

RESEARCHING THE I-SEARCH PAPER: AN EXPLORATION OF ANALYTICAL THINKING AND STUDENT LEARNING

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The most widely practiced and most firmly entrenched component of the high school English curriculum is the senior research paper. Each year, in high schools throughout the country, vast amounts of time are spent on this assignment, which is often dreaded by students and teachers alike. Students dread the countless hours they must spend in the library, meticulously copying information onto notecards and following a rigid, step-by-step process, with constant admonitions against plagiarism. Teachers dread the task of having to read and evaluate the products of this ordeal—boring and formulaic papers written on the same worn-out topics: abortion, euthanasia, gun control, etc. Few would disagree that the high school research paper has become what Benson (1987, 54) calls “an albatross” around the neck of the composition curriculum.

One alternative to this dilemma is the I-search paper (Macrorie 1988). Unlike the typical research paper, which generally reports second-hand information that was originally learned by someone else, the I-search paper encourages an active exploration of a topic that is of genuine and personal interest to the student. While a typical research paper emphasizes form (e.g., outlines, footnotes,

bibliographies, etc.), an I-search paper emphasizes the search. Written in a first-person narrative style, it not only tells *what* the student learned, but it also tells *how* he or she learned it, documenting the steps along the way. In addition, it de-mystifies the research process by privileging a variety of resources besides texts, including personal experience, interviews with experts, surveys, and other techniques that are used by researchers outside of school. Thus, instead of serving primarily as a rite of passage and the last hurdle in the high school English curriculum—something for students and teachers to dread—the I-search paper can serve as a useful and productive endeavor which invites a variety of forms and processes to meet the writers' needs.

In spite of the excitement with which Macrorie's concept has been embraced by many high school English teachers and college writing instructors, it has received little attention from researchers. To date, most of the published work on the I-search concept has been how-to articles (or books) and personal testimonials (e.g., Arnold 1989; Jensen 1989; Joyce & Tallman 1997; Kearns 1994; Opfell 1986; Parnell 1982; Reigstad 1997; Tracy 1986; Zorfass 1998). We are sympathetic to these efforts and to the work of Macrorie in general. However, we feel that some of the potential shortcomings of the I-search concept have not yet been adequately explored in the literature. For instance, the biggest criticism of the I-search that we have encountered in conversations with pre-service and in-service teachers is that it lacks rigor and that by foregoing the traditional research paper in favor of the I-search, students will not be adequately prepared for the kinds of writing and thinking that they will be required to do in college and in the workplace. In essence, these individuals seem to feel that while the I-search may be a more pleasurable and less daunting task for most students in the short term, it will not serve them in the long run.

To explore this concern, we decided to take a close look at a collection of student I-search and research papers that were produced in the classroom of Maggie Russell, an experienced English teacher at Henry Ford High School¹ in Detroit, Michigan,

and one of the co-authors of this paper. Maggie was a member of our team of high school and university co-researchers. For several years, we met on a regular basis and explored issues involving contextualized writing assessment, portfolios, and accountability. Although studying the I-search paper was not an initial goal of our project, it gradually became part of our agenda after several of the teachers at Ford High School read Macrorie's book and began to adopt some of his ideas. As we read the students' writing portfolios across several years, we began to notice distinct shifts in the students' writing for this particular assignment—particularly in the complexity of analysis they undertook and the degree of evidence that they had learned something in the process of completing the assignment.

In this paper, we present an in-depth examination of some of the changes that occurred in the writing of Maggie's students, as the assignment gradually became less like the traditional research paper and more like Macrorie's I-search paper. Specifically, we focus on two areas: complexity of analysis and evidence of student learning. Our data source includes 64 student papers produced by three different Senior English classes taught by Maggie over a three-year span.² We begin with an overview of the assignment as Maggie conceptualized it each year, including our initial impressions of her students' papers. Next, we describe the method that we undertook in order to systematically challenge these impressions, and then we summarize our findings. We conclude by offering some implications of our work.

The Assignment

In the first year of our collaboration, before Maggie had learned about the I-search concept, students had little room to negotiate how they would complete the assignment. Although the topics were self-selected, they usually came from a lengthy list provided by the school librarian, which included "The Magna Carta," "The Puritan Ethic," and "Gargoyles in Ancient Cathedrals." These were topics that the librarian felt were well-covered by the library's holdings. Maggie also encouraged the

students to carefully follow a specific sequence of steps in writing their papers, with an emphasis on notecards, outlines, bibliographic format, and properly placed footnotes. This procedure was consistent with the way that Maggie remembered having been taught to do research papers when she was a student, and it was consistent with the way the assignment had traditionally been presented in the School District's 12th grade English curriculum.

With few exceptions, the resulting papers tended to be formulaic—usually written in a detached, third-person style and devoid of original analysis or evidence of learning. In addition, based upon her knowledge of her students' individual writing styles and processes, Maggie recognized that large portions of these papers were often copied directly from books. One student, for instance, included the following paragraph in his paper about the weather:

A thunderstorm's remarkable heat capacity is due largely to the unusual thermal properties of water. When a gallon of water evaporates on the surface, it cools the earth by carrying into the atmosphere two million calories of energy as latent heat. In a thunderstorm this vapor condenses into towering clouds, releasing the latent heat five or more miles up in the atmosphere. All rainstorms pump heat into the atmosphere in this fashion, but thunderstorms are particularly efficient because of their tremendous height.

This and other apparent instances of unattributed copying and paraphrasing were very common in the papers from the first year. For many students, it seemed that writing the research paper was a task so daunting and so imposing that copying was the only way they could bring it to completion.

During the second and third years of our collaboration, Maggie gradually reconceptualized the assignment and incorporated some of the ideas that she had found in Macrorie's book. Although still stressing the importance of following an outline, writing a thesis,

and using notecards—activities that she felt her students needed and expected—Maggie abandoned the library-approved topic list and began to expand the range of possible topics to include things that stirred the students’ interest or related to their experiences. “Let your topic choose you!” she told her students, which meant that they should find a topic that interested them enough to grab their attention and hold it over the course of the assignment.

In addition, instead of relying solely upon the library as she had done in the past, Maggie began to encourage her students to use multiple sources and methods to collect information. She expanded the range of possibilities to include TV and video references, surveys, and personal interviews with individuals who were knowledgeable about the topic at hand. For example, one student was interested in learning more about the job of television production engineer as a possible career option, so she decided to interview the sound-mixer for a local television station. Another student, who was pregnant, wanted to learn how pregnant teens had been treated in the past, and after interviewing two older women she contrasted their stories with her own. Still another student, whose uncle worked in a funeral home, wanted to know how a body was prepared for burial, so he spent an entire Saturday with his uncle at work and wrote about his experience.

When presented with the option, not all students chose to do I-search papers. Some still wanted to do more traditional research papers. This time, however, Maggie felt that more students became genuinely enthusiastic about the assignment, and she noticed much less direct copying from books. In many ways, the following excerpt from a paper about football, which was written by a student who wanted to become a sports writer, typifies the type of writing that was produced during the second and third years:

Three games, in my opinion were the epitome of the NFL. All three of these games are unique, each in a different way. Some people view a great game as a game with a lot of exciting plays with an even more exciting finish. This

means the game is going to have a close score such as 24-21, 27-24, etc. Well, two of the three games I'm going to talk about were close. The other game is the biggest blowout in NFL history. However, in my opinion, it was one of the greatest games ever played.

Although we do not necessarily consider this passage to be an exemplary piece of writing, it does possess a couple of strengths that were seldom seen in the first year's papers. First, it represents the student's own language; it was not copied from a book. And second, in choosing three games to discuss and briefly describing his choices, the student has shown evidence of analytical thinking upon which he elaborates in the remainder of the paper.

Another student used the movie *Home Alone* as a point of departure for a paper in which she probed the issue of parental neglect and abuse. She wrote:

The movie was excellent as well as funny, but we as Americans must recognize the other side of children being home alone. Ever since the movie *Home Alone* has hit the box office the cases of children as young as infants being found home unsupervised has sky rocketed. The questions of course is how long has this been going on under our noses, what can we do, and when is enough really enough? Well no one seems to have any answers right now, only more questions, and astonishment at how "our children are being left neglected, and unsupervised for hours, day, and sometimes weeks without food, water, or clean clothing" (*Time Magazine*).

Later in the paper, this student pursued her questions on a personal level, writing, "My curiosity of this has grown since there are many people I personally know who have left their children unattended." Through interviews with some of these people, she set out to understand why children are left home alone and to

consider the consequences of such situations. In this paper, as well as in many other papers written during the second and third years, the student chose a personally relevant topic, and there was rich and compelling evidence that she had learned something through the assignment.

Our Methods

As we continued to read the papers that Maggie's students had produced throughout the entire three-year span, we became increasingly interested in further exploring our initial impression that the papers from the second and third years tended to show more evidence of analytical thinking and student learning than those from the first year—not less, as those who have criticized Macrorie's approach would have led us to expect. In order to explore (and perhaps to challenge) this initial impression, we decided to take a close look at all 64 papers and systematically characterize them on the basis of their analytical complexity and their evidence of student learning.

We first sought to determine exactly what we meant by the terms “analytic writing” and “learning.” In formulating an operational definition of analytic writing, we worked inductively from a sample of students' papers and identified and discussed examples of what we perceived to be analytic writing. This process was extremely slow and meticulous, taking more than 50 hours to complete. After we were satisfied that we understood what analytic writing looked like—at least in the context of this particular assignment—we developed a descriptive rating scale that enabled us to characterize each paper's level of analytical complexity.

We used a similar approach to define “learning.” Again working inductively from a collection of students' papers, we identified and discussed specific examples of what we perceived to be student learning, until we were finally convinced that we understood what it looked like in these papers. This process, too, was very slow and meticulous.

How Do We Know Analytical Writing When We See It?

Defining analytical writing is not an easy proposition. While *Webster's Seventh New Collegiate Dictionary* (1971, 32) defines "analysis" simply enough as "the separation of a whole into its component parts," it is extremely difficult to find such a simple and straightforward definition of the term "analytical writing." Indeed, Fox (1991) highlights the challenge of finding even a mention of it in many writing textbooks, guides, and handbooks—let alone a definition. Recognizing this difficulty, we decided to create our own operational definition. For approximately six months, we met once a week and examined various student research and I-search papers from Maggie's and other teachers' classrooms, painstakingly identifying and discussing what we perceived to be examples of analytical writing. Throughout our meetings, we kept a running list of these examples and placed them into categories which we regularly modified and adjusted, until we were eventually satisfied that we understood what analytical writing looked like in the context of this particular assignment. Our final list contained 11 different kinds of analytical writing, which ranged from an explication of a process, to the proposition of a hypothesis, to an observation tested against personal experience (see Appendix A for a complete list and examples).

Developing a Rating Scale for Analytical Writing

After identifying what we meant by the term "analytical writing," we turned our attention to the creation of a descriptive rating scale that would enable us to classify all 64 papers on the basis of their analytical complexity. This process involved several steps. First, we divided the 64 papers equally among us and used the categories of analytical writing that we had created (see Appendix A) to assist us in composing brief descriptive vignettes that summarized the analysis within each paper. For example, Caroline Clark wrote in one of her vignettes:

The student's paper reports events surrounding the case of *Brown vs. Board of Ed*, ending with one paragraph on the implications of this case. Analytic episodes are primarily definitional. For example, "Separate but equal" played a big part in the case. 'separate [sic] but equal' meant that public facilities for blacks and whites. So long as it was equal. The school were to be 'separate but equal' so long as the quality of education was equal." As this passage shows, syntactical and rhetorical control are both problematic in this piece. "Information overload" may have been a factor in this paper—lots of new info, words, phrases to explain. Aside from the definitions, the student's final paragraph is an attempt to synthesize the information in order to describe the implications. She writes: "Perhaps the most important development of all growing out of the *Brown vs. Board of Education* case were thr [sic] 1964 Cical [sic] Rights Act and the U.S. Justice Department responible [sic] for the enforcement of school desegregation programs. The latter finally secured that the right of all black adults to vote in local and national elections, which has resulted in blacks' winning of political offices and gaining political awareness and strength."

The purpose of writing these vignettes was to ease the formidable burden of one of us having to read all 64 full papers while simultaneously trying to categorize them on the basis of their analytical complexity. We felt that it would be a much more manageable task to read and categorize the 64 vignettes first, and then, with a rough set of categories at hand, go back and use the full papers to fine-tune our initial classifications.

The task of categorizing the vignettes was performed by Jim Muchmore, who sorted them into several categories based on the apparent complexity of the analytical writing that they each described. For example, vignettes that Jim perceived as describing very simple or unsophisticated analysis were placed in one group, and those that he perceived as describing extremely

advanced or complicated analysis in another. Those that fell between these two extremes were placed in still other groups, until he had finally accounted for all gradations of analytical complexity. At the end of this process, he had sorted the vignettes into six distinctive levels.

Next, Jim read the full papers from which the vignettes had been derived, and he altered and adjusted the six levels. For example, in instances where a paper's analysis was actually more sophisticated than the vignette had suggested, he moved it to a higher level, or if less sophisticated, to a lower level. Throughout this process, one of the six levels lost all of its papers and was eliminated.

In the next step in the development of the analytic rating scale, Jim attempted to describe the papers that he had assigned to each level. What was it about their degree of analytical complexity that made these papers similar? Why were they grouped together? To answer these questions, Jim re-read the papers within each level and wrote brief descriptions of their common characteristics. For instance, in the lowest level papers, the analysis was generally sparse or non-existent, and when it did occur, it was typically limited to a few brief and simple statements (e.g., cause-and-effect: "She did not want me to use her real name, so I am going to call her Shanita."). In other papers in this group, the analysis was more extensive or even elaborate, but there was ample evidence to suggest that the student had appropriated it from other sources through direct and unattributed copying or paraphrasing. In instances such as these, students were not credited with analytical writing that clearly did not represent their own language or thinking.

In the second level papers, the analytical writing generally consisted of several brief episodes sporadically interspersed throughout the paper without building upon one another or serving a common purpose. Such episodes included one- or two-sentence statements, such as the following generalization: "Out of all the research I have done every book says the same things. All they do is ask questions that nobody knows. Just theories." There

may have been several instances of this kind of brief analytical episode throughout the paper, although they were largely incidental, unexplicated, and unsustained.

In the third level papers, the analysis occurred more frequently, but it still tended to be brief and episodic. In a paper about gambling, for example, episodes ranged from definitions (e.g., "Gambling means staking something of value in a game of chance. True games of chance require no skill. The outcome depends entirely on luck.") to comparisons (e.g., "Persons in favor of legalized gambling argue that people will always gamble, because gambling laws are not fully enforced and probably cannot be.... Some persons oppose legalized gambling because excessive gambling may bring financial ruin to gamblers and their families."). Frequent, isolated, and distinct, such episodes occasionally worked together to serve a common purpose, but this effect was generally tempered by their brevity and/or simplicity.

In the fourth level papers, the analysis again tended to occur in separate and distinct episodes, but this time some of them were more extended or complex. For instance, there were sometimes multiple levels of analysis within a single episode, such as in the following example taken from a paper on New Year's resolutions in which the author interviewed ten individuals and analyzed their responses. "Three out of ten teens said they made resolutions on dieting, but never kept them. Two out of these three said it was so hard to stop eating because of so much food around." In these papers, several episodes of analysis also sometimes worked together in order to elaborate a particular idea, but this elaboration seldom extended throughout the entire paper.

In the highest level papers, the analysis was generally extended and complex, and it typically supported a central idea or purpose. Although many of these papers were interspersed with individual and distinct episodes of analysis, at least some of the episodes worked together to produce a more global analytic framework. In addition, many of the individual episodes were extended and/or complex. For example, one student who wrote about African-American musicians argued that the hardships and adversity in

their lives inspired their music and was the ultimate source of their success. Describing and interpreting the lives of three exemplary African-American musicians, this writer provided a rich and thoughtful analysis in support of his position.

Applying Our Analytic Rating Scale to the Students' Papers

After developing a five-point rating scale that accounted for the full range of analytical writing in all 64 papers³ (see Appendix B), Jim sought our assistance in confirming or challenging the papers that he had included in each group. Acting as secondary readers, we each used Jim's scale to rate those papers for which we had originally written our vignettes, and we then compared our ratings to Jim's. It is important to note that our goal here was not to strive for a high degree of inter-rater reliability through objective and independent readings of each paper. Because our definition of analysis, our rating scale, and indeed our whole conceptualization of this study had emerged from our prior readings of these particular papers, we carried no illusion that we could approach them objectively and apply the rating scale as if we had never seen them before—nor did we want to. Instead, drawing upon the philosophical tradition of hermeneutics (see e.g., Bleicher 1980; Ormiston and Schrift 1990; Wilson 1989), as well as our own past work on dialogical assessment (see e.g., Moss 1994; Moss 1996; Moss et al. 1992; Moss et al. 1995), we sought to attain a consensus in our ratings through careful readings of each paper by two individuals, with any differences resolved through dialogue. In this way, we characterized the analytical complexity of all 64 papers, taking full advantage of the varying perspectives offered by multiple readers.

What is Student Learning?

We defined student learning using a process similar to that which we used to define analytical writing. Again working inductively from the students' papers, we began by looking for examples of what we perceived to be evidence that the students

had learned something. This evidence, we discovered, was manifested in three ways. First, there were questions asked and answered by the student. For example, one student wrote:

I knew I wanted to know about the Senior Prom, but what? The expenses? The excitement? The plans? So I just asked, What's the Big Deal about the Senior Prom? I recieved [sic] alot of answers. Some I knew, some I didn't know. Some weren't even expected.

Second, there were expressions of surprise or amazement. For example, this same student later wrote:

Something that surprised me was that alot of teens said that they were going home after [the Prom]. I was also surprised by the reply of Seniors saying that they were going with dates. I believe this is a result of with AIDS around, everyone wants to be careful [sic].

And third, there were explicit statements of learning, such as the following:

I also learned that there is more to the Senior Prom than just the party and the laughter. There is alot of hard work and alot of hectic, mind-blowing time put into making this one special evening seem like a lifetime.

We recognized that students' learning could also be inferred through their revisions from draft to draft and through their journal entries and other supporting writing. However, because we did not possess this full range of writing for all 64 papers, we ultimately decided to limit our search for evidence of students' learning to each paper's final version.

In our search for evidence of student learning, using the aforementioned criteria, we discovered that the learning could be grouped into three different categories. First, there was *content*

learning, in which the student had gleaned some kind of knowledge or insight concerning a particular topic. For example, a student whose topic was engineering wrote, “Engineers have been around for a long, long time. I found out that engineers date back to ancient time.”

Next, there was *process* learning, in which the student had gained some kind of knowledge or insight concerning the research and/or writing processes. For example, one student wrote:

To be honest this paper wasn't an easy task at first. I had a difficult time choosing a topic. My original topic was about Jazz & Gospel, then Jazz & Rap. Finally I decided on Child Abuse. I've found that child abuse is very interesting when you take the time to find out what it is for yourself.

Finally, there was *personal* learning, in which the student had learned something about him- or herself. For example, a student who was exploring the field of computers as a potential career option wrote, “By writing, reading, and finding information about computers it really helped me stabilize my future plans. It helped me realize I want to specialize in computer technology, after attending college and learning all the skills needed.”

Our Findings

After systematically characterizing the analytical complexity of each of the 64 papers and searching for evidence of student learning, we divided all of the papers by the year in which they were written, and we began to look for trends. As can be seen in Table 1, we found that 64% of the papers that were written during the first year had low ratings (1 or 2) in their analytic complexity, compared to 56% for the second year, and 35% for the third year. In contrast, only 18% of the papers from the first year had high ratings (4 or 5), while 37% and 35% shared these ratings during the second and third years, respectively. Thus, the percentages of papers with low levels became smaller as Maggie

adopted elements of Macrorie's I-Search concept, while the percentages of papers with high levels grew.

Table 1
Numbers and Percentages of Papers for 5 Levels of Analytical Writing

Level of Analysis	1st Year	2nd Year	3rd Year	row totals
1	8 36.4%	4 25.0%	2 7.7%	14 21.9%
2	6 27.3%	5 31.3%	7 26.9%	18 28.1%
3	4 18.2%	1 6.3%	8 30.8%	13 20.3%
4	2 9.1%	5 31.3%	3 11.5%	10 15.6%
5	2 9.1%	1 6.3%	6 23.1%	9 14.1%
	22	16	26	64

We discovered a similar trend in student learning, but the increase was much more pronounced. As the assignment became more like Macrorie's notion of the I-search, the percentage of papers that contained evidence of student learning grew from 23% in the first year, to 74 % in the second and third years, combined. In addition, 80% of the evidence of student learning that we located in the first year was related to content, 20% was related to the research and writing processes, and none was related to personal insights by the students. In the second and third year papers, these percentages were somewhat higher for content learning (92% and 83%, respectively) and for process learning (23% and 22%, respectively), and they were substantially higher

for personal learning. We found that 23% of the second year papers and 44% of the third year papers contained evidence of personal learning, compared to 0% for the first year papers (see Table 2).

Table 2
Numbers and Percentages of Papers Showing Evidence of Student Learning

	Papers with evidence of learning	Categories of Learning		
		Content Learning	Process Learning	Personal Learning
1st Year (papers=22)	5 22.7%	4 80.0%	1 20.0%	0 0.0%
2nd Year (papers=16)	13 81.3%	12 92.3%	3 23.1%	3 23.1%
3rd Year (papers=26)	18 69.2%	15 83.3%	4 22.2%	8 44.4%
Overall (papers=64)	36 56.3%	31 86.1%	8 22.2%	11 30.6%

In summary, contrary to the commonly held opinion that we have frequently encountered among preservice and inservice teachers—which is that students who forego the traditional research paper in favor of an I-search approach will not be adequately prepared for the kinds of writing and thinking that they will be required to do later in their lives—we found that the

papers produced by Maggie's students over a three-year span became *more* analytical and provided *greater* evidence of student learning after the assignment changed and became more like Macrorie's notion of the I-search. We posit at least two possible reasons for this finding.

First, as we stated at the outset, many of the papers from the first year were heavily copied or paraphrased from secondary sources, and they contained little or no evidence of original analytical thinking. Because our rating scale did not credit students for presenting analysis that was not their own, these kinds of papers tended to receive low ratings. In contrast, since more of the papers from the second and third years contained the students' own language and thinking, these papers tended to receive higher ratings. Thus, it would be fair to say that the writing produced during the second and third years tended to be more analytical due, at least in part, to the fact that it was less likely to have been copied or paraphrased from secondary sources. In addition, because more students during the second and third years seemed to choose topics in which they were genuinely interested, we feel that they were often more motivated to put additional time and effort into their work, which led to higher levels of analytical thinking. Clearly, if students mindlessly copy passages from a book with no other goal than to complete the assignment, there is little opportunity for them to think or write analytically.

Second, the general rhetorical structure of many of the second and third year papers tended to provide much greater insight into the students' learning. Often written in a first-person narrative style instead of the more traditional third-person expository style, these papers were more likely to reveal not only what the students had learned about their topic and about the writing and researching processes, but also what they had learned about themselves. For Maggie, this aspect of the I-search paper was especially useful in helping her to assess what students had gotten out of the assignment. Whereas she used to wonder whether the students had learned anything at all, she now had a clear sense that

they had indeed learned something. Even before we began our systematic analysis of her students' writing, she had remarked:

I think the students have learned a lot more doing the I-search paper than they did doing the old traditional research paper. They probably learned all the mechanics in the research paper—at least the ones who were interested in it. But with the I-search paper, they learned other things as well. Because the majority of them chose a topic in which they were really interested, or they found a question that they really wanted to have answered, I think they learned a lot more about themselves and their writing.

It is important to note that we are not necessarily claiming that the students learned more when they did I-search papers than when they did more traditional research papers. Instead, we are observing that the I-search papers, by virtue of their rhetorical structure, provided a much richer source of evidence of student learning.

Implications

Although we recognize that information garnered from a case study of one teacher cannot produce findings that can be generalized to other teachers in a statistical sense, we agree with Donmoyer's (1990) assertion that reading single cases can help individuals to learn vicariously and thereby enhance their understanding of other situations. In this sense, we feel that our work holds important implications for teachers as well as for researchers. First, the story of Maggie and her gradual reconceptualization of the traditional research paper has the potential to inform and inspire teachers who may be dissatisfied with their current teaching practices. Rather than viewing Maggie's transformation as a model to emulate, however, we would encourage these teachers to use her story as a starting point in critically examining aspects of their own teaching situations. Just as Maggie read Macrorie's book and gradually adopted some

of his ideas into her existing teaching practices, we would encourage other teachers to use relevant aspects of Maggie's experiences in redefining the research paper in their own classrooms. In addition, for those teachers who may doubt the efficacy of using an I-search approach, our study provides empirical evidence that this kind of writing can be more analytical and that it can provide greater evidence of student learning.

For researchers, our study can help to build theories and formulate hypotheses that can be explored in future studies. For example, in challenging the notion that I-search papers are somehow less effective than traditional research papers in preparing students for the kinds of writing and thinking that they will be required to do in the future, our study suggests an alternative theory which holds that I-search papers can actually be more effective at this task because they foster higher level analytical thinking. Perhaps this theory could be further explored in a future study.

Our work also adds to the sparse literature that currently exists on analytical writing. By describing the systematic way in which we defined and categorized this feature, we provide a model of a process that other researchers may use in future studies of analytical writing. It is our hope that other teachers and researchers will expand upon our categories of analytical writing and perhaps construct a more comprehensive analytical rating scale by using our process with additional collections of student writing. Such a rating scale might then be used to assess the analytical complexity of student writing beyond the 64 papers that were produced in Maggie's classroom.

Appendix A

Categories of Analytical Writing

1) Overarching Structural Framework Around Which the Paper is Organized. For example, a student who wrote about the senior prom organized her paper into several categories, which included expenses, attire, and what kind of party to have afterwards.

2) Definition. For example, a student who was telling about his father's occupation defined "contracting" as follows: "Contracting deals with air-conditioning and heating, and most importantly with the installing and servicing."

3) Explication of a Process Through Which Something Occurs. For example, a student whose father had diabetes included a paragraph in which she described the ritual that he undertook each day as he prepared his insulin shot.

4) Generalization Followed by an Illustrative Example. For example, a student whose topic was slavery wrote, "The domestic servant seemed to fit the Sambo personality. He was continually loyal to the master. For instance, he held the master's life in such high regard that he would risk his own livelihood for the sake of the master's...."

5) Observation Tested Against Personal Experience. For example, a student whose topic was teenage depression wrote, "Many students I interviewed said they get depressed mainly because of male/female relationships. I myself find that true because you find yourself always wondering and trying to adapt yourself to your counterpart."

6) Proposition of a Cause or Hypothesis. For example, a student whose topic was the Civil Rights Movement wrote, "Because of the recent changes in policies and laws, young people of our nation will not be chained so securely to the traditions which lingered so long after the period of slavery."

7) Comparison or Parallelism. For example, a student whose topic was the career of newspaper reporting compared the life of a

reporter to her own desires when she wrote, “I finally did some research on my career choice of reporting and found that I didn’t want to do that. I want a job that’s not so time consuming. I want a career that allows me to have a family and a social life.”

8) Reasoning from Numerical Data. For example, a student whose topic was crib death wrote, “In the USA alone, the disease kills between 10,000 and 20,000 infants every year. Assuming that the crib death rates are about the same in all countries, and such is indicated by all studies to date, the number of crib deaths per year in all the world comes to approximately 200,000 & 400,000.”

9) Explanation. For example, the student whose father had diabetes offered an explanation for why her father’s life was stressful.

10) Summary. For example, a student whose topic was the history of Jazz used the last paragraph of his paper to pull together and summarize the main points that he had developed earlier.

11) Synthesis. For example, the student who wrote about Jazz included an outline in which he synthesized information from a variety of sources to produce new information that was different from what his sources alone would have led him to say.

Appendix B

Rating Scale for Analytical Writing

(5)

Analysis is extended and complex and generally supports a central idea or purpose. Although the paper may be interspersed with individual and distinct episodes of analysis, at least some of the episodes work together to produce a more global analytic framework. In addition, many of the individual episodes may be extended and/or complex. For example, one student who wrote about Black musicians argued that the hardships and adversity in their lives inspired their music and were the ultimate source of their success. Describing and interpreting the lives of three

exemplary Black musicians, the writer provided a rich and thoughtful analysis in support of this position.

(4)

Analysis tends to occur in separate and distinct episodes, some of which may be quite extended or complex. There may even be multiple levels of analysis within a single episode, such as in the following example taken from a paper on New Year's resolutions in which the author interviewed ten individuals and analyzed their responses. "Three out of ten teens said they made resolutions on dieting, but never kept them. Two out of these three said it was so hard to stop eating because of so much food around." Several episodes of analysis may also work together in order to elaborate a particular idea, but such elaboration seldom extends throughout the entire paper.

(3)

Analysis occurs frequently throughout the paper, but it tends to be brief and episodic. In a paper about gambling, for example, episodes range from definitions (e.g., "Gambling means staking something of value in a game of chance. True games of chance require no skill. The outcome depends entirely on luck."), to comparisons (e.g., "Persons in favor of legalized gambling argue that people will always gamble, because gambling laws are not fully enforced and probably cannot be.... Some persons oppose legalized gambling because excessive gambling may bring financial ruin to gamblers and their families."). Frequent, isolated and distinct, such episodes may occasionally work together to inform a common purpose, but this effect is generally tempered by their brevity and/or simplicity.

(2)

Analysis consists of several brief episodes that are sporadically interspersed throughout the paper without informing a common purpose. Such episodes might include one- or two-sentence statements, such as the following generalization: "Out of all the research I have done every book says the same things. All they do is ask questions that nobody knows. Just theories." Although there may be several instances of this kind of brief analytical

episode throughout the paper, they are largely incidental, unexplicated, and unsustained.

(1)

Analysis is sparse or non-existent, and when it does occur, it is typically limited to a few brief and simple statements (e.g., cause-and-effect: "She did not want me to use her real name, so I am going to call her Shanita."). In other instances, the analysis may be extensive and elaborate, but there is ample evidence to suggest that it has been appropriated from other sources through direct and unattributed copying. Such evidence might include inconsistent word choice or sentence structure, written comments from the teacher indicating her suspicion that the paper was copied, the identification and location of the specific source(s) from the which the paper was copied, etc.

NOTES

¹ Henry Ford is a comprehensive high school with an enrollment of approximately 2400 students, 99.5% percent of whom are African-American.

² Maggie and her colleagues each selected one class for us to focus on at the beginning of each school year. These selections were made largely on the basis of scheduling considerations so that no two teachers would be teaching their "project class" at the same time, thus enabling us to observe all of the "project classes" during a single visit to the school.

³ Our rating scale was not designed to be generally applicable to high school students' analytical writing. These levels of analysis were derived inductively from 64 student papers that were written over a three-year span in Maggie's classroom. We hope the process we undertook serves as an example for readers to use in developing scales that are applicable to their own teaching contexts.

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