Working with Information: Bridging the Gap in the Research Process

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Overview

In this workshop participants will learn how to guide students in evaluating, synthesizing, and organizing information into original, cohesive, well-documented products. They will develop strategies for helping students to:

- combine insight and creativity with published information
- organize information they have collected
- identify information that is still needed
- give credit to those who inspired their ideas

Background

Teachers and librarians have not paid enough attention to the important part of library research assignments, namely, how to evaluate, synthesize, and organize the information from "five different sources" into an original, cohesive, well-documented product. Without instruction from librarians or teachers, students either figure out how to do this on their own, or remain unaware of how to synthesize and organize information. Consequently, very few students actually enjoy doing research and many are tempted to plagiarize the work of others as a short cut to the finished product.

In an age of "learner-centered" curricula, many students still feel detached from their research assignments. They gather and rehash published information, vainly attempting to reword the authors' words while outlining repetitious themes. Who wouldn't attempt to "copy and paste" the they had never realized the joy of discovering a relationship among disparate facts, an interesting pattern in data, or an "A-Ha!" idea that solves a puzzle? Increasing students' ability to use information can enhance their motivation. Providing teachers and librarians with useful tools and strategies can assist in this process.

Information literacy and plagiarism are top topics for teachers and librarians. Whether it is the first library research paper or an honors project, instructors face the same challenges--how to provide simple yet effective tools for working with information.

Information literacy goes beyond gathering information. Students need skills for using information. They need to learn how to evaluate and synthesize it, and keep it organized so they know what they have, what they still need, and what they can discard. They need to use their own knowledge, insights, and imagination to combine facts and ideas from many sources, and discover new

ideas. They also need to keep track of their search, and give credit to those who inspired their new ideas.

On the subject of plagiarism, if all we talk about is how to detect it and the appropriate disciplinary measures--it's too late. We haven't done our jobs. How will students learn to use information successfully? Who will teach them?

Concept Synthesizing

The model we are using to teach information skills for research can best be described as concept synthesizing. It might be familiar to people who have used concept sorting or concept mapping techniques, so we can begin there in explaining our new strategy.

Concept sorting is a method used in business, public administration and other fields as a means of group input and decision making. Participants write their thoughts or suggestions on small pieces of paper, then the papers are collected and sorted by grouping similar items together. This is also a good way to determine the outcome of a brainstorming session--by looking for patterns or main ideas from numerous suggestions.

Concept mapping is a technique wide used in education to introduce a subject or to assess what students (mis)understand about a subject. Teachers present maps or students create maps by writing concept words and diagramming how they relate to one another. This technique is particularly effective with groups for producing a shared meaning of concepts and practicing with new vocabulary.

The known drawbacks of concept sorting and concept mapping are sensory overload and the inability to modify, copy, transport, sort, and retrieve the resulting maps. Electronic concept mapping programs solve most of these problems but they can be costly and inconvenient, and they require training to use. With computer programs you lose the spontaneity of the dialogue on shared meaning and the in-depth discussion that takes place in group learning projects.

Concept synthesizing is different from concept sorting and concept mapping in several ways. With this technique…

- Students create 3-5 word notes, not from their opinions or ideas, but from ideas and concepts they extract from reading research articles. Symbols or colors of the notes plus page numbers identify the sources of the information.
- Students begin to construct "a whole" by grouping similar items into clusters. Clusters are not hierarchical (as an outline or a concept map)--they are not even connected to one another. This is very different from creating a hierarchical content and organization <u>before</u> research is undertaken.

- Clusters are analyzed individually for a better grasp on the common theme of the cluster, its completeness, and its connection to the whole. Focusing on one cluster at a time helps combat sensory overload.
- At this time students are focusing on, and making meaning from, the authors' ideas and concepts rather than the authors' words.
- By using 3-5 word notes to represent a concept ("story"), this granularity not only makes it easy to combine items into clusters, it also pulls students away from copying the authors' prose, and frees them to tell the "story" in their own words. In sorting and combining the items into clusters, words become subordinate to the concepts they represent.
- Students can keep track of information they have, how it fits in the "big picture", what they still need, and what they can discard.
- Students can see the "big picture" and then select appropriate clusters to use for retelling, writing, posters, or computer presentations (PowerPoint, multimedia).
- Students select the most important ideas and the most appropriate sequence to meet the needs of the situation--audience, communication medium, limits of time and other resources.

As students work through the concept sorting process they create new ideas or new ways of looking at familiar concepts. This gives them a chance to make meaning, to move beyond what they already know, and to be creative--all within a guiding strategy. Students create a new story to tell and can (perhaps) tell that story in their preferred style of communicating. But even if the new story must be typed into a 10 page paper, double-spaced with one inch margins, it is still something that cannot be captured by the "copy and paste" shortcut that is now outgrown and long forgotten.

Concept synthesizing complements all of Gardner's multiple intelligences as well as other recognized learning styles. This new technique uses elements that are especially effective with visual-spatial, tactile, and kinesthetic learners. Studies have shown that these are the preferred learning styles of several ethnic groups, women, and early (young) learners.

Notes + labels + sequence = original process

These are some of the original features of concept synthesizing:

- New kind of notes use "granularity" (3-5 words represent a single concept), making notes easy to sort and combine, and pulling students away from authors' prose.
- Using a highlighter to select words, concepts, and ideas from research articles makes it easier for review, meaning making, referral back to the source for clarification, quotes, and footnotes.
- Synthesizes shared meaning of new, unlearned information.

- Organizes group research project and divides the work equitably.
- Enables students to narrow or re-focus the research topic while viewing the "big picture" and seeing how the revised topic relates to other segments.
- Enables students to see what information is present, and to keep that information organized.
- Enables students to determine when there is enough information, when to stop looking.
- Enables students to determine what information to discard and the consequences to the "big picture" of that omission.
- "Nickname" labels are used to organize the sequence to tell the story.
- "Nickname" labels are used to weight the most important sub-topics to emphasize in visual presentations (web pages, posters, PowerPoint, multimedia)

This workshop demonstrates a technique that has been practiced for seven years with university students and (once) with sixth graders. Assessment has been qualitative and informal, by faculty evaluations of assignments and students' self-reporting. Results have been very similar to outcomes reported in studies of concept mapping, but have not been scientifically analyzed. At this point the concept synthesizing technique has been modified enough to assess its value, and is ready for a formal research study. In the meantime it can be used with students as one of their strategies for research.

A selected bibliography and more information can be found at
http://www.west.asu.edu/johnso/synthesis/synthesis.html

[SIDEBARS presented at the workshop]

- Visual-spatial learners
- Preferred learning styles of ethnic groups
- Early childhood trauma - effect on spatial organization abilities
- Multiple intelligences and concept synthesizing
- Advance organizers - the importance of presentation order of spatial information - a picture is worth a thousand words
- Concept synthesizing topics previously used in classes

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