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Do Scribes Learn?: Copying and Information Use

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This study provides a description of two situations in which papers written by senior high school students have been examined for signs of plagiarism. The reader of this report should keep in mind that these two cases were not subject to experimental methods which would have required attempts to control for major factors which might affect student performance and behavior. The analysis presented here, therefore, should not be accepted as conclusive. Rather, it should be considered as observation which justifies further research under more controlled conditions. The insights from the authors provide a foundation for further investigations concerning the intervention role of the teacher of information skills and composition. The discussion which follows is an important step in helping us consider new methods that may move students further along in their responsibilities as learners who use information constructively and creatively. — *Daniel Callison*

Two qualitative field studies observed the behavior of eleventh grade students as they used reference sources to write research papers. In 1993, a naturalistic case study took place in a high school in Alberta, Canada. In 1996, a second study in Texas examined in depth particular findings of the Alberta study. The first phase of analysis in both cases compared students' final papers with the original sources of information. The first group received little direction in proper citation and the avoidance of plagiarism. The second group was very conscious of the need to cite properly and to avoid plagiarism due to emphasis by the teacher. Although both groups demonstrated a fairly high rate of direct copying from the source, copying in the second group differed from that of the first group. Students in the first group tended to copy directly from original sources. Students in the second group were more likely to parenthetically reference information, but omit to enclose the quoted passages in quotation marks. Few of the papers demonstrated the connection between paraphrasing and citing ideas. Citation errors in such passages suggested that students were simply scribing—trying to fulfill a requirement—and not considering the topic or synthesizing the information. Teacher interventions regarding the format and rules of correct citations seemed to limit the amount of blatant copying but did not help students learn from the sources or construct their own understanding of their research topics.

Picture a class of eleventh graders gathering information in the library for a research paper assignment. Some students stand at the reference shelves, reading titles on spines. They pull a book off the shelf and open it, perhaps to the front or the back or to a specific page. They either restore the book to the shelf or take it to their table. A few students linger around the microfiche readers, waiting their turn. Some of them search through the drawers of microfiche. At the

information, they should be constructing their own understanding of the subject matter. The ideas they read and their own prior knowledge should meet in a "construction zone—a magic place where minds meet, where things are not the same to all who see them, where meanings are fluid, and where one person's construal may preempt another's" (White 1989, ix). Their perceptual and conceptual changes will vary from one person to another, but the project should provide opportunity for change and growth to take place. As those changes occur, student writers should gain experience in solving problems based on the personal goals they set and revise as they move through the process.

Researchers like Flower and Hayes (1980) have shown us that better writers "develop flexible goals to guide their writing processes . . . , rich enough to work from and argue about, but cheap enough to throw away" (p. 43). Poorer writers tend to spend little time planning, rushing to commit words to the page, and to hold tight to their initial formulations of a problem. (Hull 1989, 107)

Through practice in writing research papers, students should move along the continuum from novice to expert writers.

But do students really gain these understandings as they work on research projects? How do interventions by adults facilitate this l earning? Are there interventions that inhibit learning or that teach something other than what they are designed to teach?

Design and Implementation

Two naturalistic research studies observed forty-five eleventh grade students carrying out research paper assignments. One project, described in the introduction, took place in an English class in Texas in 1996. That project grew out of an earlier study in 1993 in which students in Alberta, Canada, wrote English and Social Studies research papers (McGregor 1994). The original study generated a model of student thinking during research paper writing. One element of the model showed an orientation toward process or product. An apparent connection between strong product orientation and plagiarism was observed, but further research was needed to investigate this link. The Texas study was designed to explore student information use in general and also to probe the possibilities of the link between product orientation and plagiarism.

Students

The samples were purposefully selected to observe eleventh grade students writing research papers as part of their normal educational experience. No effort was made to control either situation in any way, but the research sites were chosen to provide as much similarity as possible. Both schools have a good reputation academically and are located in small, middleclass communities, just outside major urban areas. The student participants, though, demonstrated a range of ability levels. The Canadian students were International Baccalaureate (IB) students and the American students comprised a more heterogeneous group. The Alberta sample was selected to provide the richest data possible regarding student thinking, with the assumption that IB students describe their thinking most easily. The heterogeneous Texas sample was selected to observe a wider range of behavior.

Following information gathering, the Texas students spent class time writing their papers. Teacher intervention at this point was extensive. She demonstrated how to write a thesis statement and an outline, providing examples and instructing students to use her examples as format models by plugging the appropriate details into the sentence or phrase. She continually reminded them to cite sources appropriately. She provided editing instructions and excercises. Emphasis was primarily on the format of each of these elements. She helped individuals with these tasks (sometimes actually completing the task for the student), approved their thesis statements and outlines, and answered questions constantly.

In both studies, teachers and librarians assumed that students knew how to use incn /T1_1 1 Tf 0.004 Tc priate

Table 1 shows that blatant copying (D and E) was somewhat less in the Texas study, probably due to the many reminders to avoid plagiarism and the emphasis placed on proper citation. Only 10 percent of the papers in the Texas study were type 4 and 5 (30 percent or more of the paper contained information copied almost word-for-word). In the Alberta study, 31 percent of the papers were type 4 and 5. It would appear that the teacher emphasis on avoiding plagiarism was effective with many students, since the amount of blatant copying was considerably less.

Analysis of Errors

Traditionally, cognitive developmentalists have delved into thought processes by observing errors in written and spoken language. Through observing these behavioral errors, a means of identifying patterns in the development of cognition emerges (Piaget 1964; Ferreiro and Teberosky 1974). Based on this tradition, errors in the students' attempts to cite and paraphrase were analyzed in order to identify possible patterns in their thinking.

Citation Errors

An interesting phenomenon emerged in the 1996 research papers that did not exist in the 1993 papers. A large number of papers contained D and E categories of copying followed by parenthetical references, seemingly making them legitimate citations. Analysis showed that these portions of the paper were incorrectly cited in a number of different ways. Many included exact copies of the original text, cited, but without quotation marks. Others were very similar to the original, again cited and without quotation marks. To be correctly cited, these portions should either have been exactly the same as the source and enclosed in quotation marks, or paraphrased so that they were significantly different, including sentence patterning, with the source of the idea cited. Instead, they were a hybrid of the two—

Although some of these errors were likely typographical (hilly to chilly, guilt to quilt), others seem to indicate that meaning was not important. At the moment the word was changed, whether in transcribing from source to note card or from note card to paper, the student likely was not trying to incorporate the idea into his or her existing mental model of the topic. When the replacement word was a different part of speech or unrelated in meaning, there could be little making sense going on, either during notetaking or writing.

Almost half the Texas students put little effort into really making sense of their topic. They showed a lot of product-orientation, but in a more defined and directed sense than students in the first study. Their attention to citation of ideas, whether accurate or inaccurate, indicated that they were more aware of the format of that product element than the first group, probably because the interventions from the teacher emphasized this point so heavily. This was part of the teacher's goal—to make them aware of the need to cite words and ideas of others. She was successful in making them aware of that. Less than 5 percent of the aggregate total of their papers was copied without citation, compared with 22 percent in the Alberta study. She was less successful in getting them to cite accurately.

Seeking meaning leads to making sense, which in turn leads to constructing one's own understanding. Resnick states that "to learn about something, to come to understand it, is, in current cognitive science parlance, to construct a mental model" (1989, 4). Vosniadou and Brewer describe levels of change in developing mental models:

> Accretion refers to change that occurs through the gradual accumulation of factual information within existing schemata. Tuning describes the evolutionary changes in the categories used for interpreting information. . . . Restructuring refers to changes in knowledge that involve the creation of new structures. (1987, 52)

An immature, inaccurate mental model can become more accurate and more sophisticated as understanding is constructed.

A prime concern coming out of the Texas study was how much students actually changed their mental models of either the topic they were studying or the procedure for using information from outside sources—how much they constructed their own understanding of their topic or the procedure. They spent a great deal of time and effort simply scribing—copying or nearly copying words and sentences from an original source to a note card and then from a note card to a paper. Some of this scribing led to legitimate copying, in the form of quoting appropriately from the source. Most of it led to inappropriate copying or plagiarism. The activity of scribing seems unlikely to lead to accretion, tuning, or restructuring. Perhaps minimal accretion occurs through copying words from one place to another, but the permanence of any factual information accumulated that way is suspect. Did new understanding really develop? Did the mental model really change? Since the students were not available for interviewing after some time had lapsed, it is impossible to know to what degree they actually constructed a personal understanding of their topic. If the intent of the assignment was strictly procedural—to teach students how to cite—even the mental model of that procedure was not well constructed, as indicated by the number and kinds of citational errors.

Students copied extensively, sometimes legitimately as in quoting from the original source and attempting to cite appropriately (according to an accepted style, as defined by the teacher), and

sometimes unacceptably, by plagiarizing with no attempt to cite. Table 2 indicates the number of students in the Texas study that copied in those two ways combined. The kind of copying in this table is different from the kind of copying referred to in Table 1, since Table 2 combines the appropriate quoting and citing with the inappropriate plagiarism. Any attempt to cite, whether it followed the prescribed style or not, was considered an attempt to cite, while lack of any indication of a source for the copied information was considered plagiarized. Since both required copying word for word, or very close to it, from the original source, both were seen as involving

appropriate citation does not eliminate the behavior, but modifies it to some extent. Whether the modification is beneficial to student learning is debatable. If this was the first time that a teacher had intervened in this way, perhaps students made a beginning in a long, slow process of developing an awareness of appropriate ways to use other writers' ideas. Further qualitative analysis of these data and of other data gathered through interviews and research logs in the Texas study may yield other observations.

In neither the Alberta nor the Texas study were librarians greatly involved in the library research projects. For the benefit of all information users, perhaps librarians could initiate improved communication and collaboration designed to enhance learning. Modification of long-standing educational practices could lead to students' constructing a better model of both subject matter and information use. As suggested by Pitts in a 1994 study of high school learners/information users, "careful, but not intrusive, monitoring of individual student progress throughout the unit will be necessary if the teachers involved are to provide appropriate expert support for the new learning and to identify problems and provide mediation" (Pitts 1994, 384).

New questions launch further exploration. How do teachers intervene effectively to increase learning of both topic and procedure beyond simple compliance with a requirement? How can librarians make a difference? If librarians and teachers work more closely together to mediate in the library research experience, can student learning improve? Could increased or different collaboration between teachers and librarians have an impact on information use? Do different assignment demands lead to different behaviors? What motivates students to copy? Further research related to these questions can expand our understanding of the construction of meaning and the development of mental models of information use.

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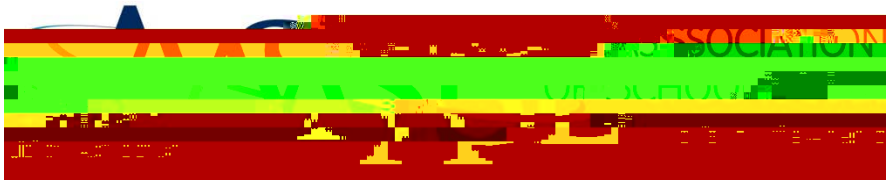
Category E

As it appeared in the original source:

> In the church a number of staging conventions evolved that were to remain in use throughout the Middle Ages. The acting space was divided into two parts: the *mansions* and the *platea*. The mansions (also called stations, seats, or *sedes*) were simple scenic devices for indicating the location of incidents. For example, a throne might be used to sug4(e)4(:)]TJ 145l the



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