

DOORS ENGLISH—
THE COGNITIVE BASIS OF RHETORICAL MODELS

Teachers of freshman English—particularly in the community college—assume a great deal about their students. For example, many college instructors assume—and correctly—that teaching the rhetorical types is important because students will face them in various forms and subjects. These types include cause/effect, comparison/contrast, process, narration, definition, and summary. If a history teacher, for instance, asks students to compare and contrast World War I to World War II on an essay or in a paper, the students are likely to do better if they have written similar assignments previously in a composition course. Instructors also assume, it appears, that college students are ready to deal with rhetorical types at the level they are usually presented; that is, they assume when assigning a comparison/contrast paper that a college student is able to grasp that form of organization when he reads it and is able to manipulate information mentally, using comparison as a tool for arriving at logical decisions.

After more than ten years of teaching English and the rhetorical types at Illinois Central College, I began to doubt whether college students were successfully using these simpler basic skills of comparison upon which the rhetorical model is built. Initially, I believed they simply could not organize, or their ideals were too synthetic, mundane, or immature. I viewed student failure then as a writing problem, not as a problem of faulty or lagging cognitive development. But, reading the work of Piaget,

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particularly his theories about cognitive development, persuaded me that my students might be suffering from some kind of developmental lag which affected their writing performance. As Piaget and others have pointed out, the child, when moving from infancy to maturity, seems to progress through four stages—from the sensory-motor and pre-operational to the concrete and formal level of operations. Oversimplifying, one could probably say a person at the third stage—the concrete—learns a concept best while actually manipulating concrete objects. For example, to teach the concept of comparison/contrast to the students at the concrete level, the teacher would be most effective by encouraging students to compare two objects which could be handled or examined closely. An approach of this type is common during the first years of elementary school. However, once students have reached the formal level of operations, they can grasp this concept of comparison in an abstract manner. The instruction, for instance, might be strictly oral, a lecture, without any reference to concrete objects. This practice is common, beginning during the junior high school years or earlier.

Despite Piaget's hypothesis that 17- or 18-year-olds should be at the formal level, I concluded my students might not have fully arrived at that point. If that were true, my instruction—geared to the formal—was falling on minds not yet able to understand what I was trying to do. Evidence for this tentative conclusion came from papers displaying a total lack of organization or papers of a superficial nature, for example comparing a Venus pencil to a Bic pen. Perhaps even more convincing was that students could not really use the rhetorical skills as tools of logical thought once they had completed the course. They could not apply what they had learned, a fact noted by my colleagues in other disciplines. In short, a writing problem might be a manifestation of a much more basic problem in cognitive development.

For further clarification, I have created the following chart to illustrate the possible levels of difficulty involved in comparison/contrast tasks. As one can see, a given individual progresses through five stages of development from the concrete to the abstract, from the simple to the complex, and from the oral to the written. "Input" is defined as the method by which the two objects being compared are presented to the individual. "Output" is the manner by which the individual expresses his comparison, either orally or in writing. "Precision" is the expected quality of the comparison, moving from gross distinctions about concrete details to fine distinctions about abstract details.

COMPARISON/CONTRAST HIERARCHY

<i>Input</i>	<i>Output</i>	<i>Precision</i>
<div><p><i>Stage One</i></p><p>Large, concrete object Small, concrete object</p><p><i>Stage Two</i></p><p>Photograph of large object Photograph of small object</p><p><i>Stage Three</i></p><p>Drawing of large object Drawing of small object</p><p><i>Stage Four</i></p><p>Written description of large object Written description of small object</p><p><i>Stage Five</i></p><p>Written description of an abstract concept, like the purpose or function of two similar things.</p></div>	<p>Oral</p> <p>Oral</p> <p>Oral</p> <p>Oral or Written</p> <p>Written</p>	<p>Gross distinctions about concrete detail.</p> <p>↓</p> <p>Fine distinctions about abstract detail.</p>

At *stage one*, an individual could be asked to compare two similar objects like a Volkswagen and a Mercedes. The resulting description might be relatively gross if the person involved is a child, but finer distinctions would be expected from an adult. The gathering of details would be relatively easy because the examiner could directly observe the two cars both inside and out. The organization of the output is likely to be unsophisticated because the presentation is oral.

At *stage two*, the examiner would have greater difficulty gathering data because the number of details would be reduced. Because it would be impossible to view the two concrete objects directly, the examiner would have to rely on what the camera detected. Again, the organization would be simple because of the oral output.

Stage three is even more difficult because now the examiner must rely on how the artist viewed the two cars. Thus, during the first three stages, the examiner's input is continually reduced because fewer and fewer concrete details are available for making the comparison. The output remains at the same level of difficulty because it is given orally.

Stage four becomes more difficult because the input requires reading, which is more complex than vision, and writing, which is more complex than speech. Now the examiner must secure his information from reading and convey the differences in writing.

At *stage five* the input and output remain as difficult as in the previous stage, but at this time the examiner must view the cars in a totally new light. Instead of dealing with concrete or perceptual qualities like size, shape, color, and the like, the examiner may be called upon, for instance, to compare the motivation for buying each of the cars. Logically, it would appear that students must be able to handle comparison at the four lower levels before successfully meeting the demands of stage five.

The point is that most English teachers probably assume college-age students, because of their age and previous experience, can easily deal with comparison in stage five. On the other hand, my experience led me to hypothesize that some college students were not operating at the formal level of operations characteristic of stage five. My evidence came from student papers reflecting the qualities common to stages three and four. Thus, my feeling was that many of my students were at a transitional stage between the concrete and the formal, and for that reason, my instruction, to be successful, had to start where the students were.

With this hypothesis in mind, I began searching the literature in three fields—English, reading, and psychology—to determine if any research had been done on this idea. I was unable to find anything directly related to what concerned me. However the available research and customary practice in teaching writing implied support for Piaget's notions. By accident, I discovered a growing body of research conducted over the last seven years by science educators, showing many young adults have not reached the formal level of operations. Instead, they were operating at

the concrete or at a transitional point somewhere between the concrete and formal levels. Representative of these studies are Campbell (1977), Dunlap and Fazio (1976), Griffiths (1976), and McKinnon and Renner (1971). Although these studies were encouraging, they focused on various Piagetian experiments such as conservation of number or volume; that is, they measured whether students could grasp scientific phenomena. None directly investigated the rhetorical modes or types which seemed as fundamental as some of Piaget's tasks.

To test my notions, I developed a transfer-level English class for the DOORS program at Illinois Central College at East Peoria, Illinois. The acronym stands for *Development of Operational Reasoning Skills*, and the program includes a core of courses: introductory English, mathematics, history, economics, physics, and sociology. This interdisciplinary experiment, taught by six different instructors, is sponsored by the Fund for the Improvement of Post-Secondary Education (HEW). Although the teachers involved in the project are attempting to integrate the skills and content taught in the various courses, no team teaching is done. As such, the program is not really intended for remedial students per se, but rather for average or slightly below average students who do *not* lack critical mathematics or reading skills.

At the outset of the semester, the six instructors agreed in principle with the notion that our students might be suffering from some type of lag in cognitive development. For that reason, the DOORS teachers decided to center all of the six different courses on the skills undergirding the rhetorical types. In so doing, the instructors made the content subservient to an understanding of the rhetorical modes; we wanted our students to develop skills which they, in turn, would apply to the content. For instance, cause/effect was introduced and explained in the English class, but the physics teacher stressed the mode when students were dealing with problems in the laboratory. And in their respective disciplines, the other teachers focused on cause/effect in history, sociology, economics, and mathematics. The chart following shows the various reasoning skills stressed during the first eight weeks.

Week	English, History, Sociology	Math, Economics, Physics
1	Observation (Identification of variables)	Observation (Identification of variables)
2	Description (Describing variables)	Description (Describing variables)
3	Comparing or Relating (comparison and contrast)	Comparing or Relating (graphing)
4	Comparing or Relating (Comparison and contrast)	Inferring (Graphing)
5	Classification	Separation and Control of variables
6	Classification	Separation and Control of variables
7-8	Summary	Separation and Control of variables

In the English class, the students wrote eight papers, over a sixteen week semester, in the following order: description, comparison/contrast, classification, summary, process, personal experience, definition, and cause/effect. The first four papers were written during the first eight weeks, two weeks on each paper. As can be seen from the chart, the skills undergirding the rhetorical modes were introduced at relatively low levels of difficulty not only in the English class but also in the other classes. For example, when students were studying comparison/contrast in English, history, and sociology, they were learning about a special kind of comparing, graphing, in mathematics, economics, and physics. If there are five levels of comparison/contrast, as I suggested earlier, it seemed to me that the students were receiving plenty of practice with the lower levels before or at the same time as they were preparing to write a comparison/contrast paper.

The inclusion of the rhetorical modes in the typical freshman English class is not unusual; what is unusual is *how* the modes were presented in DOORS. Contrary to other courses, we assumed students could benefit

from working on these rhetorical modes at the concrete level before dealing with the formal level. In a typical course, however, the English teacher begins the instruction, on the classification paper for instance, by explaining how to write it. This approach assumes the student already knows what classification is and can actually classify. In DOORS English, I began the instruction by asking the students to perform a number of *concrete* classification exercises to insure that they understood the concept behind the rhetorical type. Writing a paper using one of these modes seems to represent the most difficult task and was reserved until the student understood the concept.

To illustrate these concrete, preliminary exercises, I am including below descriptions of three of the assignments. For comparison/contrast, the students were asked to complete 70 picture comparisons from Upton and Samson's *Creative Analysis* (1961). A typical problem contained five pictures and a place for an answer, like the example below:

		A	B	C
Piper Cub Airplane	Jet Fighter Plane	Semi Truck and Trailer	Jet Passen- ger Plane	Sailboat
		<div style="display: flex; justify-content: center; align-items: center;"> <div style="text-align: left; margin-right: 10px;">Airplanes</div> <div style="text-align: center;">B</div> </div>		

In this instance, the student would be asked two questions. First, which figure—A, B, or C—is most like the first two pictures? The answer is B. Second, what is the relationship between the three figures—the two given and B? The answer is “airplanes” because all three pictures are of airplanes. Although this is an obviously simple example, many were more complex. Generally, very few students had difficulty selecting the proper figure, but a relatively large number could not accurately state the relationship between the items.

Following these pictorial comparisons, I selected a group of picture analogies, again from Upton and Samson's *Creative Analysis* (1961). A typical analogy might look like the one below:

$$\frac{\text{Arrow}}{\text{Bow}} = \frac{\text{Baseball}}{?}$$

A	B	C
Baseball Bat	Ball Glove	Tennis Shoe

These exercises seemed more difficult than the previous problems because more than two comparisons were required, but they were easier than verbal analogies because vocabulary was not a primary element in making the proper choice. Yet, these exercises were concrete, and most students had no difficulty with them.

At the next stage in comparison/contrast instruction, I gradually began introducing the verbal analogy which I believe represents one of the most difficult kinds of comparison, but it is slightly easier than writing a theme using this rhetorical mode. I broke the analogy instruction into five small components and tried to exclude any problems which might create vocabulary difficulties. With the first component, I gave the students two words and asked them to choose the proper relationship:

Tall:Short

- a. opposites b. cause to effect c. part to whole

Next, in ascending order of difficulty, I supplied three items for the analogy, and the students had to choose from five possible answers to complete it.

Game:chess::sport: (a) _____

- A. swimming b. insurance c. stadium d. horse e. checkers

With the third component I presented a complete analogy, and they were to identify the relationship:

Tall:short::fat:skinny

a. conversion b. class naming c. opposites d. function

For the fourth step, I included faulty analogies which students were to correct or rewrite entirely.

From: Gas is to pump as water is to cold

To: Gas is to pump as water is to well.

The last set of exercises required the students to write an analogy, using a relationship supplied by me:

_____ : _____ : : _____ : _____

Relationship: functional

One student's response to the last kind of problem looked like the following:

Screw:screwdriver::bolt:wrench

The last step for the students was to write a comparison/contrast paper, after a short discussion of how to do so.

In order to assess whether all this work on analogies had an effect on the students, I administered pre- and post-analogy tests which I had developed myself. The same instrument was given to a control group consisting of non-DOORS students taking similar courses taught by the DOORS instructors. This evidence indicated a significant difference in the ability of the two groups to solve analogies on the pre-test; the control was initially better than the experimental group. However, there was no difference between the two groups on the post-test. Thus, we can probably say the treatment for the experimental group improved their skills for solving analogies.¹ A perceptive critic might say improvement in the ability to solve analogies is no guarantee the skill will transfer to

better comparison/contrast papers. I fully agree with this criticism, but I have not yet devised a means of measuring the transfer.

A second assignment to be singled out for special attention was summary, the task of reading something and summarizing the main idea in writing. Although summary is not generally considered a way of thinking, like comparison or classification, it requires many thinking skills. I became interested in this assignment because it is popular in so many different kinds of classes and because I believe it is often neglected or slighted in the traditional college English class. Unfortunately, I could find no research studies concentrating on the student's ability to read expository material and to summarize the main idea in writing. Yet, many students complain about their difficulty understanding what they read and recording their ideas on paper. Many teachers, moreover, complain (Sherwood, 1977) about their students' inability to read with comprehension, whatever that general kind of criticism means. Teachers, however, may not fully grasp how complex this assignment is for some students.

Once again, working with the same concept as I had with comparison, I made certain assumptions about this assignment: students must know how to summarize orally before we can teach them to write the summary paper; many of them cannot summarize or write a summary; and most of them would benefit from concrete practice exercises. As a consequence of my thinking, I developed a series of assignments. Since I suspect the length of the material to be summarized affects the difficulty, I presented these students with single sentences, continued with single paragraphs, progressed to multiple paragraphs, and concluded with short essays of no more than one thousand words. Hence, after the students read these expository passages, they summarized them in writing in as few a words as possible. Since their responses were expected to be relatively short—certainly not more than three or four sentences—they received practice in summarizing, not in writing summary papers, which would involve introductions, examples, and conclusions. Thus, I was trying to begin summary instruction at the concrete level.

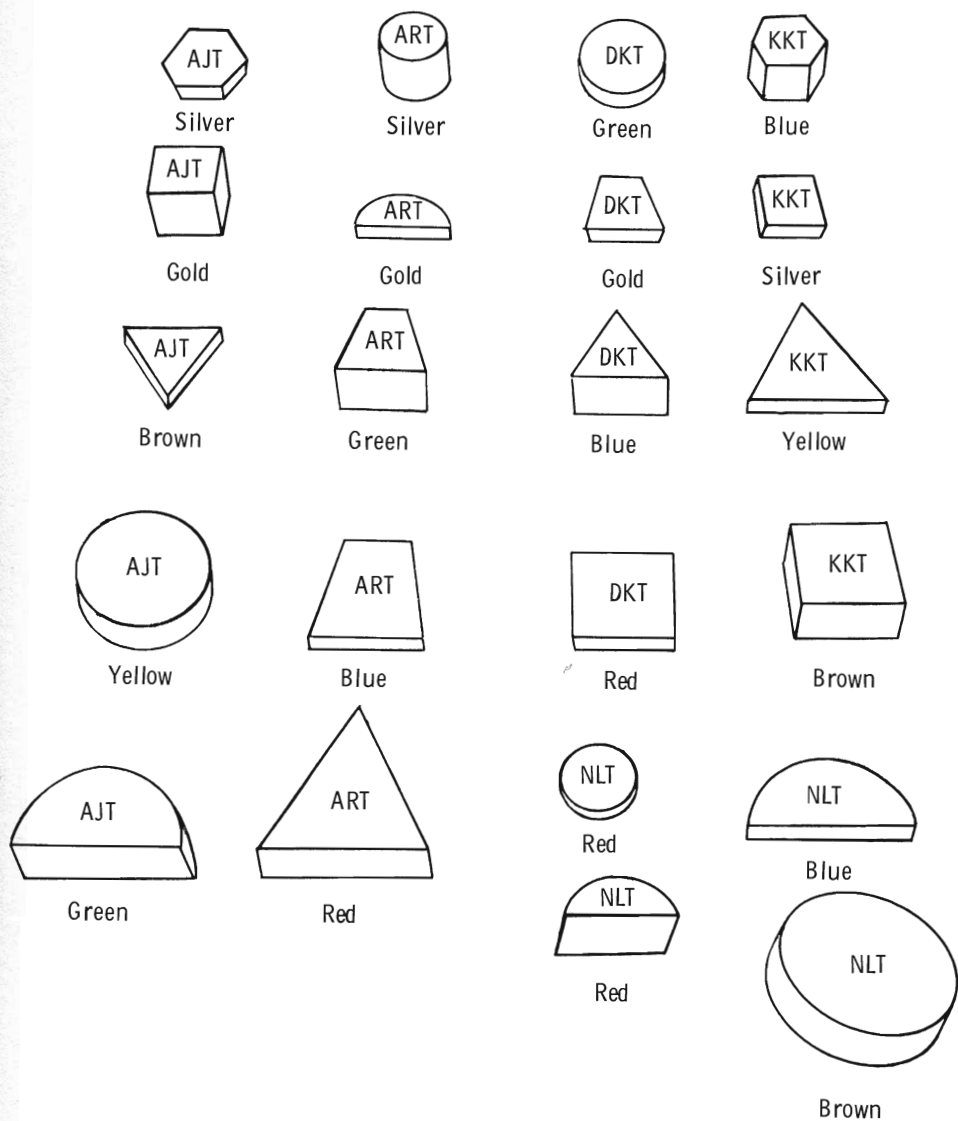
1. Both groups did very poorly on the pre-test: the experimental group (N=16) scored a mean of 2.4 and the control group (N=34) scored a mean of 2.9. The difference between the means on the pre-test was not statistically significant ($t = 1.60, p < .12$) at .05. On the post-test, the experimental group received a mean of 3.13, the control a mean of 3.4. The difference between the mean scores was not significant ($t = .89, p < .38$).

What were the results of the instruction? My suspicions were confirmed: most of the students initially could not summarize accurately and briefly. Several subsequent trials with the materials revealed a kind of hierarchy of student responses to the task of summarizing. Much like youngsters writing a short report in elementary school using an encyclopedia, these students originally wanted to copy whole articles, refusing or failing to put the passage in their own words. This deficiency may have stemmed from a fear of putting down what might be incorrect—it's always more precise to copy word-for-word—or from an inability to form a Gestalt. Next, as they gained more experience, they used more of their own words and fewer from the original. Only gradually were they able to rid themselves of the tendency to quote directly from the passages given to them to summarize. Accordingly, as they used less quotation and more of their own words, they were able to compress their summaries in fewer words. In short, I found, after three weeks of concentrated practice, my students could improve their summaries, but to date I have not devised a way of measuring the transfer of this skill to the writing of summary papers.

Classification was a third rhetorical type chosen to receive special emphasis. Like the summary and comparison/contrast assignments described earlier, the skill of classification is probably assumed to be intact by many teachers at the college level. They assume college freshmen are able to take raw data of some sort and to put it into logical categories. Although perhaps some instruction is provided in this skill, most of the class time is spent discussing how to write the classification paper. Since I assumed many of my students were not performing at the formal level of operations, I began with the following set of blocks which I devised (Fig. 1).

Without any instruction in classification, the students were each given a set of blocks and an answer sheet. They were asked to spread the blocks out on a table and to classify them in as many ways as they could. On the answer sheet, they were to record the major and minor categories under which the blocks fell. Once they had recorded a classification scheme, the students were to replace the blocks in the pile and to reclassify them, using still another principle of organization. All of this work was done outside of class, and the students were allowed as much time as they wanted to complete their work. Although most students were able to detect about half of the most obvious categories, they failed to note the most formal or abstract schemes.

Figure 1.



Following the blocks, I presented the students with a variety of visual materials which they were to classify. For instance, I assembled a group of geometric figures which printers use to fill space at the bottom of columns of print—triangles, circles, snowflakes, crosses, and the like. Again, the students were to sort and re-sort these figures. Next, I presented them with 46 small drawings of numerous subjects: an owl on a branch, an unlit candle, two black cats, a coke and hamburger, a basket of flowers, a trumpet, a tennis racket, etc. I selected these drawings because they were exact and because they presented a new problem. With the previous assignments, all the objects fit under one major category like blocks; now the students were confronted with an array of objects and of possible major categories. The last set of visual materials consisted of 22 pen and ink drawings from *The New Yorker*: two sailboats drydocked for winter, a closeup of a bakery, a produce market in the country, a wharf scene, and the like. With these drawings, the students were confronted with rather formal or abstract ways of classifying and with single pictures which could fall under a multitude of major and minor categories. Later classification exercises were more verbal in nature: Marlboro book advertisements, classified housing ads, want ads for used household goods, and a series of letters to the editors of *Time* about a single subject. The point of all these assignments was to move from the concrete to the abstract and from the visual to the verbal. In so doing, I assumed the movement was from the simple to the complex, providing the students with plenty of practice in classification prior to instruction in writing the classification paper.

The findings from the DOORS project have been reported elsewhere (Taylor, 1978), but a few conclusions are worthy of mention here. As I had hypothesized, most of my average college students were not initially operating at the formal level of operations. In the case of classification, for instance, the mean score for the groupings of blocks was a score of six out of a possible 13. When I questioned several students privately, I found they had rather confused notions about this mode. Most realized that the material had to be placed in groups, but they did not understand that the objects in the groups must be related. In other words, they grouped data without regard for the relationship between items in the categories. Similar findings were evident with the other modes. The practice at the concrete level seems to have brought more mature papers. Although I have had difficulty creating a statistical method showing transfer of this skill to the themes, the results to date have been encouraging.

In summary, DOORS English is an experiment with average or below average students. Although the content of the course is similar to others across the country, the method is unusual. The instruction begins at the concrete level, where most students are operating, and ends at the formal level when they use the rhetorical skill in writing. Lest I be misunderstood, I have *not* found that students are completely ignorant of the rhetorical modes or ways of thinking. However, I have found evidence that their knowledge is often confused and incomplete, resulting in unorganized or superficial compositions. If students are to succeed, it appears teachers can profitably spend some time insuring that their students genuinely understand the concepts and cognitive skills undergirding the rhetorical modes. We must start where students are.

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