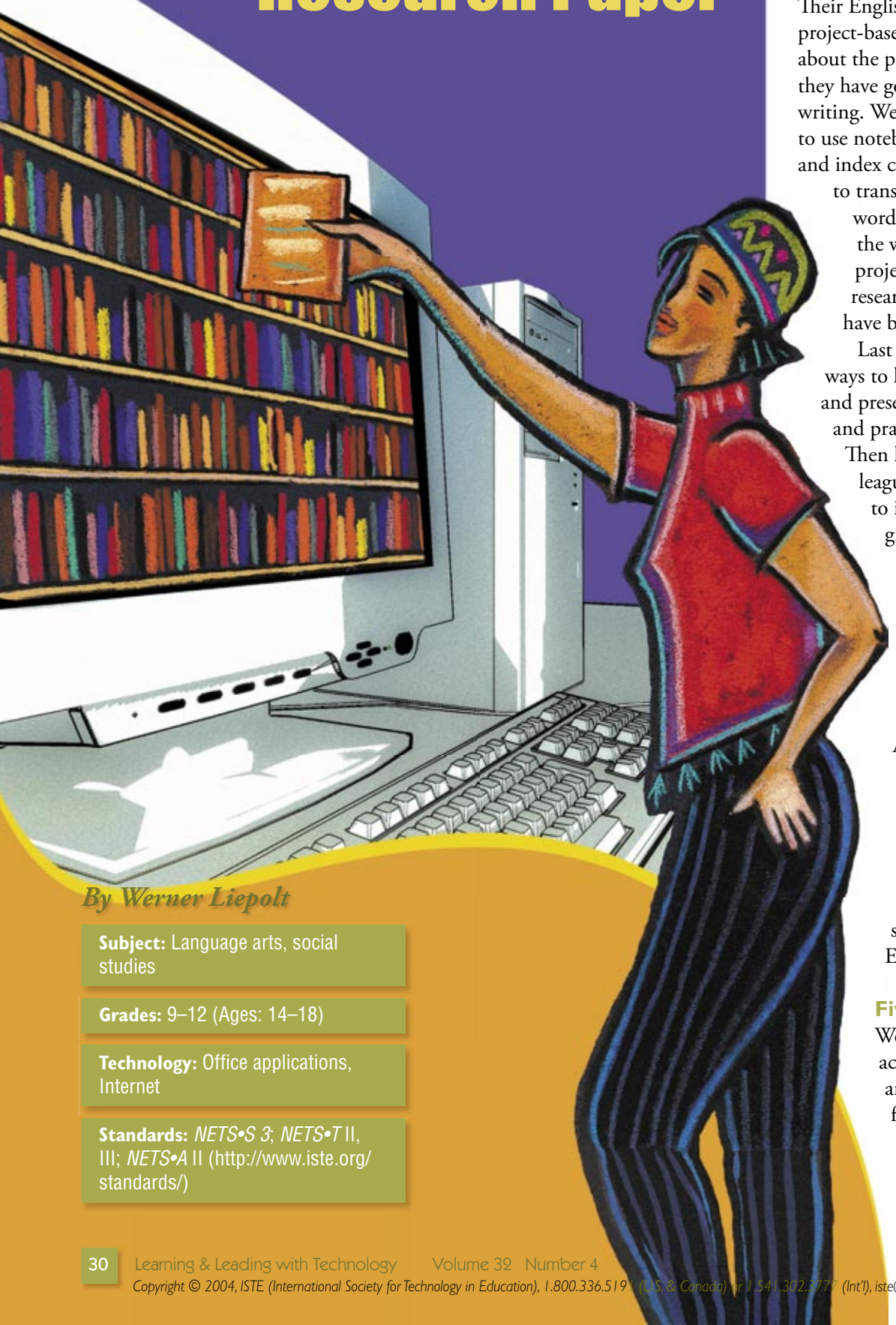
Updating the Research Paper



By Werner Liepolt

Subject: Language arts, social studies

Grades: 9–12 (Ages: 14–18)

Technology: Office applications, Internet

Standards: *NETS•S 3*; *NETS•T* II, III; *NETS•A* II (http://www.iste.org/standards/)

For more than 30 years, Staples High School (Westport, Connecticut) juniors have undertaken a major research paper. Their English teachers supervise this project-based unit and get feedback about the preparation students feel they have gotten in research and in writing. We used to teach students to use notebooks, paper, pencil, and index cards for research and to transfer their material to a word processing program for the writing of the paper. The project is evergreen, but the research methods and materials have become outdated.

Last year, I began to explore ways to help students collect data and present it in more efficient and practical ways than they had. Then last summer several colleagues and I examined how to integrate spreadsheet, graphic organizer, outlining, and word processor applications into our curriculum. We also developed online and classroom support materials for teachers and students. (***Editor's note:*** All files and presentations referred to in this article are online in the research paper section of the Staples High School English department Web site at http://shs.westport.k12.ct.us/English/.)

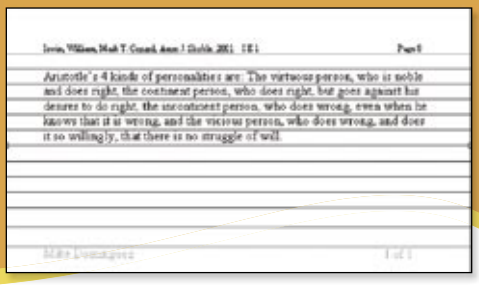
Five Integration Ideas

Weighing each for efficiency, accessibility, ease of use, and assessment, we found five places to integrate computer technology to improve our research paper curriculum:

- Planning a spreadsheet
- Creating an annotated bibliography
- Expanding the spreadsheet
- Submitting notes
- Brainstorming and outlining

Detailed instructions on implementing the strategies is available online. In this article, we'll limit ourselves to general discussion of the concepts.

The mail merge directory or catalog template links to the spreadsheet students use to store collected source information and research. When the merge is executed, Word ignores empty fields and prints an annotated bibliography ready for proofreading.



Upon executing the mail merge, students have a file consisting of all notes, each on a page the size of a file card. This file can be turned in electronically or printed.

Planning a Spreadsheet

Students and teachers familiar with using spreadsheets to calculate auto loans or to graph the results of science experiments sometimes miss using them to contain and control textual data.

Students can collect research information in a spreadsheet or flat database. If some care is taken in planning the spreadsheet, it will be valuable throughout the research paper writing process. In this case, advance planning helps the student generate and submit an annotated bibliography, a body of research, a paper outline complete with correctly cited notes, and a works-cited page for the final draft of a research paper.

The spreadsheet must have clearly labeled columns for the information that will be required. Because the spreadsheet information needs to be easily transferred to other programs such as a graphic organizer and word processor, it is important that students create spreadsheets that facilitate this. In our case, we use Microsoft Word's mail merge features to transfer data in and out of the spreadsheet. The contents of the cells in the first row act as labels, so clear descriptions are important. The 15 columns set up at the outset are: source, author or editor, title of article, title of the Web site, database name, database server, library from which database was accessed, title of magazine or newspaper, book title, date of publication or copyright date, publisher, place of publication, date accessed, Web link, annotation (approx. 100-word summary).

The titles of the columns are color coded and explained by a key. Not all fields are applicable for all sources, a book, for example, must have information in the author or editor, and publisher fields, but wouldn't require an entry under the URL heading.

We adopted the strategy of color coding the column labels and providing a color key to guide students as they enter information about their research sources. Grey column heads indicate information (such as Author's name) required for all sources. Blue column heads call for information specific to books and periodicals (such as Publisher). Yellow column heads show students where to provide information such as URL or date accessed about Web sources.

Creating an Annotated Bibliography

All students submit annotated bibliographies early in the research process. The bibliographies result from mail merging a formatted Word document with the spreadsheet used to collect information about sources.

The mail merge directory or catalog template links to the spreadsheet that the student uses to store collected source information and research. When the merge is executed, Word ignores empty fields and prints an annotated bibliography ready for the student to proofread.

The PowerPoint-supported lesson on building the annotated bibliography is best delivered in a computer lab where all students can download and save a Word mail merge document that we've already linked to the spreadsheets they have begun to use.

I also present successful examples of annotated bibliographies from my earlier classes. I point out salient features of the Modern Languages Association formatting and tips for using the spreadsheet, such as hiding intervening columns between the Author and Annotation columns when writing the annotations and showing the first row when scrolling down.

During discussion, I emphasize the results students are expected to achieve and encourage them to develop an approach that works best for each of them. Students adept at using relational databases, for example, grasp how to import the worksheet into the database application and develop a suitable report.

Students with learning disabilities are often empowered by using the computer to record research.

Expanding the Spreadsheet

After students develop their topics into thesis statements, they are ready to begin taking notes on their research. I demonstrate how to add five columns to their spreadsheets: subject of note, notes, pages, outline position, and used in works cited. As each note will be defined by a row, I also go over how to add rows, how to fill down, and how to drag the note column to the left so that the columns between A and P are hidden. Sometimes students need to see all the words in the cell, so I review how to resize cells as well.

Submitting Notes

In the past, students have taken notes on index cards. This method has persisted so long because it had advantages. Students could shuffle the deck, rearranging the cards to suit their developing comprehension of the topic being researched. The cards were portable and easily held together with a rubber band.

With the advent of online storage and e-mail, a file containing notes is more portable and less susceptible to loss than the physical deck of index cards it replaces. Further, issues of legibility and tedium are addressed when students take notes electronically. No one, the student researcher included, gleefully faces the frustrating task of deciphering whether the illegible scrawl on an index card written at 2 in the morning represents a direct quote, a paraphrase, or a fanciful creation of an overworked mind. Lengthy URLs can be copied and pasted. Students with learning disabilities are often empowered by using the computer to record research. Finally, once the student has written the note, why should they have to copy it again?

The mail merge template links to spreadsheet columns containing information about the author, the date (needed when multiple works are by the same author), the position in the outline, and the page (in the case of books and articles). The center of the digital card contains links to the subject of the note and note columns in the spreadsheet providing a brief description of the subject of their note and their notes—direct quotes, paraphrases, or summaries. Students type their name into the footer so it appears on all the note cards. A Word merge field counts the rows and the total number of filled rows in the spreadsheet. It reports the information so the student and teacher can keep track of the completed research.

Brainstorming and Outlining

While students are researching, I ask them to begin to develop an idea of how their papers will progress. Starting with their theses, they use graphic organizer software to develop multilevel diagrams and corresponding outlines.

After reformulating the strongest of their controlling questions as a positive thesis statement, students use it as the main idea, and type in the topics they think they will need to cover to satisfy it.

When elementary school students begin writing, teachers frequently encourage them to sketch mind maps or idea webs as ways of brainstorming. So this process taps into the long experience of the student writer. The payoff in using concept mapping software comes when students want to convert their finished graphic organization into an outline. In the outline view, students can shift the positions of topics, promoting and demoting them as necessary. And the new organization is, for the most part, readily visible in the diagram view. In Inspiration, students can toggle between diagram and outline views. The outline can be exported to word processing documents.

Outlining with Notes and Citations

Students print copies of their preliminary outlines and keep them handy while they are taking notes. Updating periodically enables them to strengthen their mental maps of their chosen topics of research, facilitating writing the rough drafts of the paper.

Students assign outline positions for each note, and then they record these positions in the new outline position column of the spreadsheet. Once each note has been assigned a position in the outline (for instance, II, B, 5, a) students use the Sort menu item to reorder the data in the worksheet. When they sort using the outline position column, they find that Excel recognizes the hierarchical outline enumerating system.

The third mail merge is a rough draft starter. It generates a document with all the quotes—properly cited—in the order of the outline. Seeing the notes and sources ordered by the outline position column is a great way to get a sense of the scope and structure of the finished paper. At this point, students can see whether sections of their papers are overly dependent on individual sources. If a section appears to follow a book or article page by page through a number of notes, it is a sign that the student may be merely reporting on a source or mimicking an argument.

Although they still have lots to do, students are hardly starting with a blank page. Having the notes organized makes them ready for writing.

The Works-Cited Page

As students write the two or three drafts of the research paper, they frequently discard unnecessary or repetitive notes. They sometimes winnow the number of sources they use significantly. To prepare a works-cited page, students return to the Excel spreadsheet. Because the works-cited page is to contain only the sources the students actually used in the final paper, the student needs to mark just those sources used in the paper.

The method we use is to have students type an asterisk in the used in works cited column of the spreadsheet after one note from each source the student has cited. This enables the use of a mail merge conditional to signal the printing of only the asterisked records.

Because the works-cited page contains all the information contained on the annotated bibliography except the annotation, students find modifying that mail merge document as the most expedient way of producing a works-cited page. Making sure the works-cited mail merge is formatted according to MLA standards, the students alphabetize the spreadsheet according to authors, then produce a new directory or catalog mail merge.

The resulting document can be saved as a file, then inserted into the finished research paper after a page break, and printed out. The advantage of this is that the student can then get the formatting in the header and footer of the paper to be consistent with this section.

Measuring Success

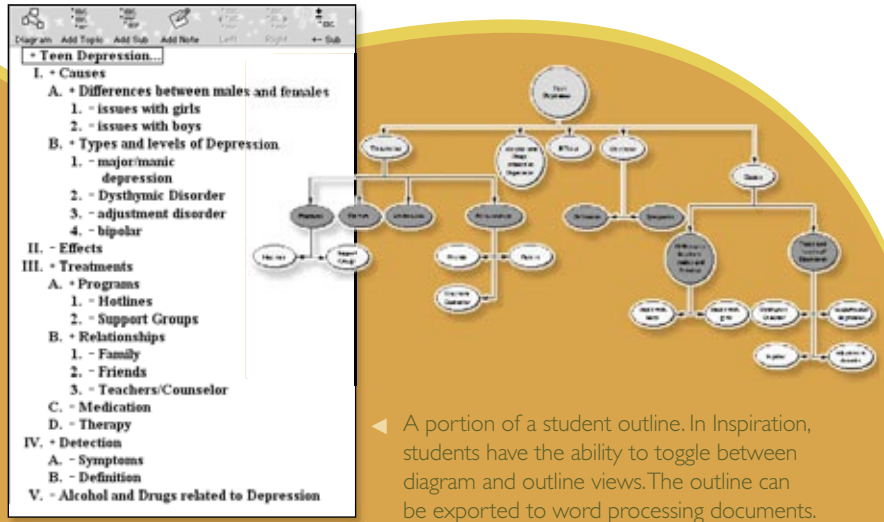
We began the integration of MS Office into our junior research paper curriculum during the current academic year. As preparation, we had one experimental trial the year before in only a few of my classes. During the summer, we prepared teacher and student material.

So far, our observations tell us that about two-thirds of the students take readily to the integration of computer technology that they had experienced in middle and high school computer literacy classes. Many of the remaining third do not like using computers, but almost all seem to credit efficiency to this approach.

One positive aspect of the approach for the student is that the spreadsheet is accessible from any computer in the school and at home. Students' backpacks are filled with fewer scraps and jottings noting sources, and students feel as if they are more organized and their work is more orderly. We think they view the annotated bibliography as more fluid and less fixed than before and have seemed more ready to explore and add new sources. We have had only two instances of lost work and, our school system operator speedily restored the lost files.

Teachers observe that checking both sources and notes is easier, and they can provide more and better guidance to students' research. Legibility, once an issue, is no longer.

A few teachers observed that some students seem to write the first draft more easily. Finally, some teachers have taken readily to the integration of computer technology. We have found that a summer workshop—where those teachers who have difficulty with the integration of technology into the research paper curriculum have an opportunity to talk about the problems they have had and where they are involved in developing solutions to those problems—is an effective way to ensure that what we think are best practices really are and are adopted by all teachers. Further, one of our teachers has been assigned the equivalent of one class to provide support for integrating technology into the English curriculum during the coming school year.



A portion of a student outline. In Inspiration, students have the ability to toggle between diagram and outline views. The outline can be exported to word processing documents.

Werner Liepolt served on two NETS writing committees. He is currently editing the ISTE 9–12 English curriculum book. At Teachers College, Columbia University, he has taught graduate courses in multimedia development and database-driven Web design. Named an Apple Distinguished Educator and teaching English at Staples High School, Westport, Connecticut, he has developed software and written and produced several plays and film scripts.