental science, and history. The intention was to choose topics within these fields that could hopefully, clearly convey similarities and differences across language, structure, and reference, and how these three aspects of writing were handled in different fields. These were fascinating aspects to investigate, as they are, in many ways, interwoven with the purpose of the study. Language varied with author intention, from more topic specific in the sciences, to slightly more broadly used language in the humanities. Structure showed interesting similarities, as it was all roughly the same from piece to piece, with an IMRaD structure, however subtle nuances like graphs or keyword sections were included depending on the discipline. Analyzing reference created a useful way to find similarities within disciplines, as it revealed the extent to which research was done in each topic. The usage of these principals is discussed heavily in accordance with Writing Across the Curriculum (WAC).

**Literature Review**

Written language can be a distinctly powerful mode of learning that is under utilized in classrooms of today. Janet Emig, the grandmother of Writing Across the Curriculum (WAC), advocated for the use of writing as an active process of learning, She believed it proved more effective than the traditionally passive reading and listening heavy methods of instruction. Emig believes writing allows students the priceless ability to compose, much like a symphony, but in a highly “...available medium” (Emig J., 1977, 1). WAC is a widely accepted concept in colleges and universities today, largely because of its effectiveness in improving students’ literacy and growth. This is, of course, contingent upon WAC being conducted properly in a way that truly best suits the needs of students, and deviates from a grammar centralized approach to writing instruction and cohesion.
 Writing across the curriculum (WAC) is an important and effective way to increase literacy across various disciplines in colleges and universities, (McLeod, S. H., 1989; Anson, 2011). WAC is conditioning developing scholars to be equipped to tackle writing in its many forms. Students declining levels of literacy require a positive change to the methods in which writing is taught, according to McLeod. Too often in scholastic writing what students learn about their professor becomes more important than what they’ve been taught; students try to adhere to their professor’s unique individual set of beliefs.. In “Writing as a Mode of Learning,” Emig describes how when used as a learning tool, writing provides enactive, iconic and symbolic processes of reinforcement to improve students’ cognitive understanding of material. They are then comfortable writing across disciplines as more concepts are learned through writing, and thus can be recalled and expressed through the same or other active mediums (Emig 1977).

 WAC approaches prioritize problem solving, free expression, and acquisition of new knowledge, as described by Chris Anson in his analysis: “The Interdisciplinary Influence of Composition and WAC.” The thought is that this will translate in various courses, allowing students to apply this base knowledge to a multitude of assignments. McCarthy’s study of a college student showed that he perceived assignments from multiple courses as being completely different from one another, despite their similarities when approached with WAC. The test subject, Dave, received good marks in classes that he felt “served” him and his interests. He excelled in writing that catered to his strength in data analysis and science, but fell short in his poetry classes that involved more literary analysis. Dave is a living example of a student who was failed by a system full of instructors who rely on their own beliefs, and use listening and reading as the primary method of education. Learning is best accomplished at one's own pace as personal interest and engagement are essential to properly reinforcing material. Passive learning processes associated with lectures and readings don’t allow for the brain to commit content to cognitive understanding, (Emig, J. 1977). Perhaps if Dave had been conditioned to develop his writing strength in a way that would apply to all courses he wouldn’t be one-dimensional in the classroom.

 WAC is commonly misunderstood and mishandled in classroom settings, which Susan McLeod and Elaine Maimon describe in their essay “Clearing the Air: WAC Myths and Realities.” In the scholarly world, the consensus is that “WAC is highly successful if it’s conducted properly.” Some scholars disagree on what this means. Grammar cohesion is commonly over stressed in attempts at a WAC approach to college writing. The thought is that professors coming together to create a standard of communication will prepare students to write across multiple disciplines, however students will still be inclined to try to aim their content at the specific desires of their individual professors. As an alternative, professors should allow students to “...listen less, learn more” (McLeod, & Mairmon, 2000, 576), and access the profound reinforcement qualities of writing and speaking first explained by Janet Emig. Expressavist and formalist schools of thought can complement one another when not mutually exclusive. Formalism analyzes the concrete language and structure, important aspects of writing when secondary to understanding the implications of the writing, (McLeod, Maimon, 2000). WAC done properly, “...should move the center of the classroom from the teacher, to the student,” (McLeod S., & Mairmon, E. 2000, 578), placing the focus on articulating new knowledge, leaving standards and criteria developed by the instructor as the lesser of the two requirements.

 As Chris Anson points out, the increase in published journals about instructing writing, proves the need for WAC and reform to an ineffective system. Students enter higher education minimally equipped for navigating different disciplines. In WAC, students are trained beyond the personal essay, and given the capability to apply their knowledge in other mediums such as lab reports, book critiques, and research reports. Freedom of expression and knowledge expansion takes precedence over adhering to professors’ unique rigid requirements in the WAC system. If it weren’t for the capabilities writing has as a mode of learning, WAC would not have gained such popularity and achieved such success in recent decades.

**Methods**

When conducting this research, familiar topics were chosen to allow the hurdle of reading comprehension to be easily navigated, and allow for the focus to be entirely on language structure and reference. The actual content of the samples was not the focus during selection. The most crucial step in this process was the initial literature review, as it allowed for familiarization with the various qualities seen in academic writing. The skill of understanding the rhetorical situation was critical in being able to analyze further academic writings. Researching writings about WAC, its intentions, and its values allowed for an easier time finding the similarities in language, structure, and reference across multiple disciplines. It allowed for the realization that there are many skills and writing formalities that are consistent in all academic writing. Observations about language structure and reference were compiled and compared throughout the research before any writing began.

**Results and Analysis**

**Language**

Given the three fields of sample writing—history, sociology, and environmental science—there were a handful of noticeable similarities and differences across the three disciplines. In history, the use of jargon was not overwhelming, creating palatable language for a broad audience of experts and non-experts on the subject. The voice in one article by Dennis Shanks on infectious diseases in World War 1 blended science and history by creating context for fact, “Typhoid fever killed many young irrespective of the social status (two of Louis Pasteur’s five children died of typhoid).” This was consistent with an article by Maria Kett and Leo Bergen about socioeconomic inclusion following World War 1. Neither article was written to challenge the knowledge of an everyday reader, a trait that was mainly unique to the writings chosen from the humanities discipline. While all six sample pieces contributed to a gap in their field through identifying a new avenue in previous research, the articles in the natural and social sciences appeared more properly constructed for the scholars in their specific field.

 In the cases of writings from the science disciplines, they both shared rhetorical situation that prioritized the experts in their field. In the sociological field, covering the topic of wealth inequality, the first sample writing by Edward Wolff displayed the use of more advanced financial terms likely beyond the vocabulary and understanding of the average reader. The author had the intention of contributing to the scholarly conversation surrounding wealth inequality, consistently backed by other experts and statistics. The same perception is evident in another sociological piece written by Alexandra Killewald, Fabin Pfeffer, and Jared Schachner. The use of scientific jargon allowed for the authors to accurately and precisely illustrate their points. As demonstrated with this sample, advanced topic specific vocabulary appears to be common in the sciences with the purpose of being clear and specific with the nature of its claims. Upon entering the natural sciences, the expectation was that the chosen samples would also deliver a major amount of discipline-specific language. Both of the pieces selected certainly supported that expectation, even going as far as to include a ‘keywords’ section that would possibly allow a non-scholar an opportunity to educate themselves on the more complex nature of the topic. The natural science, specifically environmental science, samples were taken one from Michael St. Louis and Rune Slettebak. The principal topic of the two samples was issues surrounding climate change. The voices of both came across slightly more argumentative, in that they were attempting to solidify their gap-influenced research as a piece of what is a young and quickly growing field of study. The methods sections of the pieces selected from the natural sciences were certainly home to the most dense and complex language of all six sample articles chosen for this study.

 Each of the fields seemed to have their own rhetorical situation that was consistent between the articles selected. The pieces from the humanities and social sciences appeared slightly more reader-friendly, by including acknowledgment to readership outside of scholars in the field. When it came to the natural sciences, however, the research conducted and methods of explaining that research took no liberties in assuring the comprehension of readers that are not properly experienced on their specific ongoing discussion. The only pieces of the samples in the natural sciences that weren’t packed heavily with jargon were the abstracts and introductions, that gave some limited background information on previous research, and the direction the article was heading in its upcoming sections.

**Structure**

The structure of the pieces analyzed took on unique forms as the genre changed. Both of the articles in the field of history on various subjects surrounding World War I opted for the use of an abstract. In both cases, the abstract was vital to the remainder of the piece in that essential background and context was provided to smoothly segway into the area of study. IMRaD structure was used by Shanks, with a uniquely short methods section titled “Search Strategy and Selection Criteria.” Unlike the four other samples pulled from two different scientific fields, both writings in the historical field had short methods sections briefly explaining that extensive research was done. Given that Shank’s piece was not an example of history in an applied field or any sort of experimentation or surveying, the methods section did not require much detail or substance. The results and analysis section of Shank’s piece featured content specific headers, in this case being different diseases, each relating directly to the thesis, and reason for study stated in the introduction. It could be said that the crux of this work was in the results and analysis section, with less emphasis paid to a brief discussion or conclusion section. The Kent and Bergen sample similarly used the abstract to provide historical context imperative to the coherence of the study, as well as to educate the reader on prior research done on the subject. Kent and Bergen’s piece was shorter and lacked many headings throughout.

 Both sociological pieces included abstracts that much more clearly identified the gaps each piece would be evaluating. Essential background information was present in both, however the abstracts were structured primarily around explaining how they found the gap and what other research had accomplished on their subject. Wolff explicitly states that his study had not yet been done, “...As far as I am aware,” (Wolff, 1990). His piece started with a brief literature review, data sources and methods, and a discussion that served as a conclusion. The methods and results sections were combined into one by Wolff, as he explained both simultaneously. A theme seen in all the samples from fields in the sciences is usage of graphs, charts and diagrams. Wolff’s two-column layout was commonly interrupted by large graphs that demonstrated his survey findings. In the Killewald, Pfeffer, and Schachner’s piece, a keyword section was placed at the beginning of the article prior to the abstract. This may have been done in order to expand the rhetorical situation to include individuals outside of the experts contributing to the discussion. This second example of sociological writing had an incredibly detailed and deliberate abstract in terms of how it broke down what would be covered in the piece, utilizing almost a bulleted list, or step by step style of briefing. The gap is not as explicitly stated, however Killewald, Pfeffer and Schachner explain they’ve discovered promising new avenues for research on the subject. One could interpret this as an exclamation that new gaps were created by the research rather than analyzed within. The introduction served to explain how in a new area of study, the team had brought the topic of wealth generation from its infancy to adolescence, implying that there is much more growth to come in this field, but they have contributed significantly in the early stages of this conversation. After the introduction, the sample is broken into four parts indicated by headers and roman numerals. These headers clearly outline usage of an IMRaD structure, using the pieces of the acronym to title the sections. Graphs and diagrams were thoroughly utilized throughout the results and analysis section. Both pieces in the sociological field were presented in a single column format, with no indentations on paragraphs.

 In the natural sciences, St. Louis and Hess also elected to use a very bold and straightforward style of abstract that clearly described the framework of the article using a numbered list. Two graphs are utilized in the introduction to preliminarily provide visual support for the claims made in the opening statements of the article. The pair did not clearly include a methods section, however the specific data that was referenced in the article was given its own few paragraphs just after the introduction. The results and analysis section is the meat of this article, using headers that corresponded to the four initiatives covered in the abstract, as well as sub headers to divide the research under each of the four broader sections. The discussion section is rather short in this piece, however with a topic like climate change, the results and analysis section provides the evidence and arguments of the study, given its use of numerical data to support the four claims stated in the abstract. Slettebak’s writing *Climate Change Natural Disasters* and *Post Disaster Unrest in India* does not have an abstract. Interestingly the introduction spans many paragraphs and encompasses a section with the heading “Theory.” This section evaluates studies that have already been done on the subject and the current state the research is in. The remainder of the article adheres directly to IMRaD structure with a section headed “Results” and the following headed “Concluding Remarks.” The same single-column, non-indented style utilized by St. Louis and Hess was also used by Slettebak.

 **Reference**

The references across the three studied fields were represented one of two ways: a typical APA format, or Chicago style. In history, Shanks as well as Kent and Bergen both utilized Chicago format with footnotes throughout the piece that correspond to a numbered list of references on the final pages. In many cases, several footnotes were used at a time, separated by commas, suggesting numerous sources were used to create the statements in the pieces. Other historians were referenced using their last name and often a footnote. On the reference page, citations were listed by author in the order last name, middle initial, first name, followed by the name of the source and year of publication.

 In sociology, APA format was seen in both pieces. Wolff’s piece included a literature review which included numerous in-text citations, none of which are parenthetical however. Wolff often incorporated their name into the sentence making them the subject, “Michael Hurd and Gabriella Mundaca (1989) found that...'' This reference style is consistent throughout both sociological samples. Wolf’s references section included APA style citations with names in bold print. Killewald, Pfeffner and Schachner had a similar style of including other experts’ names into the subject of the sentence, which seems to be a common practice in this field and perhaps this discipline. Parenthetical citations in APA format were utilized a majority of the time by the trio. However, the works cited pages of both samples were in alphabetical APA format.

 Both natural science articles utilized Chicago format references with footnotes that correspond to numbered reference lists. St. Louis and Hess do not utilize any form of parenthetical citation, and reference other authors by last name if at all. While footnotes were used throughout, reference by name to other scholars was less common in that piece than others. Slettebak used the same form of Chicago citations and footnotes in his piece, and seldom included in text reference to other scholars. The in-text references in Slettebak’s piece were all databases from which he recovered data during his study.

**Discussion**

The consistencies in writing selected from within the same discipline display how understanding writing as it exists across the curriculum will create well-rounded university students equipped with a full arsenal of knowledge, so to speak. This study analyzes how the three main disciplines of writing regardless of the field, share similarities that can be taught and learned. Understanding how different disciplines communicate and express knowledge opens many doors for students who have a hard time applying their writing ability to all of their courses. From a language perspective, it’s apparent how rhetoric changes across disciplines to adhere to the intentions of the piece and research. For example, science disciplines typically need to use more specific language to contribute with clarity to their ongoing discussions. Structurally, academic writing very commonly follows the basic IMRaD structure, which was consistent through the vast majority of the samples chosen. This was an interesting discovery; while language and reference change throughout genre and discipline to accommodate different rhetorical situations, the structure remains roughly the same. There are some trends that seem to pertain more to certain disciplines such as graphs and charts in the sciences, however different usages of imagery are consistent throughout academic writing. How the immersive knowledge of WAC benefits students to navigate various courses and paths in college is evident and highly researched, however the question exists about standardized testing in high school and how WAC implementation even earlier could benefit students in their academic performances.

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