<u>Writing & Thinking or Thinking & Writing – Which Comes First?</u>
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The Brooklyn teachers and I have been meeting with students in order to assess their abilities in the preparation and writing of a senior research paper.

I have also met with the Brooklyn teaching staff to discuss their part in the support of students as they work on their research papers.

After meeting with students, several issues became apparent in relation to assessing their abilities in:

1. Identifying a "manageable" topic
2. Formulating a thesis
3. Demonstrating a "perspective" and "voice" independent of a major primary source for their information
4. Demonstrating a cognitive process in the development of their written draft paper as shown by:
    a. Identification of relevant source materials of varied types, e.g. books, magazines, web, journals
    b. Ability to identify specific, relevant data such as terminology, specific facts, and definitions relevant to their thesis; also ability to take notes
    c. Ability to organize, critique, identify trends, sequences, classifications of data
    d. Ability to identify major themes, patterns, ideas that may be organized into principles and generalizations related to their thesis
    e. Development of criteria to determine relevance of information to thesis so as to
        i. Use information
        ii. Exclude information

The specific problem for many students is to find and write their own words (voice) and ideas, from their 'unique' perspectives, and to use information at different steps in the writing process.

Students are able to use the internet to 'cut and paste' the words and ideas of sources into their student papers. This type of "writing" depends heavily on the perspective, words and organization of data presented by others' writing selected as sources for the student paper.

Teachers and I have met with individual students and demonstrated to them how to use their organization of "facts" to paraphrase information and deliberately place ideas, principles, theories, etc. into their own organization of information.

With instruction and practice the students are able to demonstrate paraphrasing abilities, and to prepare an organized outline for a paper.

Explanation, Summary and Integration of Ideas and Data

Students are expected to translate their researches of non-literal, metaphorical, figurative, non-factual statements into symbolic statements that communicate their explanation or summary of a major theme, reflected by their data. The translation of research results into summaries of major themes is a difficult task. Students must be proficient in sentence structure-- the use of dependent and independent clauses, and so forth-- to emphasize the priority and importance of information and ideas. Students must be taught to determine the implications and the correlatives of data as it relates to their thesis.

It's one thing to collect facts; and another to demonstrate comprehension of those facts. If students do not demonstrate their mastery of basic prerequisite processes, then they will not be able to use facts to identify and apply rules, state general ideas, and principles in particular, or to relate concrete situations to their thesis. Such lack of skills causes students to compensate and depend upon their sources to illustrate the connections between facts and ideas.

Students' demonstration of the ability to collect and order facts, their comprehension of those facts, and ability to relate selected facts to the thesis are prerequisite to higher order thinking and writing.

Bloom's Taxonomy, Steps and Strategies in Writing and Thinking

Strategies and tactics based on Bloom's Taxonomy may be developed for each level of cognitive process along the six levels of information used in writing.
These six levels are
Demonstration of the knowledge of facts
Comprehension
Application
Analysis
Synthesis
Evaluation of data

As the research paper develops, evidence of student mastery of the assignment will be apparent. Students will demonstrate their analysis of facts and ideas by recognizing unstated assumptions, making distinctions between facts and factual relatedness to the thesis, making connections between pieces of data, and comprehending and stating, verbally and in writing, the interrelationships between data to be included in the research paper.

To write a paper that conveys their unique ideas, students need to demonstrate a plan and outline that proposes the way they will test their thesis. They need to be able to explain particular data in relation to their basic set of original propositions in the development of their thesis.

Next the students need to be able to judge, through their use of evidence, a logical consistency and documentation of the support or refutation of the original thesis.

It is these later levels of thought, analysis, synthesis and evaluation of data that are a major challenge for our students. But many students are capable of learning the steps through the levels of thought so that students can use data to produce, in their own words, an effective research paper. That is, IF the steps are systematically taught

One basic set of tactics for developing the student's ability to create notes and paraphrased statements from source materials has been to teach the following steps:
1. Choose an article related to the thesis
2. Separate long paragraphs, in the article of 100 words or more, into 30 words
3. Read the source shortened paragraphs aloud
4. Paraphrase the shortened paragraph - put into a summarized statement using own words – say aloud
5. Write a one sentence paraphrased statement of the previous paraphrase of the paragraph – read it aloud

These practiced steps improved the student's ability to write, in his or her voice, a clear paraphrased statement. The key concept is this:

Students must have tools and strategies that they can apply to the big picture - how data becomes useful and fits together at different stages in the development of a research paper. The end result of collecting, sifting, comprehending, analyzing data is to produce, in one's own words, an effective research paper.

The teacher's task is to help students move toward the advanced organization and framework necessary for each level of thought, each use of data as teacher and students go through the steps that result in an effective research paper. We need to provide students the steps and the guidance during that effort.