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PHELPS, TERRY OLIN

AN EXPERIMENT COMPARING TRADITIONAL INSTRUCTION IN COLLEGE FRESHMAN COMPOSITION WITH INSTRUCTION EMPLOYING LEARNING CYCLES BASED ON PIAGETIAN THEORIES

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AN EXPERIMENT COMPARING TRADITIONAL INSTRUCTION IN COLLEGE FRESHMAN COMPOSITION WITH INSTRUCTION EMPLOYING LEARNING CYCLES BASED ON PIAGETIAN THEORIES

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TERRY OLIN PHELPS

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AN EXPERIMENT COMPARING TRADITIONAL INSTRUCTION IN COLLEGE FRESHMAN COMPOSITION WITH INSTRUCTION EMPLOYING LEARNING CYCLES BASED ON PIAGETIAN THEORIES

APPROVED BY:

DISSERTATION COMMITTEE

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A PIAGETIAN APPROACH TO COMPOSITION

CHAPTER I

INTRODUCTION

One of the favorite targets for educational reform recently has been English composition, a plethora of articles having decried the deplorable condition of student writing. In response to public concern over "Why Johnny Can't Write" some schools have restructured their English programs in line with popular "back to basics" movements, even though few teachers agree upon what is basic to composition: to some, organization and structure are all-important; to others, style or substance may be more significant; to others, including laymen, basics translates into spelling, punctuation, and grammar, regardless of what research says about the lack of relationship between grammar and composition.[1] Another response has been the creation of such programs as the Bay Area Writing Project and its progeny, e.g., the Oklahoma Writing Project, which attempt to pool English teachers' ideas on how best to teach writing. Meanwhile, recognizing the importance of composition in the incipient "Information Age," some college English departments have begun to emphasize teaching and research in composition, producing a multitude of studies and theories. To date, most composition research has been descriptive rather than experimental, with nothing substantive to convince teachers to change their approaches to composition. Consequently, they continue to rely primarily on conventional textbooks, supplemented with catchy ideas

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[1]Anthony R. Petrosky, "Grammar Instruction: What We Know," English Journal, 66 (December 1977), pp. 86-88.

(which fit their current practices) gathered from workshops, journals, and other teachers. In other words, the teaching of composition is pretty much business as usual for all but a few who keep looking for answers.

Need for the Study

If not the public alarm over poor writing, then the writing itself--pointless, vague, disorganized, banal, incoherent, and artificial--should be evidence enough that conventional approaches to teaching composition are pitifully inadequate. To be sure, the textbook market has been flooded with supposedly innovative approaches to teaching composition, but many of these products are simply the old rhetoric in new packages. Others may indeed be innovative but lack substantive research to support their efficacy. What is generally lacking is a sound theoretical base combining accurate concepts of cognitive development and learning with legitimate notions of what produces good writing. In other words, what must students know, and how can they learn it best?

Research on intellectual development led Lawson to believe that ". . . 'retarded' development can be traced directly to inappropriate subject matter and teaching procedures in today's schools."[2] In the composition classroom, as well as many others, students have usually been taught by lecture. Lecturing, or expository instruction, is the most direct, expedient method of disseminating information. Though speaking of science, Lawson might just as well have been discussing composition

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[2]Anton E. Lawson, "A Study of the Piagetian Model as Directly Applied to Science Subject Matter," Research, Teaching, and Learning with Piaget Model, (Norman, Okla.: University of Oklahoma Press, 1976), p. 169.

when he said, "The teaching procedures used in the classroom are largely expository; consequently, students seldom are confronted with first-hand concrete experiences with any aspects of the discipline."[3] Speaking specifically about composition, Moffett says,

> It seems terribly misguided to me to tell about something to students when they are using that something every day of their lives. . . The expository approach would prepare textbooks and workbooks that either tell a student what he is already doing or tell him what he ought to be doing in his verbal behavior. . . .To read and be told about, at one time and place, how language works and how we should best use it, then to try to discourse for real at another time and place. . .well, to make such an application and transfer presupposes an intellectual attainment that could only be the end not the means of an education. . . . Besides being inefficient and irrelevant, exposition is inhumane. It is dull.[4]

While ineffectual instruction based on inaccurate notions of learning and cognitive development is a significant reason for poor writing, it is only half the problem. The other half is the content, which Moffett divides into six classes: 1) advice, exhortation, and injunction; 2) explanations and definitions of rhetoric, grammar, logic, and semantics; 3) exercises with dummy sentences and paragraphs; 4) models of good writing; 5) writing stimulants (topics for composition); 6) assignment directions. Moffett makes a good case against each of these. Briefly, the first class majors in error avoidance and inhibits thought; the second is based on the primitive assumption that naming things is mastering them; the third tends to be arhetorical or without a context; the fourth is based on the notion that advance diagnosis and prescription

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[3]Ibid., p. 171.

[4]James Moffett, Teaching the Universe of Discourse, (Boston: Houghton Mifflin Company, 1968), p. 118.

facilitate learning; the fifth risks irrelevance and produces canned writing; and the sixth should be adapted in individual students.[5]

The conclusion that can be drawn from the foregoing is that both the content of the traditional college composition course and the procedures used in teaching it are inadequate. What is needed is experimental research in composition instruction which meshes an accurate theory of cognitive development and learning with a model of the composing process which most nearly matches the process of learning itself.

Theoretical Basis for Research

This research involves an experiment wherein the experiences of students in college freshman composition are structured in order to increase student efficacy in writing. This research has a thorough theoretical basis which needs to be explained before the problem addressed can be definitively stated. The study began with the developmental theory of Jean Piaget, the application of which has been so successful in the teaching of science (see "A Study of the Piagetian Model as Directly Applied to Science Subject Matter," and "Curriculum Experiences and Movement from Concrete Operational Thought," in Research, Teaching and Learning with the Piaget Model, pp. 79-173). It also began with a question: How could Piaget's theory be applied to composition? Its success in teaching science was no surprise, after all, since Piaget's learning model so closely resembles scientific inquiry. But how would it fit composition, generally considered to be an art, not a science? First let us examine Piaget's theories.

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[5]Ibid., pp. 201-209.

Piaget's Theories

Piaget identifies four sequential stages of intellectual development through which an individual may pass, described in terms of the best a child can do at each stage: the sensori-motor period from birth to about two years of age; the preoperational period from about two to about seven; the concrete operational period from about seven to anywhere from eleven on; and the formal operational stage which follows the concrete stage if and when formal operations are indeed reached. The ages vary with the individual, depending on his/her maturation, physical experience, social interaction, and equilibration (which will be discussed later). As Piaget has said, "The average age at which children go through each stage can vary considerably from one social environment to another, or from one country or even region within a country to another."[6] Studies by McKinnon and Renner have demonstrated that over fifty percent of college freshman remain concrete operational;[7] therefore, this study will be concerned with the final two stages, concrete and formal operations.

"Concrete" is the name given the third stage because the mental operations performed in this stage "relate directly to objects and not yet to verbally stated hypotheses. . . Concrete operations are already

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[6]Jean Piaget, "Intellectual Evolution from Adolescent to Adult," Human Development, 15, (December 1972), p. 7.

[7]Joe W. McKinnon and John W. Renner, "Are Colleges Concerned with Intellectual Development?" American Journal of Physics, 39 (September 1971), quoted by Joe W. McKinnon in "The College Student and Formal Operations," Research, Teaching, and Learning with the Piaget Model, op. cit., pp. 111-116.

coordinated into overall (mental) structures, but these structures are weak and permit only step-by-step reasoning, for lack of generalized combinations."[8] For the concrete operational person, "the possible is always a limited and direct extension of concrete reality."[9] He/she "does not formulate hypotheses, in the usual sense of imagining what events would occur under conditions that also are imagined."[10] In other words, the concrete operational person cannot think about thinking and its consequences; his/her abstract thinking is limited to abstractions only once-removed from reality.

Unlike the concrete operational person who "always starts with experience and makes limited interpolations and extrapolations from the data available to his senses," the formal operational individual "begins with the possible and then checks various possibilities against memorial representations of past experiences, and perhaps against sensory feedback from the concrete manipulations that are suggested by his hypotheses."[11] For the formal reasoning individual, cognition is relatively independent of concrete reality because "the content of a problem has at last been subordinated to the form of relations within it."[12] Hence, the name "formal" operations. The formal reasoning person is able to formulate and sometimes test hypotheses without actually manipulating concrete objects.

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[8]Jean Piaget and Barbel Indelder, The Psychology of the Child, trans. Helen Weaver, (New York: Basic Books, Inc., 1969), p. 100.

[9]John L. Phillips, Jr., The Origins of Intellect: Piaget's Theory, 2nd ed., (San Francisco: W. H. Freeman and Company, 1975), p. 131.

[10]Ibid., p. 130.

[11]Ibid., p. 134

[12]Ibid., p. 134

An understanding of the Piagetian stages has implications not only for what students are capable of learning at a given stage but also for how it is taught. Very simply, if students are concrete operational, they do not understand concepts which require formal operations.[13] Unfortunately, many of the ideas dealt with in composition courses require formal operations, such as "the comprehension and appreciation of metaphor, of irony and satire, of proverbs and parables, of analogies of all kinds."[14] Abstractions such as audience, persona, connotation, and subtlety may be beyond the grasp of many college freshman. Even students who are formal operational may not deal with these ideas formally, for advancement into a higher level only means that the individual can perform that level of operations, not that he/she necessarily will do so in all areas: ". . .they reach this stage in different areas according to their aptitudes and their professional specializations."[15] A student may consistently perform formal operations in physics, for instance, and seldom if ever move beyond the concrete in, say, social science or English. So, in effect, the level at which students do function is as much a determinant of course content as the level at which they can function.

A second implication of the developmental-levels concept involves the methodology of teaching. If many college freshmen are concrete operational, and since formal operational students can perform concrete operations, it would seem most propitious to provide a learning environ-

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[13]Lawson, p. 170.

[14]Phillips, p. 133.

[15]Piaget, "Intellectual Evolution from Adolescent to Adult," op. cit., p. 10.

ment conducive to concrete operations. As McKinnon has suggested, "Apparently the college freshman does not come to college prepared to carry out extensions of prior concrete thinking; that is, he/she is not yet capable of the abstract formulation of concepts without additional concrete experiences or without many added opportunities for forming abstract concepts through actual manipulation of materials and variables."[16] Therefore, instruction should afford concrete experiences which enable students to form abstract concepts from the ground up. Most instruction in our schools, however, has been based, consciously or not, on the behaviorist model of learning: a stimulus produces a response, and the two are tied together (with repetition and reinforcement) so that when the stimulus is encountered, the response will occur. Piaget refers to this as "learning in the narrow sense,"[17] and insists that association is not the fundamental process of learning. He uses the term "structures" for the mental system of transformations which enables the individual to process sensory information from the environment. These structures are not merely collections of elements and their properties, says Piaget, but transformations involving laws: ". . .the structure is preserved or enriched by the interplay of its transformation laws, which never yield results external to the system nor employ elements that are external to it."[18] In other words, a structure might be something as simple as knowing how to tie a shoe or as complex as knowing how to

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[16]Joe W. McKinnon, "The College Student and Formal Operations," in Research, Teaching, and Learning with the Piaget Model, op. cit., p. 126.

[17]Phillips, op. cit., p. 14.

[18]Jean Piaget, Structuralism, trans. Chaninah Maschler, (New York: Harper & Row, Publishers, 1970), p. 5.

anticipate an audience's objections to an argument. The individual will maintain a mental structure until it is found wanting.

According to Piaget, mental structures are structured or restructured by two concurrent processes: assimilation and accommodation. As individuals encounter new situations, they may attempt to fit their perceptions into their present mental structures. This is assimilation, and a lack of "fit" with present mental structures brings about what Piaget calls disequilibration--a recognition of the inadequacy of those structures. The individual's innate desire for equilibrium necessitates some change in the mental structures, and that change is accommodation which usually brings equilibration. Together (Piaget insists that one can't take place without the other) assimilation and accommodation make up what Piaget refers to as adaptation, "an equilibrium of interaction between subject and object,"[19] or "the accord of thought with things."[20] It should be noted that adaptation "depends on previous behaviour involving the same or similar objects."[21] That is, some similarity must exist between new situations and previous experience if adaptation is to occur. For example, it would be ridiculous to ask a monolingual English-speaking person to translate a passage from Japanese.

In addition to adaptation, Piaget identifies another basic, invariant mental function, that of organization. This "accord of thought with

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[19]Jean Piaget, Psychology of Intelligence, trans. Malcolm Piercy and E.E. Berlyne, (Totowa, N.J.: Littlefield, Adams & Co., 1973), p. 8.

[20]Jean Piaget, The Origins of Intelligence in Children, trans. Margaret Cook, (New York: International Universities Press, 1952), p. 8.

[21]Piaget, Psychology of Intelligence, op. cit., p. 7.

itself"[22] involves the establishing of patterns or relationships among the mental structures.[23] That is, mental structures do not exist in isolation, and when one is changed it will likely affect others, prompting reorganization.

Although Piaget's work focuses on the learner and not the teacher or instruction, some of Piaget's proponents have applied his theories to education. Concerning the fostering of disequilibration-equilibration, Phillips says, "The most feasible way to induce cognitive conflict is to arrange for optimal discrepancy between environmental inputs and existing cognitive structures" which puts the learner in a situation of "recognizing a conflict and constructing a system that will resolve it."[24] The emphasis here is on active participation by the learner. In this situation the teacher is not a dispenser of knowledge but a "guide--a guide not of a planned tour but of a genuine exploration."[25] Similarly, Renner says, ". . .the learner must move from a state of equilibrium; one cannot move him. That, of course, means that just telling the learner that his views of something are skewed does no good; he himself must make that discovery."[26] To accomplish this, Renner proposes a developmental learning cycle consisting of three phases--exploration, invention, and expansion of the idea--which parallel Piaget's assimilation, accommodation,

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[22]Piaget, The Origins of Intelligence in Children, op. cit., p. 8.

[23]Piaget, Psychology of Intelligence, op. cit., p. 57.

[24]Phillips, pp. 144-145.

[25]Ibid., p. 145.

[26]John W. Renner, "Learning and Piaget," Research, Teaching, and Learning with the Piaget Model, op. cit., p. 12.

and organization. In the Renner model, the teacher selects the ideas to be considered, then sets up a concrete investigation by students which "begins with an exploration, which may include library research,. . . experiments, visits to various places where societal functions are carried on (such as judicial court or a diary), or any manner of things that will help the learner collect information about the representative idea being considered."[27] In this process of exploration, the students will have the opportunity to become disequilibrated, in which case the second phase of the model, invention, will provide occasion for accommodation of the mental structures to the newly assimilated material, thereby restoring equilibrium. According to Renner, this phase is most successful if the learners invent concepts for themselves, "but there are times when the precise conceptual invention must be made by the teacher."[28] That is, once the students have explored all the material, it may be necessary for the teacher to help them formulate specific concepts, perhaps labeling the concepts in the process. Finally, the third phase provides experiences to test, apply, or expand the newly invented concepts as students attempt to answer the question, ". . .what discoveries* can you make with the representative idea that could not have been made without it?"[29]

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[27]John W. Renner, "What This Research Says to Schools," Research, Teaching and Learning with the Piaget Model, op. cit., pp. 181-182.

[28]Ibid., p.182.

*In his later work, Renner has employed the phrase expansion of the idea in place of discovery because the earlier term did not fully express the dimensions of the third phase. Hereafter, the phrase expansion of the idea will be employed in this paper.

[29]Ibid., p. 182.

Composition Theories Employed in the Study

The theories of composition and composition instruction used in this research may best be understood when contrasted with traditional composition instruction. Traditional composition instruction tends to be rule- or formula-oriented, and those rules or formulas are the concrete material of traditional instruction. At first glance, rule-based writing might seem compatible with Piaget's developmental model. Much of science, after all, is based on natural laws, and scientific research follows certain rules. And, as we have seen, scientific exploration closely resembles the disequilibration-equilibration mode. Furthermore, rules, with their concrete, exact nature, seem to be very appealing to concrete operational students, as this researcher has seen in unpublished research* and observation. In science, experimentation with or questioning of present knowledge and understanding of natural laws is what leads to new inventions and discoveries. Just as continuous use of the same formulas in science would lead to no new discoveries, the same adherence to composition formulas leads to lifeless, trite, hackneyed prose. Moreover, traditional composition instruction does not take into account students' levels of operations--often teaching formal concepts to concrete operational students--nor does it provide optimum conditions for disequilibration and equilibration. Traditional composition instruction, then, combines inappropriate content with inefficient methodology.

The experimental curriculum employed in this research, on the other hand, was not only consistent with Piaget's theories, but actually grew out of them. Its content, rather than being pre-existent, was generated

*Case studies, employing taped writing sessions, were conducted by members of composition instruction classes at the University of Oklahoma in 1978-79.

by the students' processes of writing and interacting, thus making it organic. Likewise, the learning cycles were generated by questions or situations that arose from those same processes of writing and interacting. The experimental curriculum began with a theory of composition which may be stated: Effective writing springs from writers' interaction with their milieu as they determine what they want to say, to whom, and how. Writers' purposes in writing are therefore dictated by the materials--experiences, observations, perceptions, and audience--with which they are working, and these in turn dictate the parameters of their work. In other words, the "rules" grow out of the writers' purposes and materials, thus making those rules organic instead of universal.

A mating of this theory of composition and Piagetian theories yielded a Moffett-like theory of composition instruction (although it was constructed before this researcher was familiar with Moffett). Moffett says:

> Ideally, a student would write because he was intent on saying something for real reasons of his own and because he wanted to get certain effects on a definite audience. He would write only authentic kinds of discourse such as exist outside of school. A maximum amount of feedback would be provided him in the form of audience response. That is, his writing would be read and discussed by this audience, who would also be the coaches. This response would be candid and specific. Adjustments in language, form, and content would come as the writer's response to his audience's response. Thus instruction would always be individual, relevant, and timely. . . . Classmates are a natural audience. . . . By habitually responding and coaching, students get insights about their own writing. . . Many of the comments that teachers write on themes can be made by practically any other person than the author and don't require a specialist. [30]

The researcher agrees with Moffett that composition instruction should enable students to write for a real audience besides the teacher, with

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[30]Moffett, pp. 193-195.

opportunities for feedback throughout the writing process. Besides being convenient, classmates are an ideal audience because of their high degree of influence on each other. Small group as well as entire class interaction is important because it enables students to expand their ideas by coordinating various points of view. Again, Moffett says,

> What hinders the growth of understanding, he (Piaget) says, is an unconscious preference for a limited local point of view. Learning is a matter of "decentering," of breaking through our egocentricity to new points of view not determined solely by our physical vantage points in time and space or by our emotional preferences. We achieve decentering by adapting ourselves to things and people outside ourselves and by adopting points of view initially foreign to us.[31]

The content of class discussions, as mentioned earlier, should come from questions arising in the students' process of writing. Each assignment should be weeks in duration, giving students adequate time for the exploration (through information-gathering techniques such as observation, interview, and reading, in addition to peer interaction) necessary to assimilate new ideas about which to write. As students encounter various rhetorical and grammatical problems during the exploration phase, they can be led to invent strategies for solving those problems (accommodation). If students don't notice problems on their own, the teacher can use their papers to call their attention to the problems, then let them as a class find solutions. Maximizing student invention should lead to imaginative, creative, original thought and writing. In the process of criticizing each other's papers and revising their own, students will have numerous opportunities for expanding their newly-invented strategies and concepts, discovering new contexts in which to employ them. Thus, even with a limited number of assignments and with no explicit instruc-

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[31] Ibid., p. 148.

tion in writing modes per se (such as description, narration, exposition, argumentation, comparison-contrast, or process analysis) students should be able to transfer what they learn to other types of assignments or writing situations (as might be encountered, for example, in later classes). Quite plainly, this expansion of the idea phase of writing is what Piaget refers to as organization, just as the rest of the curriculum is obviously a direct and logical inference from the Piaget model of assimilation and accommodation.

Motivated by peer interaction and the opportunity for active participation with concrete subject matter, students should develop a positive attitude toward writing. Phillips contends that in assimilation-accommodation, "Motivation is intrinsic to the activity itself."[32] Moffett says, "The desire to get certain effects on an audience is what motivates the use of speech. This is what rhetoric is all about."[33] Furthermore, it is hypothesized that the use of the developmental learning cycle in teaching composition will encourage the transition from concrete to formal thought for those students who enter the course functioning on the concrete operational level. Lawson and Wollman[34] demonstrated that science instruction employing developmental learning cycles encouraged such a transition, so it is reasonable to assume that similar effects would ensue from this approach to teaching composition. As Irmscher says, "If we think of education as concerned with learning how

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[32]Phillips, p. 144.

[33]Moffett, p. 191.

[34]Anton E. Lawson and Warren T. Wollman, "Encouraging the Transition from Concrete to Formal Cognitive Functioning--An Experiment," Journal of Research in Science Teaching, 13, (September 1976), pp. 413-430.

to know, finding meaning by association, organizing knowledge, and finally, developing our capacity to use that knowledge in new situations, then certainly writing serves us as a way of learning and developing."[35] Moffett points to studies of symbolic expression (including writing, of course) which indicate that such expression and mental growth go hand in hand: "These experiments point up, I believe, the fact that development of symbolic expression depends on nothing less than general mental growth."[36]

Statement of the Problem

This student-centered approach to teaching composition depends on the participation and response of the students. Therefore, what differences in the writing of college freshmen will be made by a composition course based on the theories of Piaget, emphasizing peer interaction and feedback, enabling students to write for a genuine audience (besides the teacher), and providing a maximum number of concrete experiences through developmental learning cycles?

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[35]William F. Irmscher, "Writing as a Way of Learning and Developing," College Composition and Communication, 30, (October 1979), p. 244.

[36]Moffett, pp. 17-18.

CHAPTER II

REVIEW OF LITERATURE

Little research has been done in applying Piagetian theories to composition. This review will deal with that research as well as literature concerned with other aspects of instruction employed in this experiment. This is by no means intended to be an exhaustive review even of those areas because the sheer volume of related literature would make a complete review impractical and repetitious. What follows, then, is an eclectic sampling of what has been said and done relating to the present investigation.

Piagetian Theory in Composition

Perhaps the most comprehensive application of Piaget's theories to education has been the ADAPT (Accent on Developing Abstract Processes of Thought) program at the University of Nebraska-Lincoln. A multidisciplinary freshman program including studies in anthropology, economics, history, mathematics, and physics, as well as English, ADAPT classes are based upon the learning cycle--which was earlier shown to be based upon the Piagetian model--consisting of concrete exploration, invention of concepts, and application of those concepts to other situtations. Two sections of the ADAPT publication Piagetian Programs in Higher Education deal with composition.

In chapter ten of the ADAPT book Bergstrom[37] makes the assertion that the most serious writing problem for students is inability to struc-

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[37]R. F. Bergstrom, "Piaget and Teaching Composition," Piagetian Programs in Higher Education, (Lincoln, Nebraska: University of Nebraska, 1980), pp. 89-94.

ture their thoughts with logical clarity and rhetorical skill, a problem precipitated by the limited composing strategies available to concrete operational students. To overcome this problem, Bergstrom insists that students need greater maturity and cognitive development, not merely more writing practice. The teacher should, therefore, provide opportunities for students to explore the writing process itself under conditions promoting disequilibration and self-regulation. Bergstrom then details one such exercise which explores structural aspects of composition.

McShane[38] insists that thinking about language is almost always formal, requiring reflexive capacities, propositional logic, and the ability to manipulate abstract materials for a hypothetical audience. Concrete thinkers, he says, have difficulty deciding when a particular generalization or formula is appropriate to a given context, or selecting among several of them for a particular use, or in manipulating several of them in relation to each other. This may be explained by the fact that composition rules are generally developed to deal with problems only recognizable to formal thinkers, leaving concrete thinkers with solutions for problems they don't even perceive. McShane's answer to the problems encountered in writing by concrete thinkers is to provide group discussion of students' papers with group feedback on points of satisfaction and difficulty--interaction from which students discover the need for topic sentences, sentence combining and other elements of writing.

Suggesting that composing may be defined as "Piaget's formal operational thought represented in tangible form," Holland[39] believes that

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[38]J. A. McShane, "Poetry, Prose, and Piaget," Ibid., pp. 95-108.

[39]Robert M. Holland, "Piagetian Theory and Design of Composing Assignments," Arizona English Bulletin, 19, (October 1976), pp. 17-22.

composing should free the writer from time, circumstance, and self. Realizing, however, that even formal operational students lacking fundamental data, elementary concepts, or conventional formulations of composition may perform on a concrete operational level and be unable to organize their thoughts in writing, Holland insists that assignments should be accessible to all stages of operations, developing writing from the lower levels to the higher. To accomplish this, he suggests that each assignment confront writers with an idea or piece of experience to which they must first respond, then explain how the response was arrived at, and finally offer other possible responses. Resulting papers, Holland says, would be "the metaphoric reenactment of the assimilation and accommodation" experienced by the writer in connecting an experience to an idea.

Purchatzke[40] contends that the process of writing is one of problem-finding and problem-solving, a process which she says demands formal operational thought but which is partly knowable through experience and observation. Employing a problem-solving approach to writing, Purchatzke says her course provides concrete thinkers with a systematic method of thinking which is neither formulaic nor obscure. Three rhetorical concepts--heuristics, structure, and style (other labels for Aristotelian terms)--are taught in three Piagetian learning cycle sequences of five weeks each (including shorter related cycles using peer-editing sessions and students' own writing in lieu of a text). The first cycle,

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[40]Margaret Purchatzke, "Thinking about Writing/Writing about Thinking: Cognition, Composing, and Piaget," An Approach to the Development of Cognitive Skills: The Star Program, (Denver: Center for Experimental Studies, Metropolitan College, 1979).

for instance, involves small groups, discussing methods of gathering material for a particular assignment, methods which they discover must be altered for different assignments. During the second learning cycle, students discover structure as "something 'organic,' a reflection of the mind creating cohesion through its inherent capacity to recognize and formulate intricate relationships." This recognition, says Purchatzke, frees students from excessive use of "such starch-collared structures as 'Topic Sentence, Restriction, Illustration'" which tend to handicap students who use them mechanically.

According to Odell,[41] improvement in writing comes only as students grow intellectually, and to assist in that growth requires an understanding by instructors of the psychology of human development. Drawing on Piaget, Odell suggests that equilibration is achieved through problem-solving, and one approach for composition instructors is the application of Kenneth Pike's discovery procedures to literary work, (e.g., segmenting the continuum of experience into discrete units, or contrasting one item with others). After studying Pike's procedures, Odell's students explored literary works and wrote essays with the only instruction being: "Formulate and solve what seems to you an interesting problem concerning the work you have read." Odell admits that most students were not prepared to do this sort of work and were often frustrated by the uncertainty and hard work involved in problem-solving.

Kroll[42] advocates an "interactionist" concept of development in com-

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[41]Lee Odell, "Piaget, Problem-Solving, and Freshman Composition," College Composition and Communication, 24 (February 1973), pp. 36-42.

[42]Barry M. Kroll, "Developmental Perspectives and the Teaching of Composition," College English, 41, (March 1980), pp. 741-752.

position. He contrasts this concept with those of interventionism and maturationism (or "nurture" and "nature") which he says have been the dominant paradigms upon which composition instruction has been based throughout this century. The intervention perspective, says Kroll, emphasizes content--the transmission of fundamental knowledge and skills--and is manifested in composition instruction which focuses on the written product's standard usage, sentence structure, modes, and other content stressed in many traditional rhetoric texts. The maturation perspective, on the other hand, focuses on the person--with development seen as the spontaneous working out of the individual's potential for growth--and is evident in composition classes which emphasize writing about personal experiences and emotions. Kroll sees interactionism as a synthesis of the other two, viewing development as a dynamic interaction between internal and external forces. Citing Piaget as the chief spokesman for this concept, Kroll says it stresses the posing of meaningful, challenging problems for students, then helping them acquire the skill or knowledge necessary to solve those problems through active participation. Composition instruction based on interactionism would create holistic writing problems which would foster student awareness of a purpose for communicating and an awareness of the reader's needs and expectations.

Instruction Resembling Aspects of this Research

Contending that they constrict students' notions of the writing process, Rose[43] disparages composition textbooks as "static and insular ap-

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[43]Mike Rose, "Sophisticated, Ineffective Books--The Dismantling of Process in Composition Texts," College Composition and Communication, 32, (February 1981), pp. 65-74.

proaches to a dynamic and highly context-oriented process." Admitting that recent texts make good sense and are conceptually sophisticated, he found even in them rigid rules and unqualified restrictive statements such as "Every word in your essay must lead the reader back to your thesis," and "Do not inject a new idea into your concluding paragraph." Such arbitrary prescriptions, he says, are often read by students as rigid rules. Rose levels an attack on the continued inclusion (despite heavy criticism) of discourse modes and categories in texts, suggesting that they confuse students by forcing them to classify the unclassifiable and narrow their vision. Contrasting composition with such disciplines as mathematics he points out that writing is a complex, dynamic, nonlinear process which cannot be reduced to algorithmic rules and stages. Rose's alternative is to involve students in an intensive series of thinking and rethinking, prewriting and rewriting exercises, with the only texts being condensations of research in the composing process--those texts for the teachers, not the students.

Elsewhere,[44] Rose uses case studies to demonstrate the difference between useful heuristics and stifling rules or algorithms. Contrasted to such dysfunctional rules as "Always make three or more points in an essay," which Rose says leads to writer's block, heuristics are flexible "rules" such as "Try to keep an audience in mind." In his studies, students with the least precise rules and plans have the least trouble composing.

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[44]Mike Rose, "Rigid Rules, Inflexible Plans, and the Stifling of Language: A Cognitivist Analysis of Writer's Block" College Composition and Communication, 31, (December 1980), pp. 389-401.

Another opponent of textbooks and rules is Kelly[45] whose open-class project began with teachers disillusioned with textbook-oriented, teacher-dominated classes. The project has no lectures, handbooks, readers, or specified kinds of papers, focusing instead on student interaction in small groups and as a class with their writing as the course content. Linguistic and rhetorical principles are introduced only when a student's response to his own or another's writing makes a lesson relevant and meaningful. Thus, says Kelly, students learn to spot such things as boring repetition, confusing ambiguity, weak generalization, and simplistic, limited point of view as they attempt to communicate with each other. Spelling, punctuation, and usage are separated from the rest of the process and saved until the final stage of paper preparation which they call copyreading, and students build individual copyreading guides with examples from their own writing.

Moffett[46] contends that students are motivated to write when they are intent on saying something to someone to achieve certain effects, and a natural audience is classmates who can provide feedback. According to Moffett, such an audience has advantages such as being able to respond to each other in their own terms, making feedback seem significant yet impersonal by sheer weight of numbers, and profiting from each other's work. He further insists that many of the comments which teachers write on themes don't require a specialist, and that students can point out things like irrelevance, unncessary repetition, confusing organization, omitted leads and transitions, and anticlimactic endings. Moffett sees

[45]Lou Kelly, "Toward Competence and Creativity in an Open Class," College English, 34, (February 1973), pp. 644-660.

[46]Moffett, op.cit., pp. 193-210.

the teacher's role as one of clarifying problems after students have encountered or raised them, helping students "to interpret their initially vague responses and to translate them into technical features of the paper that gave rise to them." He would have students work sometimes in groups of four or five in which they would read each other's papers and discuss them, with the teacher circulating among the groups, selecting various problems to present to the class as a whole.

Clifford[47] believes that the best way to improve writing is to combine practical learning techniques with controlled observation of writers in action, and this can best be accomplished through what he calls "collaborative composing." He employed this approach, with small groups giving feedback throughout the writing process, in an experiment to determine if it was more effective than traditional instruction. Significantly greater gains by the experimental group over the control group led Clifford to the conclusion that collaborative composing was superior because it offered multiple responses soon after crucial linguistic and rhetorical choices were made by students in the writing, process and because feedback "from an immediate, socially appropriate audience also seems to have provided a more compelling impetus to change. . ."

A somewhat different approach was employed by Greenbaum and Schmerl,[48] but the principles of peer interaction and writing for an au-

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[47]John Clifford, "Composing in Stages: The Effects of a Collaborative Pedagogy," Research in the Teaching of English, 15, (February 1981), pp. 37-53.

[48]Leonard A. Greenbaum and Rudolf B. Schmerl, "A Team Learning Approach to Freshman English," College English, 29, (November, 1967), pp. 135-152.

dience besides the teacher were similar. Working in small groups on subtopics within a common subject area, each class wrote a multiple-author monograph similar to group writing done in universities, research laboratories, and government agencies. The assignment consisted of four work sequences which included (1) collecting information (from news media, books, and interviews) and writing; (2) editing; (3) evaluating; (4) prepublication preparation. The instructor was merely a consultant and advisor, refraining from discussing rhetorical techniques or conventions. The authors contend that exposure to a variety of ideas and examples of writing, together with dependence on the writing of others, made students more critical of their own writing.

Irmscher[49] sees writing "as a generative process, as investigation, as probing, as learning in action." Pointing out that writing encourages abstraction, he insists that composition teachers must allow students to abstract from the ground (concrete) up. This is different from teaching abstractions and trying to apply them, yet many teachers, Irmscher says, seem not to understand that difference. Too many teachers do not provide the concrete experiences from which ideas emerge for writing.

All the literature reviewed here suggests--though not necessarily employing this terminology--exploration, student invention of concepts (with help from the teacher to invent the language of the concepts), and expansion of the idea. For further reading, the investigator suggests

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[49]William F. Irmscher, "Writing as a Way of Learning and Developing," College Composition and Communication, 30, (October 1979), pp. 240-244.

the following authors: Mitchell and Taylor,[50] Flower and Hayes,[51] Britton,[52] Odell,[53] Emig,[54] Barwick,[55] Lunsford,[56] and Shaughnessy.[57]

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[50]Ruth Mitchell and Mary Taylor, "The Integrating Perspective: An Audience-Response Model for Writing," College English, 41, (November 1979), pp. 247-271.

[51]Linda Flower and James Hayes, "Problem-Solving Strategies and the Writing Process," College English, 39, (December 1977), pp. 449-461.

[52]James Britton, Language and Learning, (Middlesex, England: Penguin Books, 1970).

[53]Lee Odell, "The Process of Writing and the Process of Learning," College Composition and Communication, 31 (February 1980), pp. 42-50.

[54]Janet Emig, "Writing as a Mode of Learning," College Composition and Communication 28, (May 1977), pp. 122-127.

[55]Joseph Barwick, "Thinking and English Classes," College English, 43, (February 1981), pp. 179-188.

[56]Andrea A. Lunsford, "Cognitive Development and the Basic Writer," College English, 41, (September 1979), pp. 38-46.

[57]Mina P. Shaughnessy, Errors and Expectations, (New York: Oxford University Press, 1977).

CHAPTER III

PROCEDURES OF THE STUDY

Overview

The study employed a pretest-posttest design with three control group instructors teaching two classes each and three experimental group instructors likewise teaching two classes each. On the first day of classes, students in all twelve classes were assigned an outside-class essay to be turned in one week later. The assignment, to write about power after considering quotes on that subject (see Appendix A), included all necessary instructions and was not discussed again. The same identical assignment was given to all twelve classes again two weeks before the end of the semester (so as not to interfere with or be affected by final examinations) with one week to complete it. These assignments constituted the pre- and posttests.

The project was coordinated by the director of composition at the University of Oklahoma who selected the six instructors and assigned them to experimental and control groups. The experimental group instructors developed a curriculum which they practiced during a pilot semester (discussed below). Once the semester was underway there was little coordination, resulting in some confusion among control group instructors. Somehow, one control group instructor's entire set of posttests was misplaced as were several other experimental and control group posttests. Despite the loss of the one instructor's posttests, however, all three control

group instructors are discussed below because attitude surveys were available for all three instructors' classes, and they were not separated according to instructor, only according to group.

Pilot Semester

Before the spring 1981 experiment, the three experimental group instructors developed a tentative curriculum which was evaluated by composition specialists, their criticisms leading to some revision. During a pilot semester, the experimental curriculum was observed several times in each instructor's classes by John W. Renner. Renner's visits and meetings with the three instructors led to whatever modifications (such as the elimination of "yes-no" questions which fostered only guesswork instead of genuine problem-solving) were necessary to insure consistency of instruction with Piagetian theories. As the pilot semester progressed, the three instructors modified the curriculum to include fewer teacher-prepared learning cycles and to allow for more ad hoc learning cycles. In this way, as problems arose in writing, they initiated learning cycles which led to strategies for solutions.

Control Group Methodology

Control group instructors were selected with the understanding that they employed "conventional" approaches to teaching composition--"conventional" meaning that they taught largely by lecture, using composition handbooks and reading texts, emphasizing the modal approach (focusing on the modes of narration, description, exposition, and argumentation by studying textbook models) in writing, and writing eight to ten essays per semester. The use of published pieces in reading texts as

models is common practice in composition classes, as is the explanation of various forms and elements by the instructor in advance of writing assignments--typically a deductive approach in which the students are shown the conventions then expected to comply--hence the selection of instructors employing this methodology for the control group. All three instructors used The Random House Handbook, (Frederick Crews, New York: Random House, 1977) the standard text of the English department, a text which has one section devoted to rhetorical conventions such as mode, and another section devoted to grammar and usage. The instructors had a choice of reading texts which will be discussed along with other differences as each instructor is now considered:

Instructor A used The Wiley Reader (Caroline D. Eckhardt and David H. Stewart, New York: John Wiley & Sons, 1979), which is a guide to rhetorical forms such as comparison-contrast and process analysis, containing numerous examples of each form written by professional writers, with explanations of the forms and suggestions for writing. Instructor A had students read various pieces from the reading text, then lectured about them in class, pointing out the particular characteristics of the form being considered. At the same time, students read parallel information from the handbook elaborating on the elements of the form. Writing assignments stemmed from these readings and discussions, sometimes in the form of single paragraphs (such as practice in writing introductions) and sometimes in full-length essays with the reading text examples as models. Lectures included opportunities for questions and feedback. There was no small group work; students worked independently outside class on papers. Having once turned their papers in, students were not given an opportuni-

ty for revision. They were encouraged instead to make use of instructor comments on the graded papers in writing subsequent assignments.

Instructor B likewise used The Wiley Reader and taught very much as instructor A, emphasizing rhetorical modes, using published works as examples. "I don't think I do anything unusual," instructor B said. "I teach the same way a lot of people do." Instructor B emphasized "a lot of writing," with ten essays and numerous shorter assignments such as paragraphs. A class session might consist of finding topic sentences in various paragraphs in the reading text, then students' writing their own paragraphs in class, attempting to achieve the same coherence as the model paragraphs. There was no small-group work. Sometimes students were given a piece of unidentified student writing in class and instructed to correct technical problems, then find the main idea and subordinate ideas and write their own paragraph using those ideas. Essays were written in specific forms such as cause and effect, comparison-contrast, process analysis, and in particular modes such as description or argument. If they demonstrated a need for further work in a mode, students might be assigned more than one essay in a particular mode.

Although the form of the paper was dictated by the instructor, students were given considerable freedom of choice of topics and techniques. For example, the assignment of a definition essay gave students optional techniques (dictionary definition, illustration/example, analogy, functional definition, or identification of essential characteristics) of which they could use any two. Furthermore, students had five choices of topics for definition: themselves; the way a machine, a body system, or a natural phenomenon works; a new experience; a social custom; or their

specific interpretation of a generalized experience. Examples of each topic were identified in the reading text by the instructor.

Instructor C (unbeknownst to the investigator until after the experiment) did not follow entirely conventional procedures. Like other control group classes, instructor C's students studied the modes and conventional rhetorical structure of thesis, restatement, illustration, and conclusion. And, like the other control group instructors, instructor C used the reading text to demonstrate examples of various forms for students to use as models for their own writing. Instructor C also had students write individual paragraphs in class to work on essay structure and mechanics of writing such as punctuation, similar to work done in other control group classes. Unlike the other control classes, however, instructor C stressed different audiences by having the classes edit each other's work in class. The students were to consider the instructor as an editor getting them ready for a public audience, instead of writing strictly for the instructor. Students might write a paper initially for a narrow audience which shared the writer's perspective, but class discussion and debating of points in the papers encouraged writing for broader audiences. Other differences in Instructor C's classes included keeping of daily journals and doing interviews. The journals contained twenty-eight entries which consisted of short writing assignments such as describing people on campus or relating a color to a sound. Some of these entries were ultimately used to develop full-length essays. Essays were drafted as if in final form, including a cover sheet listing the subject, thesis, audience, and anticipated audience response. Sometimes these were used in class by small groups which read and criticized each

other's papers, to determine the writer's success. After submitting their papers for one-third credit, students rewrote them according to the instructor's revision instructions and submitted them a second time for the remaining two-thirds credit.

Instructor C required fewer essays--six--than the other control group instructors, but revisions, in effect, doubled that number. Among the assignments were a descriptive essay about another time in the students' lives; another descriptive essay on university life; a comparison essay on the students' choice of topics; a process essay describing some procedure such as decorating a room; a classification essay categorizing people on campus; and an analytical or argumentative essay about the media. Each of these essays involved gathering information by interviewing, observing, or reading. For example, the media essay resulted from attending a lecture by writer Nora Ephron, then collecting information from magazines and television and analyzing it. Instructor C used the handbook primarily for exercises in punctuation, employing the reading text Thinking in Writing (Donald McQuade and Robert Atwan, New York: Alfred A. Knopf, 1980--like The Wiley Reader, a guide to forms) to introduce forms of writing and give examples, followed by lectures to point out various aspects of each of pattern.

As the following discussion of the experimental group will reveal, several similarities exist between instructor C's classes and the experimental classes. There are marked differences, however, notably the absence in the experimental group of textbooks and instruction in specific forms, along with the experimental group's use of developmental learning cycles.

Experimental Group Methodology

Experimental group instructors were selected because they were interested in developing an innovative curriculum employing Piagetian theories. After being led by John W. Renner to an understanding of those theories, the three instructors worked together to apply the developmental learning cycles--with the three phases of exploration, invention, and expansion of the idea--to composition instruction. The resulting curriculum will now be described in detail. It must be remembered that, because many of the learning cycles arose from class discussions of student papers, those cycles might vary from class to class. Therefore, the learning cycles described here did occur in the investigator's classes and might or might not have taken place in all the classes, but they are typical of cycles which occurred in each class.

The first assignment was to interview a classmate and ultimately write what was called a "personality profile." Students were paired to interview each other and get whatever information they thought would be good for such a paper. Questions which they asked usually included inquiries about age, hometown, college major, family, hobbies, and ambitions. Some students seemed to have no trouble thinking of questions. Some ran out of questions fairly quickly and asked the instructor, "What are we supposed to ask?" The instructor turned the question back to the class: "What kinds of questions are you asking?" The class then generated a set of possible questions, and everyone seemed to have enough to finish the class period. The next day, students were asked if they had an idea what they might write about their interviewee. Some responded with comments such as, "He seems to be a very versatile guy," but most of

them (including those who suggested ideas about which to write) insisted that they needed to know a lot more about the person to be able to find anything interesting to say. They also admitted that the questions they had asked so far had not yielded much. This exploration through interviewing was disequilibrating them, demonstrating that they needed to learn more about information-gathering or research. Their invention of questions on the first day was only partly accommodating. Class discussion led to the invention of questions based on answers to earlier questions ("You say your hobby is surfing; have you ever had any close calls? Why do you like surfing?"), and other inventions such as observing their subject outside the classroom; interviewing his/her friends, family, or roommates; and merely conversing with the subject or discussing philosophies or issues. Some of the pairs even decided to date each other to carry out some of the research techniques they had invented.

To help students invent other research techniques, the instructor had them read magazine articles and speculate about the source of information or the questions that might have been asked to elicit the information in the articles. The instructor helped students focus their research by introducing a short learning cycle which involved reading a paper which was a jumble of ideas without any unifying idea (see Appendix B). After reading the paper (assimilation) the students responded that it "rambled" or lacked a "point," thereby inventing the concept of a thesis or controlling idea which they decided was important in any paper. Expansion of this idea, as well as expansion of their newly-invented research techniques, came as students proceeded to gather and focus infor-

mation for the personality profiles (and later for subsequent assignments).

As students began to write their papers, the instructor introduced another learning cycle. Each student was to write a list of twenty characteristics of a friend or relative. The instructor then selected some of the characteristics and asked several class members what the characteristics meant to them, as in the following fictitious but typical dialogue:

> "Mike has written that his friend is beautiful. What does that mean to you, Steve?"
> "That means she's sexy."
> "What do you think, Myrna?"
> "I think of beautiful as graceful and elegant."
> "How about you, Robert?"
> "Beautiful means she has nice features, like a pretty face."
> "What did you mean by 'beautiful', Mike?"
> "Oh, wow, I didn't mean any of those things. I mean she was kind, considerate, and sensitive, and really cared about other people. To me that's beautiful."

This exploration led students to see that, because of semantics, what they meant to convey was not always understood, leading them to invent the need for specificity--for giving enough information to avoid misunderstanding. Another learning cycle on specificity had two students seated back to back with identical sets of assorted blocks. The instructor arranged one student's blocks into some arbitrary design, then asked the student to describe that arrangement to the other student who would then try, without asking any questions, to duplicate the arrangement. After completion of the exercise (in which students invariably fail to successfully duplicate the arrangement they've heard described) the class discussed the problems encountered in the situation: lack of opportunity for feedback and lack of precise, specific description. Not only did

this expand the idea of specificity, but it graphically demonstrated the problems of one-way communication without feedback. The block excercise (exploration) enabled students to invent the need for audience assessment to determine the degree of specificity necessary for a particular communication situation. (For example, if one of the blocks was a trapezoid, the speaker had to decide without feedback if calling it a "trapezoid" would suffice, or if the listener was unfamiliar with that term and needed more description.) This was easily expanded to the act of writing--a situation involving an audience unable to provide feedback.

Another learning cycle involving specificity began with the class reading an altered passage of Edgar Allan Poe's "The Fall of the House of Usher" in which the phrase "the bright cheery daffodils" was inserted among the melancholy phrases penned by Poe (see Appendix B). Asked to respond to the passage, the students pointed out the specificity of the description which created an atmosphere broken only by the "bright cheery daffodils" phrase. They tried to rationalize Poe's inclusion of the phrase as possible relief from the pervasive gloom, but that didn't seem consistent with the rest of the story. This exploration led eventually (after the class was told that the phrase had been added by the instructor) to discussion of when specifics are superfluous, resulting in the invention of the notion that a writer's purpose determines what specifics to include and what to exclude (in Poe's case, the purpose being to create gloom, negating the inclusion of other details, whether realistic or not). As in other learning cycles, the expansion of the idea came naturally from application in their own writing throughout the semester.

After seeing the need for specificity, students were led through a

learning cycle to show them one vehicle for achieving specificity--the cumulative sentence.* The exploration phase of the cycle consisted of examining some cumulative sentences and noting the characteristics. Part of the session might sound like this fictional dialogue:

> "What do you notice about this sentence?"
> "Well, it's long and has lots of detail."
> "What else?"
> "It's got a lot of phrases in it."
> "What do you notice about the phrases?"
> "They all begin with ing words: crouching, wagging, making."
> "Where do they come in the sentence?" "At the end."
> "What about the next sentence?"
> "It's about the same, except the phrases are different. They don't start with ing words."

Further discussion might include the naming of those phrases, such as participle for "ing words," but only after students had invented the concept of the participle for themselves. Other characteristics were identified in the same way until the students had invented the concept of the whole cumulative sentence with its beginning simple statement and accumulation of various modifying phrases and clusters. Although concrete operational students (about half the class, according to research by Renner cited earlier) can only do limited interpolations with the cumulative sentence, all students were able to grasp the basic concept and see the value of the modifying phrases for providing specificity. Expansion of the concept consisted of students' composing their own cumulative sentences and later employing them in papers.

One more "premeditated" learning cycle, during the initial stages of preparing the personality profile, began with the instructor's telling a joke. After the punchline, the instructor asked if the students wanted

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*See Francis Christensen, Notes Toward a New Rhetoric, (New York: Harper & Row, 1967) for complete explanation of the cumulative sentence.

to hear the joke again. A negative consensus prompted the instructor to ask "why?" to which students responded that they already knew the punchline, that it would be boring to hear the joke again. This exploration led to a discussion of interest and what makes something interesting to a reader. The class then invented types of interest-stimulators such as the informative, the unusual or surprising, the dramatic, the humorous, and the ironic. Expanding the idea of interest, the class decided that writing could be made interesting by employing the interest-stimulators they had invented.

The learning cycles described to this point were prepared in advance of class time to teach the concepts of audience interest, specificity, selection of detail, research, thesis, and cumulative sentence. Other learning cycles, as mentioned previously, stemmed directly from problems which arose in the process of writing or critiquing their essays. For example, when students were first assigned to small groups with the purpose of critiquing each other's first drafts, they quickly found that beyond the mechanics of spelling, punctuation, and usage, they didn't know what to look for. They soon discovered that critiquing (or editing, as they came to call it) was merely an expansion of what they had been doing already. That is, after the exploration phase (trying to edit) they invented the concept of editing as the process of looking for the writer's point, determining if the essay was interesting, and judging the adequacy and relevance of specificity in the essay. Further discussion resulted in the invention of a hierarchy of editing concerns, with determination of the writer's purpose--based on his/her message, audience, and genre--at the top of the hierarchy. That is, editing first involved finding

the writer's purpose, then determining the appropriateness of everything in the paper in light of that purpose. Expansion of the idea included further discoveries of elements of writing which were also found to be subordinated to the writer's purpose.

One such element was organization, a concept which was invented after a few students tried to impose a structure with which they were familiar--sometimes called the "three-point essay"--onto their writing. This structure requires an introductory paragraph which introduces a thesis, which is then developed by three supporting paragraphs followed by a summarizing conclusion. After an exploration of several essays, the class concluded that the three-point essay did not fit those writers' purposes; there were alternative means of organization. The students' papers which would not fit in a three-point essay were seen as possible alternative structures, and further discussion resulted in the invention of organizational patterns such as chronological narrative or description (these terms are not necessarily the students'), pyramid (least important to most important ideas), and inverted pyramid (as used in newspaper stories).

Paragraphing was another organizational problem which precipitated a learning cycle. Some students seldom indented while others did so frequently. They wanted to know what was "right." For exploration the instructor brought several examples of paragraphs, including newspaper stories, dialogue, and bits of prose that were essentially descriptive, narrative, persuasive, or expository. From those examples, students invented reasons for paragraphing such as appearance or cosmetics (as in newspapers), changing speakers, grouping details, separating segments of

action, and grouping and developing arguments. As with the magazine articles used earlier to infer research techniques, the examples of paragraphs in this exercise were used to infer purposes for paragraphing, not to give models for students to attempt to emulate (although the students may well have used them as models).

As other problems were encountered during the writing and editing processes, exploration of those problems led to invention of solutions with expansion of the idea coming in subsequent writing and editing processes. After editing sessions, students revised their papers according to peer and instructor comments made in the sessions. For instance, a student might say, "You say Dale is a real clown, but you don't give examples. Examples would be more specific and make it more interesting." Or someone might say, "There are a lot of different ideas here, and I couldn't figure out what your point is. You need to tie it all together somehow or leave some ideas out." Students thus saw the need for such things as specificity and thesis, not because a textbook or a teacher told them, but because the learning cycles and their own attempts to send and receive communication revealed it to them. Once aware of a problem, if students couldn't find solutions on their own, peers could offer suggestions. In the case of the student's comment about needing examples of Dale's being a clown, another student might suggest that the writer do more research to find such examples. Or in the case of the paper without unity, other students might help the writer sift through all the information, find a good point, and select relevant details. In so doing, students expanded ideas already taught and encountered new situations which could disequilibrate them, providing material for the instructors to instigate new learning cycles.

Unlike other elements of writing, the mechanics of spelling, punctuation, and usage were not dealt with until the final draft of each paper. The reasoning behind this was: (1) it was a waste of time to deal with, say, a punctuation error until the rest of the content was set because the sentence which contained the error might not be around by the last draft anyway; (2) students tend to fasten or center on mechanics at the expense of other elements unless otherwise directed; (3) students often contend that mechnical errors are what English teachers are primarily interested in, and focusing much attention on those errors reinforces that suspicion; (4) much of grammar and usage is beyond the grasp of concrete operational students (which, as mentioned in the theory section, half of college freshmen are likely to be) because it is a formal postulatory deductive system. With the exception of the syntax studied in the cumulative sentence (mentioned earlier), grammar and mechanics were handled as part of final manuscript preparation, as students "cleaned up" anything that might distract a reader or provide miscues.

In addition to the personality profile, students in all the experimental group classes wrote restaurant profiles. Like the personality profiles, the restaurant profiles stressed the gathering of information through interviews and observation, and students interviewed customers, employees, and owners. For two of the instructors, these first two assignments filled the semester. The third instructor had students write articles for their choice of magazine with their choice of topic. Since the audience for this assignment was not classmates, the students did audience analyses of their particular magazines, reading several articles and inferring age, sex, class, political persuasion, interests, and other

characteristics of each magazine's readership. This expansion of one of the elements of writing invented earlier, that of audience, was an attempt to encourage formal operational thinking--abstracting an audience by inference then abstracting how to write for that audience, whereas previous assignments were written for an actual audience (classmates).

When students submitted each assignment to the instructors for grading, all the drafts and written peer comments for that assignment were included. From these, instructors were able to see the paper evolve and determine how successful students were in following revision instructions given by classmates and instructors. Students' success in revising to fit their purposes was the basis for grades.

Evaluation

Pre- and posttest essays were shuffled and coded from a table of random numbers, duplicated, and evaluated by three disinterested teachers from other schools. The method of evaluation was holistic, and the evaluators (two college English instructors and a high school English teacher) were selected because of their practice in holistic evaluation while participants in the Oklahoma Writing Project.* Holistic scoring involves

> . . .evaluating the paper as a whole. Such evaluation is achieved through the use of a scoring guide, or rubric, which has been mastered, even internalized, by the reader. This kind of rubric describes each point on a scale for ideas, organization, language, tone and awareness of audience, use of syntax, and mastery of conventions. These separate aspects, however, are described in terms of the specific assignment and the relationships these aspects bear to each other at any point on the

*The Oklahoma Writing Project, like other projects patterned after the original Bay Area Writing Project, consists of annual summer institutes in which composition teachers from all school levels share teaching and evaluating techniques they have developed, and consider recent research in composition.

> scale in achieving a unified composition. . . .These procedures require readers to set aside their personal preferences and idiosyncrasies in order to make the process work with precision, speed, and fairness. Readers give scores based upon the rubric; they do not mark papers for correctness.
>
> Holistic scoring assumes that each factor that makes up writing skills is related to all other facts and that one factor cannot easily be separated from the others. It views a piece of writing as a total work, the whole of which is greater than the sum of its parts. Such a scoring focuses on what the student does well instead of the errors made. . . .The reader scores the paper by deciding where it fits within a range of other papers written on the particular question.
>
> The nine-point scale is perhaps the most widely used for holistic scoring. It affords the best range and thus gives a better opportunity for readers to make fine discriminations in quality of writing.[58]

Prior to receiving the essays, the three readers met with the investigator to establish the rubric for evaluation (see Appendix C) and were given two sample essays (not from the study) to evaluate. All three evaluators rated one paper a six and the other an eight, so the investigator was satisfied that they were in agreement on the criteria.

None of the evaluators knew of the design of the experiment. Each was given a complete set of pre- and posttests with a one-week time limit (to avoid differences in evaluation due to time lapse). They worked independently (a slight departure from the usual holistic procedure of having each evaluator evaluate only a few of the papers but making sure each paper is read twice), thus yielding three scores for each essay. The evaluation was done during early August 1980 when none of the evaluators had classes, thus avoiding conflicts with class preparation and evaluation of their own students' papers.

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[58] A Common Ground For Assessing Competence in Written Expression, Division of Curriculum and Instructional Services, Office of the Los Angeles County Superintendent of Schools, 1978.

The significance of gains from pre- to posttests was measured separately for control and experimental groups using a t-test for correlated data. Then the significance of the differences of the gains between control and experimental groups was measured using an F-test for independent data.

A second form of evaluation, separate from the pre- and posttests, was an attitude survey (see Appendix D) given to students three weeks prior to the end of the semester of the experiment. The two-part survey, the parts administered on successive days, was designed to determine students' attitudes toward the procedures used in the classes and their attitudes about writing. It was content validated by professors John W. Renner and Jerome C. Weber. On part one, students were asked to respond to four questions with one of five responses ranging from very negative to very positive. The four questions asked about students' feelings about the course, the instructor, the material covered, and the teaching procedures. Two more questions on part one were to be answered on a similar five-point scale, regarding the students' own assessment of improvement in their writing and attitude toward writing. The control and experimental group results on each question were compared using an F-test for independent data to determine if there was a significant difference.

Part two of the attitude survey included two sections. The first section asked whether the student was told what content to know or led to find out about the content. The results were compared using a chi-square test for independent data. The second section of part two listed seven statements about the teaching procedures, asking students to check which-

ever statements they felt were true. Statements for response included "I like them," "I like them, but felt insecure for part of the semester," and "I do not like them." Because students could check any or all of the statements, the data were evaluated by a test of the significance of proportion on each item.[59]

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[59]N. M. Downie and R. W. Heath, Basic Statistical Methods, 4th ed, (New York: Harper & Row, 1974) pp. 181-187.

CHAPTER IV

PRESENTATION OF THE DATA

Types of Error

This research began with the question: What differences in the writing of college freshmen would result from an experimental treatment based on Piaget's theories of development, compared with a control group treatment of traditional instruction? Any consideration of the findings of this research must involve a judgment of the significance of differences between the groups. Committing a Type I error would suggest that the experimental treatment produced superior gains when actually it did not. A Type I error, then, might result in expensive but fruitless composition curriculum changes. A Type II error, on the other hand, would suggest that the experimental treatment did not produce superior gains when it indeed did. A Type II error, therefore, might result in perpetuation of ineffective composition curricula rather than adoption of curriculum similar to the experimental treatment. The investigator would prefer to avoid a Type II error, which would result in the rejection of a potentially effective, viable alternative to the status quo, and suggests a .05 level of significance which is a reasonable compromise between Type I and Type II errors. To provide greater latitude of interpretation, the investigator chose to report the level of significance of the findings.

Types of Data

Two types of data were collected in this investigation: (1) three holistic scores for each pretest and posttest essay obtained from 83 students (59 experimental and 24 control) enrolled in freshman composition;

(2) data from a three-part attitude survey administered on two separate days near the end of the treatment (the first part completed by 126 subjects and the other two parts completed by 118 subjects--a difference due to the attendance patterns on the day administered. (The difference between the number of attitudinal surveys and pretest-posttest essays resulted from accidental loss of several of the latter.)

Essay Scores

The three evaluators' scores for each essay were averaged to obtain a pretest mean score and a posttest mean score for each student. These are presented, along with the differences between pretest and posttest mean scores, in Table 4-1.

TABLE 4-1

INDIVIDUAL PRETEST AND POSTTEST MEANS AND DIFFERENCES

Subject No.	Pretest Mean	Posttest Mean	Difference	Group-Instructor
1	4.33	5.67	1.34	Exp-A
2	6.33	7.33	1.00	Exp-A
3	4.33	3.33	-1.00	Exp-A
4	4.33	7.00	2.67	Exp-A
5	5.67	7.33	1.66	Exp-A
6	6.33	7.33	1.00	Exp-A
7	5.67	4.67	-1.00	Exp-A
8	3.33	5.67	2.34	Exp-A
9	5.33	6.00	0.67	Exp-A
10	6.67	8.00	1.33	Exp-A
11	5.33	5.67	0.34	Exp-A
12	2.00	6.00	4.00	Exp-A
13	6.00	7.33	1.33	Exp-A
14	5.00	7.33	2.33	Exp-A
15	3.67	4.67	1.00	Exp-B
16	6.67	6.33	-0.34	Exp-B
17	5.33	4.33	-1.00	Exp-B
18	7.33	7.33	0.00	Exp-B
19	4.33	6.00	1.67	Exp-B
20	3.33	4.67	1.34	Exp-B
21	5.33	6.33	1.00	Exp-B

TABLE 4-1 (Cont.)
INDIVIDUAL PRETEST AND POSTTEST MEANS
AND DIFFERENCES

Subject No.	Pretest Mean	Posttest Mean	Difference	Group-Instructor
22	4.67	7.00	2.33	Exp-B
23	6.67	8.00	1.33	Exp-B
24	5.33	6.00	0.67	Exp-B
25	5.00	6.33	1.33	Exp-B
26	5.33	6.00	0.67	Exp-B
27	4.33	5.67	1.34	Exp-B
28	6.33	6.67	0.34	Exp-B
29	5.67	8.33	2.66	Exp-B
30	5.33	8.00	2.67	Exp-B
31	4.33	5.33	1.00	Exp-B
32	5.33	7.67	2.34	Exp-B
33	7.33	8.00	0.67	Exp-B
34	7.33	9.00	1.67	Exp-B
35	3.67	4.33	0.66	Exp-B
36	6.00	6.00	0.00	Exp-B
37	4.67	4.67	0.00	Exp-B
38	6.00	6.67	0.67	Exp-B
39	4.67	4.67	0.00	Exp-B
40	4.33	5.67	1.34	Exp-C
41	5.33	5.67	0.34	Exp-C
42	5.00	5.67	0.67	Exp-C
43	5.67	6.33	0.66	Exp-C
44	6.33	5.67	-0.66	Exp-C
45	5.00	6.00	1.00	Exp-C
46	4.33	5.33	1.00	Exp-C
47	3.67	7.33	3.66	Exp-C
48	5.00	5.67	0.67	Exp-C
49	3.67	4.33	0.66	Exp-C
50	4.67	7.33	2.66	Exp-C
51	4.67	4.33	-0.34	Exp-C
52	4.33	5.67	1.34	Exp-C
53	5.33	7.00	1.67	Exp-C
54	3.67	5.67	2.00	Exp-C
55	5.33	6.00	0.67	Exp-C
56	5.33	6.33	1.00	Exp-C
57	4.00	4.33	0.33	Exp-C
58	4.67	6.67	2.00	Exp-C
59	6.33	4.33	-2.00	Exp-C
60	7.33	5.33	-2.00	Con-B
61	5.33	4.67	-0.66	Con-B
62	3.00	3.00	0.00	Con-B
63	4.33	4.67	0.34	Con-B
64	5.67	3.00	-2.67	Con-B
65	5.33	4.67	-0.66	Con-B
66	5.33	3.67	-1.66	Con-B
67	3.33	3.33	0.00	Con-B

TABLE 4-1 (Cont.)
INDIVIDUAL PRETEST AND POSTTEST MEANS
AND DIFFERENCES

Subject No.	Pretest Mean	Posttest Mean	Difference	Group-Instructor
68	4.67	4.33	-0.34	Con-B
69	5.00	5.00	0.00	Con-B
70	5.67	3.67	-2.00	Con-B
71	4.67	3.33	-1.34	Con-B
72	6.00	6.00	0.00	Con-B
73	3.67	6.67	3.00	Con-B
74	4.33	4.00	-0.33	Con-B
75	6.67	3.67	-3.00	Con-B
76	4.33	5.33	1.00	Con-C
77	5.33	5.00	-0.33	Con-C
78	4.33	4.67	0.34	Con-C
79	6.00	6.33	0.33	Con-C
80	6.00	6.33	0.33	Con-C
81	5.33	8.00	2.67	Con-C
82	4.67	5.00	0.33	Con-C
83	6.00	4.00	-2.00	Con-C

Individual mean scores were totaled and averaged for each group to determine pretest and posttest means. Table 4-1 shows these means along with the mean gain/loss and the t values obtained in evaluating the significance of each group's gain/loss. Table 4-2 shows the standard deviations and F values obtained from a comparison of experimental and control group pretest means, posttest means, and mean gain/loss.

TABLE 4-2

PRETEST AND POSTTEST MEANS,
MEAN GAIN/LOSS,
AND t VALUE OF GAIN/LOSS

Group	Pretest Mean	Posttest Mean	Mean Gain/Loss	t	p
Experimental	5.107	6.135	1.028	7.03	0.0001
Control	5.097	4.736	-0.361	-1.22	0.2361

TABLE 4-3

STANDARD DEVIATIONS AND F VALUES
OF DIFFERENCES BETWEEN
PRETEST MEANS, POSTTEST MEANS, AND GAINS

Means	Difference Between Groups	S. D.	F	p
Pretest	0.010	1.067	0.001	0.969
Posttest	1.399	1.230	22.06	0.0001
Gain	1.389	1.226	21.89	0.0001

Pretest means of 5.097 for the control group and 5.107 for the experimental group were found to be statistically the same when subjected to an F-test (F=0.001, p=0.969). The posttest means were 4.736 and 6.135 respectively for the control and experimental groups. The F-test was applied to those means, the probability that the difference occurred by chance was p=0.0001 (F=22.06). When the difference between the two groups' gains (1.389) was subjected to the F-test, a value of F=21.89 was obtained. The probability of that difference in gains occurring by chance was p=0.0001. When measured by a t-test, the experimental group's gain of 1.028 yielded a t-value of 7.03 with a probability of 0.0001, while the control group's loss of .361 yielded a t-value of -1.22 with a probability of p=0.2361.

Attitude Survey Scores

Each of the three parts of the attitude survey (see Appendix D) was treated with a different statistic due to the nature of the parts. Table 4-4 shows the mean responses for each group on the first six questions

(part one) to which students were supposed to respond on a scale of one to five. On the first four questions, the scale ranged from "very negative" (one) to "very positive" (five), while on questions five and six the scale went from "very much worse" (one) to "very much better" (five).

TABLE 4-4

MEAN RESPONSES ON PART ONE OF ATTITUDE SURVEY

Group	Item A	Item B	Item C	Item D	Item E	Item F
Control	3.729	4.270	3.667	3.729	4.083	3.750
Experimental	4.256	4.641	4.115	4.590	4.333	4.308

Table 4-5 shows the differences between group means, the standard deviations and the F-values obtained in testing those differences.

TABLE 4-5

COMPARISON OF MEAN DIFFERENCES ON PART ONE OF ATTITUDE SURVEY

Item	Mean Difference	S. D.	F	p
1	.527	.872	10.86	.0013
2	.371	.759	7.07	.0089
3	.448	.864	8.01	.0054
4	.861	.881	28.32	.0001
5	.250	.666	4.19	.0428
6	.558	.781	15.16	.0002

Experimental group responses were higher (more positive) on all six questions: question A (How do you feel about the course itself?) F=8.01, p=0.0054; question B (How do you feel about the instructor of the course?), F=7.07, p=0.0089; question C (How do you feel about the material covered in the course?), F=8.01, p=0.0054; question D (How do you feel about the procedures used in the course?), F=28.32, p=0.0001; question E (How do you feel your writing ability has changed as a result of having taken this course?), F=4.19, p=0.0428; and question F (How do you feel your attitude toward writing has changed as a result of having taken this course?), F=15.16, p=0.0002.

In part two of the attitude survey, students were asked to check either of two responses which best described their general feeling about the course: "I felt I was being told what content to know," or "I felt I was being led to find out about the content." Table 4-6 shows the number of responses to each statement (labeled "told" and "led" as well as the number of students who chose not to check either statement.

TABLE 4-6

RESPONSES TO FIRST SECTION OF PART TWO OF ATTITUDE SURVEY

Group	Told	Led	No Response
Experimental	4	52	1
Control	10	41	10

When the chi square statistic was used to check the data in table 4-6 for differences, a value of χ^2=11.146 was obtained (p=0.001). That chi square value indicates that the experimental group had more "leds" and fewer "tolds" and nonresponses.

In the second section of part two, students were asked to check any items which described their feelings about the teaching procedures used in their class. The seven items which students could check included: (1) "I like them." (2) "I do not like them." (3) "I like them, but felt insecure for a part of the semester." (4) "I do not like them because I felt insecure." (5) I like them but felt insecure for the entire semester." (6)" I like being told what to do." (7) "I like finding out ideas for myself." The resulting data are presented in Table 4-7.

TABLE 4-7

NUMBER OF RESPONSES
AND z VALUE FOR DIFFERENCE OF PROPORTION
IN SECOND SECTION OF PART TWO OF ATTITUDE SURVEY

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7
Experimental N=57	46	3	25	1	2	4	48
Control N=61	40	6	24	0	2	7	43
z	1.845	-0.919	0.502	1.039	0.060	-0.836	1.769
p	0.033	0.179	0.308	0.150	0.467	0.202	0.039

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This investigation was designed to determine the effect on the writing of college freshmen of a composition course based on the developmental theories of Jean Piaget, emphasizing peer interaction through group editing, using students' own essays instead of textbook models to identify elements of composition, limiting assignments to three or four essays per semester with numerous revisions, stressing reader interest, and providing a maximum number of concrete experiences through developmental learning cycles. It might be argued that too many variables were present in the experimental treatment, and that each variable should have been isolated in a separate study. Certainly, a study could be conducted comparing the effects of formal lecture and concrete learning cycles on a single variable such as instruction in the modes. Such a study would be similar in purpose to research in science by Friot[60] and Lawson[61] which found learning cycles most effective. Instead, the investigator contends that the most productive research in applying Piagetian theories to composition should come from studies involving a thoroughly integrated, student-centered curriculum such as the one developed for this study. The overall effect of this integrated program is what the investigator wished to measure, not its individual parts, although this discussion will of necessity consider the contribution of various aspects of the curriculum.

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[60]F. Elizabeth Friot, "Curriculum Experiences and Movement from Concrete Operational Thought," Research, Teaching, and Learning with the Piaget Model, op. cit., pp. 79-89.

[61]Lawson and Wollman, op cit., pp. 413-430.

Discussion and Conclusions

In light of studies such as the one done by Jewell[62] which found no significant differences in the improvement of writing by college students who took freshman composition courses and students who didn't, any course which produces significant improvement in the writing of freshmen bears considerable attention. Therefore, before comparing the experimental and control group data from the present study, the investigator would like to establish the merit of the experimental treatment on the basis of the improvement in writing which it produced. Rated on a scale of one to nine, the experimental group mean score on the pretest essay was 5.096. The posttest mean score of 6.135 shows a gain of 1.039 which yields a t-value of t=7.03, p=0.0001. To put that into a different perspective, it could be converted to a percentile which would show a gain of eleven percent, or eleven points on a hundred-point grading scale. Of the fifty-nine subjects in the experimental group, forty-eight showed gains from pretest to posttest, with one gain as high as 4.0. Four subjects showed no change, and seven had lower posttest scores, the greatest loss being -2.0.

The seven students whose scores dropped present something of a problem which cannot be answered definitely from the data. Why did their scores drop? Some students admitted to the instructor that they neglected or "blew off" (to use their own terminology) the posttest essay. Assuming that was the case, what factors contributed to their negligence? Although the posttest essay was assigned two weeks prior to the end of

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[62]Ross M. Jewell, et al, The Effectiveness of College-Level Instruction in Freshman Composition, (Cedar Falls, Iowa: State College of Iowa, 1966).

the semester and turned in one week before the semester's end to avoid conflict with final examinations and other final assignments from other classes, it was probably too late in the semester to avoid such conflicts. Consequently, some students did not devote as much time to the posttest essay as they might have otherwise. Another possible explanation might be that, recognizing the posttest assignment as identical to the pretest which, to avoid influencing the students, was not graded or handed back to them, some students might have speculated that the posttest would not be graded.

Another explanation, besides student negligence, for the lack of improvement in some essays is that the treatment itself was either ineffective or deleterious. Given the latter proposition, what harmful effects could be produced by the experimental treatment? It is possible that students conditioned by previous prescriptive instruction stressing rules and formulas could write a formulaic pretest then, with no stock formulas to cling to, write an inferior posttest because of insecurity or confusion fostered by a class not emphasizing such formulas. The experimental treatment undoubtedly required adjustment for these students who were conditioned by years of being told. That some students had difficulty in that adjustment was apparent from comments they made in class (which in effect could be stated, "Why don't you just tell me the answer instead of making me figure it out for myself?") and from the last section of the attitude survey. When asked by the second section of part two of the survey to check appropriate comments about the teaching procedures used in the course, twenty-five experimental group students checked the state-

ment, "I like them, but felt insecure for a part of the semester." One experimental group student checked the statement, "I do not like them because I felt insecure," and two checked the statement, "I like them, but felt insecure for the entire semester." Perhaps even more significant is the fact that four experimental group students checked the statement, "I like being told what to do." (The students' names were not on the surveys, so there is no way of tying individual student responses on the survey to their posttests.) The proposition that the experimental treatment had a negative effect on some students' writing because it forced them to think for themselves would seem not to be a flaw in the treatment but instead an indictment of previous instruction.

The other proposition, that the experimental treatment was ineffective for some students, bears consideration. In what way(s) might it have been ineffective? If textbooks are necessary and students' own essays are insufficient for exploring the elements of composition, then the course could certainly have been ineffective. However, the investigator and the other two experimental instructors found that every important element of composition did arise from the students' writing and discussions. A more likely, though related, explanation of possible ineffectiveness might be the absence of explicit instruction in the modes of writing. In fact, the investigators purposely chose a pretest-posttest essay topic which would lend itself more to conventional modal instruction (such as that used in the control group) than to the experimental instruction, so as not to favor the experimental group. The pretest and posttest assignment to write about power was made to order for students with specific experience in writing expository or

argumentative essays (such as the control group had). Furthermore, the pretest-posttest assignment was conducive to a deductive approach to thesis development (beginning with one of the provided quotations on power as a thesis, then setting out to support it), whereas the experimental group assignments during the semester encouraged an inductive approach to developing a thesis from that information (by first gathering information, then generalizing a thesis from that information). The investigators wanted to see if experimental group students could effectively transfer the ideas from other kinds of writing (the other experimental group writing assignments would probably be classified as primarily descriptive or narrative) to a new situation. Possibly some students could not transfer what they had learned. Judging from the data, however, most of the experimental group students were successful in expanding the concepts they had invented to the new situation presented by the posttest.

One conclusion that may be drawn from the foregoing discussion is that the experimental treatment improved the writing of most students because it successfully taught an effective approach to all kinds of writing. Furthermore, the adjustment required for many students, from being <u>told</u> to thinking for themselves, indicates that independent thinking probably has not been developed by their previous instruction. If independent thinking is (as it is purported to be in the philosophies stated in many school handbooks) a major goal of education, then more curricula like the experimental treatment should be considered for adoption.

So far, the discussion has centered on the experimental group to establish the efficacy of the experimental treatment on its own merit. Comparing experimental group data with that of control group data presents a bit of a problem: a "conventional" approach to composition instruction is something of a fiction. The practice of teaching the classical rhetoric of Aristotle and others is certainly conventional, but various instructors emphasize different aspects of classical rhetoric, and their methodological approaches may also vary. Furthermore, since so much recent literature has deprecated traditional instruction, further deprecation may seem akin to "beating a dead horse." Be that as it may, a great number of composition teachers continue to use the same old approaches, no matter how ineffective, and perhaps another "body count" will cause some teachers to consider alternatives.

With a pretest mean of 5.097 and a posttest mean of 4.736, the control group had a mean loss of .361 which yielded a t-value of $t=-1.22$, $p=0.236$. This raises the question of why so many scores dropped. Exactly half of the control group students scored worse on the posttest than on the pretest, and four others scored the same on both. It would be convenient to say, "That just demonstrates the superiority of the experimental treatment over the control treatment," and leave it at that. But obviously that would not be convincing to anyone favoring traditional instruction, nor would it explain the loss.

One explanation for the control group loss might be the large number of papers they wrote during the semester. Having already written eight or nine essays, the students' drop in performance on the posttest could perhaps be attributed to "writer burnout," similar to "teacher burnout"

among teachers who grade a large number of papers. If that is so, the experimental curriculum is all the more attractive with its three essays. Another possible explanation for the control group loss is that the post-test assignment was too much like previous control group assignments (such as instructor B's definition essay) and therefore lacked interest. It is questionable, however, whether a lack of interest in the assignment would offset the benefits of having had experience in that mode of writing. That experience, in fact, negates another possible explanation for the loss: that control group students were ill-equipped for writing in the mode(s) prompted by the assignment.

Explanations similar to those offered for experimental group losses could be offered for control group losses, but that would not explain the difference between the groups in the proportion of losses. Perhaps many control group students were simply not motivated because the course did not enhance an already low interest in writing. This possibility is borne out by students' responses to question F on part one of the attitude survey: "How do you feel your attitude toward writing has changed as a result of having taken this course?" Responding on a scale of one (very much worse) to five (very much better), the control group mean was 3.75, a little over halfway between "about the same" and "somewhat better." The experimental group mean of 4.31 (between "somewhat better" and "very much better"), was higher ($F=15.16$, $p=0.0002$).

Other questions on the survey may shed some light on students' attitudes about the course and, hence, the differences in the group gains from pretest to posttest. Question E, "How do you feel your writing

ability has changed as a result of having taken this course?", solicited the same scale of responses as question F. The difference between the experimental group mean of 4.333 and the control group mean of 4.083 yielded an F-value of F=4.19, p=0.043). While questions E and F were intended to get students to assess the effects of the course, questions A through D sought negative or positive responses toward the course, the instructor, the material, and the procedures. In each case, the experimental group rated significantly higher. Feelings about the course itself on question A were between "somewhat positive" and "very positive" for the experimental group with a 4.256 mean, while the control group's feelings were between "neutral" and "somewhat positive" with a 3.729 mean, yielding an F-value of F=10.86, p=0.001. On question B the experimental mean of 4.641 was higher (F=7.07,p=0.009) than the control group mean of 4.271, indicating that the experimental group felt very positive about the instructor. On question C a difference of (F=8.01,p=0.005 between the experimental group mean of 4.115 and the control group mean of 3.667 indicated that the experimental group felt more positive toward material covered in their course than did the control group. The greatest difference (F=28.32, p=0.0001) occurred on question D in response to teaching procedures, the experimental mean of 4.590 indicating a "very positive" feeling compared to the control mean of 3.730, or "somewhat positive."

One obvious conclusion from these data is that the experimental curriculum is more appealing to the students than traditional courses such as the control treatment. Another conclusion that may be inferred is that the more appealing the curriculum, the more it produces confidence

in and therefore positive feelings about writing. Taken one step further these conclusions lead to another: one reason for superior gains by the experimental group was the improvement in confidence and attitude toward writing fostered by the experimental treatment.

Given these conclusions and the conclusion reached earlier that the experimental treatment's content (an effective approach to all kinds of writing), was superior, the investigator next wanted to determine what it was about the experimental treatment that made it more appealing and more effective in teaching a content. The first section of part two of the survey asked students to check the statement which best described their feelings about how the course was conducted. The statement "I felt I was being led to find out about the content" received ninety-one percent (fifty-two responses) of the experimental group responses and sixty-seven percent (forty-one responses) of the control group responses. The statement "I felt I was being told what content to know" drew only seven percent (four responses) from the experimental group and sixteen percent (ten responses) from the control group. Ten control group students and one experimental group student did not check either statement. The overall difference between the two groups was $\chi^2=11.146$, $p<0.001$, and although the chi square statistic does not consider the variables individually, it is apparent that a greater percentage of experimental group students felt they were being led to find out about content. The importance of this finding is evident when results of the second section of part two of the attitude survey are considered. In that section students were asked to check as many items as they felt were applicable to them. The sixth and seventh items are of particular interest because they

indicate students' preferences for teaching procedures relative to being told or led. Only four of fifty-seven experimental group students (see Table 4-7) and seven of sixty-one control group students checked "I like being told what to do." A test of proportions (Because of the nature of this section of the survey which enabled students to check any or all of the items, a test of proportions was used.) applied to the data produced a z-value of $z=0.386$, $p=0.202$, indicating that the two groups did not differ at the 0.202 level, in their attitudes toward being told what to do. Forty-eight experimental group and forty-three control group students checked "I like finding out ideas for myself." When a test of proportion was applied to these data, it yielded a z-value of $z=1.769$, ($p=0.039$), indicating that at the probability level of 0.039 the experimental group preferred finding out ideas for themselve more than did the control group.

The higher number of students checking "I like finding out ideas for myself (see Table 4-7, column seven) indicates that most of the students in both groups preferred finding out ideas for themselves and would consequently prefer instruction similar to the experimental treatment. Therefore, the higher number of students in the experimental group feeling that they were led indicates that more experimental group students than control group students got their preference.

In response to other statements in part two, section about teaching procedures in their courses, forty-six experimental group students and forty control group students checked "I like them" ($z=1.845$, $p=0.033$); three experimental and six control group students checked "I do not like them" ($z=-.919$, $p=0.179$); twenty-five experimental and twenty-four

control group students checked "I like them, but felt insecure for a part of the semester," (z=.502, p=0.308); one experimental and no control group students checked "I do not like them because I felt insecure" (z=1.039, p=0.150); and two students in each group checked "I like them, but felt insecure for the entire semester" (z=.060, p=0.476). Interpreting these data is difficult because they do not seem to corroborate the findings from part one of the survey which indicated a greater preference for the experimental treatment. The key word in the last section may be insecure. Similar proportions of experimental and control group students checked the three items containing the word insecure. The investigator can only conjecture why. One hypothesis might be that prior experience in writing in secondary school caused some students to be so insecure about writing that no single semester course--no matter what method of instruction--could dispel the insecurity. Even the improved writing and confidence in writing of the experimental group, while perhaps eroding that insecurity, could not in one semester completely overcome feelings developed over a period of years. Another hypothesis is that the insecure students were concrete operational. The number checking items indicating insecurity is close to half of each group--about the same proportion of freshmen found to be concrete operational by McKinnon and Renner.[62] Concrete operational students could easily be insecure in a traditional composition class with its formal concepts and formal instruction, and they could likewise be insecure in a class such as the experimental group which, though largely concrete, pressed students to

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[62]McKinnon and Renner, op. cit.)

think for themselves. If either hypothesis is true, it does not negate the findings from part one of the survey. Students could improve their writing and attitude toward writing considerably and, if they began with an antipathy toward writing, still not particularly enjoy it or feel secure in it. The fact that similarly large proportions of students in each group checked "I liked them" in reference to teaching procedures, does not discount the findings of the first part of the survey that the experimental treatment was preferred; someone can like both chocolate and vanilla ice cream but like one better than the other.

The investigator concludes, therefore, that no contradiction exists between the various sections of the attitude survey, and that the greater appeal of the experimental treatment was its opportunity for exploration which fulfilled many students' desire to find out ideas for themselves.

A final conclusion which may be drawn from this research is that the lack of improvement in the control group's writing supports Jewell's assertion that conventional freshman composition courses do not improve writing.

Recommendations

Probably more questions were raised than answered by the investigation. Although differences between the control and experimental groups were significant on both pretest-posttest gains and most parts of the attitude survey, the precise reasons for those differences are not certain. What effect(s) did each aspect of the experimental treatment have on the results? Would the results be the same if any single factor--such as peer interaction, the absence of textbooks or instruction in the modes, or fewer concrete experiences--were changed? Further research needs to

be done to answer these questions. One form of research might include Piagetian operational levels tests administered before and after the treatment to measure the effects of the experimental treatment on students' operational levels. Case studies could be used to observe changes in students from the beginning to the end of the treatment. And, of course, the variables within the experimental treatment could be isolated and studied to determine if any one of them was the key or if, as the investigator suspects, it was the concomitant effect of all the variables in the treatment which produced the results.

Because the experimental treatment was concrete operations-oriented, it should be effective in secondary school and possibly to some extent in later elementary school, so similar studies could be done on those levels. Furthermore, because the methodology and content are so amorphous and concrete, the treatment should be suitable for students in basic or remedial writing classes.

Members of the research team agreed that the posttest would probably not begin to measure all the effects of the treatment on students, either at the time of the posttest or later. One principle of the Piagetian theory of development, as discussed in the theory section of this research, is that every equilibrating experience causes additional changes in mental structures, thereby carrying with it the seeds for further disequilibration. The semester of the experimental treatment, then, can be considered merely a gestation period with further expansion in other writing experiences producing manifold offspring. Therefore, a longitudinal study needs to be conducted after similar treatment to observe the long-range effects.

In addition to the improved writing and interest in writing engendered by the experimental treatment, it has benefits for the instructors. Grading three or four papers per semester is certainly less time-consuming than eight or ten papers, and this research suggests that fewer papers are more effective. Moreover, instructors will probably find, as the research team did, that grading and evaluating papers is less difficult and more productive when the students have themselves identified the problems and solutions in class editing sessions; consequently, a few comments about a paper's effectiveness suffice in lieu of numerous red marks and explanations.

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APPENDIX A

PRE- AND POSTTEST ASSIGNMENT

Below are a number of statements on the subject of power. Read them, and in a form of your choice (article, essay, theme, etc.), write on the subject of power.

"Patience and gentleness is power."
"Power corrupts; absolute power corrupts absolutely."
"The strongest man is the one who stands most alone."
"Blessed are the meek, for they shall inherit the earth."
"Wherever I found a living creature, there I found a desire to have power. "

A finished, type-written draft of this assignment is due one week from today. The assignment will be written entirely outside class, without assistance of the instructor. Type your name and section number in the upper right-hand corner.

APPENDIX B

SAMPLES OF PARAGRAPHS

TO BEGIN CONCRETE LEARNING CYCLES

The roach crawled across the Arm & Hammer Baking Soda, skirted the Schilling Ground Allspice and Durkee Cream of Tartar, and paused behind the Wyler's Instant Chicken Bouillon. When I lifted the bouillon jar, the disgusting little insect skittered up the inside of the cabinet wall to the next shelf and disappeared among the cereal boxes. I lifted box after box but saw no roach. Finally, there was one box left: Kellogg's All-Bran. Sure enough, I found the roach ensconced between the bottom flaps of the All-Bran. My mother uses All-Bran to make muffins, but I don't like them because they give me diarrhea. Once I missed a whole day of school because of diarrhea. Of course, I don't mind missing school. Some of the classes are okay, but I can't stand history or English. We read a story in English last week called Red Badge of Courage. It was about a guy in the Civil War who was a coward for awhile but ended up being brave. His name was Henry. I have a cousin named Henry who's always getting into trouble. He got arrested last week for shoplifting, swiping a candy bar from a Seven-Eleven store. He never would have got caught except he started eating it right there in the store. Henry never was very bright. Once he tried to steal a hubcap off a moving car. I had to get a new headlight for my car yesterday because it quit working. It had a run-in with a brick wall when I was putting the car in the garage. The body shop estimated that the fender and bumper would cost about $450.

"During the whole of a dull, dark, and cloudless day in the autumn of the year, when the clouds hung oppressively low in the heavens, I had been passing along on horseback, through a singularly dreary tract of country, and at length found myself as the shades of the evening drew on, within view of the melancholy House of Usher. I know not how it was--but, with the first glimpse of the building, a sense of insufferable gloom pervaded my spirit. I say insufferable; for the feeling was unrelieved by any of that half-pleasurable, because poetic, sentiment with which the mind usually receives even the sternest natural images of the desolate or terrible. I looked upon the scene before me--upon the mere house, and the simple landscape features of the domain--upon the bleak walls--upon the vancant eyelike windows--upon a few rank sedges--upon the bright, cheery daffodils growing in the yard--and upon a few white trunks of decayed trees--with an utter depression of soul which I can compare to no earthly sensation more properly than to the afterdream of the reveler upon opium--the bitter lapse into everyday life--the hideous dropping of the veil."

APPENDIX C

SCORING INSTRUCTIONS AND RUBRIC

FOR HOLISTIC EVALUATION

SCORING INSTRUCTIONS

A. Scale

Use scale of 1-9, but use even points primarily. First decision: is paper in upper half or lower half? Is paper a 2, 4, 6 or 8? Then refine scoring, using odd numbers to reward things which really stand out --language use, freshness, crispness--or to lower the score of a paper which was a struggle to read.

B. Rubric

The writer is to be rewarded for what he does well in response to the question. He may argue with it and still receive the top score. Evasions are kept separate. An evasion is a response to a different topic, one for which the reader must create a different rubric, not merely a poor response to the topic given. Writers will use different methods in showing the meaning which subjects have had for them: explanation, implication, narration, dialogue, connotation, contrast, methaphor, etc. But a paper that does not deal with the meaning of a subject should not receive the top score. A writer who deals with the meaning of a subject in implied ways can, however, receive the top score.

C. Some points to keep in mind.

1. Generally ignore mechanics. Add a point for exceptionally sophisticated style and grace; subtract a point for severe mechanical and stylistic deficiencies that block communication and meaning.

2. Do not be prejudiced by typing unless the paper is completely illegible.

3. Each paper deserves full respect, even the most maudlin, the most limited.

RUBRIC*

9-8 Papers that are clearly excellent. The top score, a score of 9, is reserved for that paper clearly above an 8. Both 9's and 8's are papers which develop the topic with excellent organization, content and insight. They display facile use of language and mastery of mechanics.

7 A thinner version of the excellent paper, still impressive, cogent, convincing, but less well handled in terms of organization, insight, or language.

6-5 An above-average paper, but it may be deficient in one of the essentials mentioned above. It may be less mature in thought or less well handled in terms of organization, syntax, or mechanics. The 5 paper is a thinner version of the 6. The papers below 5 are lower half papers.

4-3 The lower half paper, which maintains the general idea of the writing assignment, shows some sense of organization, but is weak in content, thought, language facility, mechanics. It may distort the topic or fail to deal adequately with one important aspect of the topic. The 3 paper is a thinner version of the 4.

2 A paper that makes an attempt to deal with the topic but demonstrates serious weakness in content and coherence and/or in syntax and mechanics. It is unacceptable for most standards.

1 An on-topic response that has almost no redeeming quality. It may be very brief or very long, but will be scarcely coherent and probably full of mechanical errors as well.

0 Given to a blank paper or a non-topic response.

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* From A Common Ground for Assessing Competence in Written , Expression Division of Curriculum and Instructional Services, Office of the Los Angeles County Superintendent of Schools, 1978, p.11.

APPENDIX D

ATTITUDE SURVEY

DEPARTMENT OF ENGLISH

COMPOSITION COURSE EVALUATION FORM

DIRECTIONS: Using the following scale, choose one number which best describes your reaction to questions A, B, C and D:

1 - very negative

2 - somewhat negative

3 - neutral

4 - somewhat positive

5 - very positive

A. _____ How do you feel about the course itself?

B. _____ How do you feel about the instructor of the course?

C. _____ How do you feel about material covered in the course?

D. _____ How do you feel about teaching procedures used in the course?

DIRECTIONS: Using the following scale, choose one number which best describes your reaction to questions E and F:

1 - very much worse

2 - somewhat worse

3 - about the same

4 - somewhat better

5 - very much better

E. _____ How do you feel your writing ability has changed as a result of having taken this course?

F. _____ How do you feel your attitude toward writing has changed as a result of having taken this course?

THANK YOU FOR YOUR HELP

DEPARTMENT OF ENGLISH

COMPOSITION COURSE EVALUATION FORM

Which of the following statements best describes your general feeling about how this course was conducted? Check the response which best describes your overall feeling.

_____ I felt I was being told what content to know.

_____ I felt I was being led to find out about the content.

Evaluate your own feelings about the teaching procedures used in the course. Check as many of these items as you feel are applicable to you.

_____ I like them.

_____ I do not like them.

_____ I like them, but felt insecure for a part of the semester.

_____ I like them, but felt insecure for the entire semester.

_____ I like being told what to do.

_____ I like finding out ideas for myself.

THANK YOU FOR YOUR HELP.