ACADEMY LITERACY

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Introduction

The news is out, only it isn't really news. The latest report[1] by the Carnegie Foundation for the Advancement of Teaching finds that college and university faculty are overwhelmingly critical of the preparation of undergraduates for higher education. We are not surprised by this finding because we have been listening to these judgements for years. In 1980, Arons warned college professors not to take for granted that students will possess such cognitive skills as understanding variables, propositional thinking, awareness of knowledge gaps, distinguishing between observations and inferences, hypothetical reasoning, and metacognitive awareness. When we subtract these processes, what seems left is a basis kind of literacy that at best would prepare students for the absorption of information in the lowest dualistic conception of knowledge and learning (Perry, 1970)

Others have documented lack of classroom experiences that would foster higher order thought processes. Applebee (1984 b), reporting case study examinations of writing across the curriculum and across grade levels in 200 schools, found that students were spending only about three percent of their school homework time writing paragraph-length or longer compositions. The emphasis in school writing, moreover, was on demonstration of previous learning rather than on building new knowledge, which focused attention on information rather than on discourse. Topics assigned often elicited a superficial survey response rather than deep level engagement with personally important subject matter. Goodlad (1985), in his intensive study of 1,016 classrooms across the nation, found that high school students spent about 16 percent of class time writing, but this included non-discourse activities such as fill-in exercises and short answers. More than half of class time was spent listening to teachers talk and only 5.2 percent on student centered discussion, suggesting a lack of experience in dialectics and argument.

To these reports Hirsch (1989) adds the evidence of cross-national comparisons, which invariably place American students in the lowest strata of achievement. Citing discussions with college deans, he con-

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[1] "The Conditions of the Professoriate. Attitudes and Trends, 1989," released November 6, 1989

cludes that in many institutions "the educational level of incoming students is so low that the first and second years of college work must be largely devoted to remedial work". (p. 29)

The picture is clear, and we have been looking at it for a long time. But while it is easy to point to it and reiterate the need for new and intensified school reform efforts, when we have done that we have not done much. As college educators, we have yet to define our own responsibility in bringing about significant improvements in student learning at all levels, which will certainly include formulating and communicating a concept of academic literacy that is truly functional in postsecondary learning.

Views of Literacy

To begin, we must acknowledge our concept is a complex one that requires definition from at least three angles, a triangulated concept if you will. One is the relationship of literacy to its traditional components, reading and writing, and how these relate to the print cultures that have dominated western thought for the last few centuries. The second is the mind-set that has grown with these print cultures, ways of thinking and valuing that have become so familiar to us that we may find them difficult to examine. As we shall argue, literacy is more than proficiency with written language; it is a state of mind. The third augle, which we cannot explore in the present discussion but is perhaps the source of the most profound questions concerning education in the years to come, involves the relationship hetween print and computer literacies, again going beyond technical proficiencies and looking at the mind-sets that each medium enables and exploits..

Eisenstein (1979) points out that western society lives, breathes aud thrives upon printed matter. As print technologies have advanced, the availability of this matter has progressed from abundant to overwhelming Kozol (1985) argues that Westerners need a literacy that enables them to bring order and meaning not only to this superabundance of print but to their lives amidst the information explosion. Certainly this situation has implications for reading and perhaps has led to a focus on reading in the development of academic skills.

With regard to reading, from Bloom's taxonomy to Adler's *How to Read a Book* higher order thinking has been emphasized. Clifford (1984) reports that Western academic institutions define literate individuals as those who are able to synthesize, organize and interpret ideas as well as apply information gained from reading to new situations. Culler (1975), Fish (1980), and Adler and van Doren (1972) would add that literate individuals also have familiarity with cultural and conventionaal "vraisemblance" (de Beaugrande (1984), that is, the various genres of thought that are embedded in texts they read. Such

high level literacy abilities are the means by whicb individuals become "informed readers" (Fish, 1980), that is, readers guided by awareness of their own prior knowledge and its contribution to the new meanings they construct from texts. Such readers attend not only to what texts "say" to them but also to what they "say" to texts, an interaction rather than a transmission, with the goal of discovering new meanings and insights from a two-way communication

In a similar vein, Freire and Macedo's (1987) conception of literacy includes the ability to read oneself. In fact, in his opinion, such an ability should precede more conventional aspects of literacy. In one of his most memorable statements he claims that "the very act of learning to read and write has to start from a very comprehensive act of reading the world, something which humans do before reading the words" (xiii) This world includes the readers themselves, so reading the world includes the ability to take a conscious approach towards learning and the acquisition of knowledge. Being readers of the world and therefore of themselves, such individuals focus on knowledge relevant to their needs with reference to the future as well as the present. This "power of envisagement" as Freire terms it results in hypothetical thinking and experimentation to test the truth and usefulness of theoretically conceived ideas.

A similar view of literacy, but with emphasis on writing rather than reading, is expressed by Christiansen (1988). She describes how a group of inner city high school seniors used their literacy to create the knowledge they needed to confront the issues of their low scores on the SAT. They did this by historically analyzing the tests, the organization that markets them, and the relationship of both to racial and class issues. These written critiques in the form of both journal entries and essays enabled the students to realize and assess their literacy abilities far more accurately than the test which, ironically, is considered a measure of academic preparedness. The test scores still stood, but the student themselves were intellectually empowered by the experience of discovering the roots of the problem and articulating an informed stance toward it.

Literacy and the Critical Thinking Movement

From the discussion above, and particularly the last example, we can see that academic literacy surpasses a language-based conception. While language plays its usual vital role, we shall assert our argument here that literacy is a state of mind that grows out of a particular communication culture. Illych (1988) goes so far as to contend that the mind-set that grows out of a print culture is shared by all members in that culture, even those who do not read and write. While we cannot follow up on that interesting argument here, we cite it as evidence of the view that particular behaviors, such as reading and writing, do not

by themselves define literacy except perhaps in a weak sense. To define literacy in a strong sense we can look at statements by those in the critical thinking movement who attempt to define a strong concept of thinking

Paul (1987) has established a distinction between weak (or micrological) and strong (macrological) sense critical thinking skills that can provide a parallel for defining micro- and macrologicai senses of literacy This distinction centers on concepts of dialectical or dialogical reasoning, an approach to knowledge building that makes use of multiple perspectives and an open-minded search for the best truth within the current state of knowledge.

Problem solving in the macrological sense involves inquiry, the gathering and critical evaluation of information. The primary tendency of people, however is egocentric and "strongly prone to irritional belief formation." Their secondary nature, which must be deliberately developed, is their "implicit capacity to function as rational persons" (131)

Paul advocates instruction that leads students to think relativistically and open-minded, exploring anomalies and not flinching from information that confronts their own cherished beliefs. Thus he regards dialogical thinking as related to character, and strong sense critical thinking as integral to the individual's ethical position in life. In this he seems to confirm Perry (1970), who argued that intellectual and ethical development proceed in tandem along a continuum from dualism, a finite view of knowledge; to multiplicity or acceptance of diversity; to relativism, an infinite view of knowledge in which one stakes out a reasonable turf with flexible boundaries. At the most advanced stages of this development, students commit themselves to an intellectual stance to govern their identities and lifestyles as well as the type of knowledge and information they select to process. This highest form of literacy is achieved only with the understanding that commitment is not a rigid stance but an unfolding activity to be subjected to the ongoing reality test of new information.

Belenky et al. (1986) take Perry's notions a step further, arguing for the social nature of knowledge and against the implication that the individual can take a stand unrelated to the positions of others within the network of a community They believe that individuals cannot usefully separate their commitments from those of others. The ultimate objective of literacy then should not be the abilty to justify one's own way of believing, understanding or knowing but to connect with other knowers. The goal of connected knowers, in contrast to that of separate knowers, is to achieve intellectual and personal collaboration. Such language seems to harmonize with Paul's concepts and suggests that perhaps the unselfcentred rationality he advocates is not so secondary in some segments of the population

The theme of connection between intellectual and ethical growth is also strong in Kozol's (1985) endorsement of Charles Muscatine's concept of "humane literacy", which includes attributes that could well be considered elements of character: informed irreverence (a questioning stance arising from a broad array of knowledge), tolerance for ambiguity, political sophistication, respect for history, wise anger (as a logical response to exploitation), arrogance of taste (confidence in one's unique views), and global literacy. Unlike other views of critical literacy, Kozol's conceptualization has content as well as process implications. To respect history one must know it, to be politically sophisticated requires a great deal of a certain kind of experience, and to be globally literate requires, at the very least, some attention to geography. In this he is closer than the others to that other modern explicator of literacy, E.D. Hirsch, though Kozol's views lead into a quite different direction.

In support of his concept of "cultural literacy", Hirsch (1987) argues that processes have been overemphasized in school curricula and information denigrated. To redress this imbalance, he advocates a "return" of information to the centre of education in the form of a national curriculum. His argument for this emphasis is derived partly from a banking metaphor, in which "facts' are the capital which learners invest, with further learning being the interest their investments earn. (Hirsch, 1989) This metaphor reveals a view of literacy as an accumulative commodity that is in contrast with the views of writers such as Paul and Kozol.

Comparing Hirsh's and Kozol's positions on literacy, one called "cultural", the other "humane", provides one basis for distinguishing between micro- and macrological conceptions. Micrological conceptions focus on particular operations and accumulations, whether of language skills, particular content knowledge, or any other divisible and separable elements of the construct. Into this category, along with Hirsch's cultural literacy, we would place studies focusing on reading and writing per se and their interrelationships. In this categorization we are not arguing for the inferiority or unimportance of these aspects of literacy. We *are* arguing, however, that a micrological view is not enough or even operable without the context of the macrological perspective.

A strong or macrological view conceives of literacy as a state of mind. A state of mind is a world view that encompasses beliefs, values, expectations, discriminations and styles as well as particular competencies. It might best be described in the framework of Kuhn's (1970) notion of paradigm shifts, according to which there is an ongoing, cyclical process in the development of knowledge that requires each level of discovery to be a plateau from which to launch new explorations. According to this view, the technology of exploration,

whether it be stone tools, printing presses, or computers, is relevant only within the context of the vision that employs it. In that sense, there is one literacy that is developing through particular disciplines and media, and we are travelling in its orbit at the threshold of the twenty first century from Citing Schwartz and Olgivy (1979), Marzano et. al. (1988) summarize characteristics of the paradigm shift in conceptions of knowledge at the end of the twentieth century Seven major areas of change from earlier eras they identify include these:

* *From simple to complex* instead of trying to reduce areas to their simplest terms, we now look at open systems interacting with other open systems.
* *From hierarchical to heterarchical* : a systems view dispels notions of increasing powers of knowing with an ultimate explanation at the top Contemporary views look for lateral more than hierarchical connections.
* *From mechanical to holographic* . paralleling a move from machines composed of moving parts to machines with hidden circuits, we move from a view of cause-effect sequences to notions of total and simultaneous interconnectedness.
* *From determinate to indeterminate* . we no longer hold the notion that reality is "knowable" enough so that with diligent effort we can accumulate enough knowledge to make precise predictions. Our aims now are for possibility and probability
* *From linear to mutual causality* · Having dispensed with a unidirectional notion of cause and effect, we adopt a notion of recursive feedback among interacting systems, again eliminating simple predictability
* *From assembly to morphogensis* : a building block conception gives way to an organic conception in which new forms can arise from interactions among systems.
* *From objective to perspective* · we give up the myth that the observer can operate separately and neutrally with regard to the observed. The knower is inextricably involved with the knowledge, which is itself fluid and changing

In summary, if literacy is a state of mind, as we contend it is, contemporary literacy must accomodate contemporary views of knowledge.

In the following sections of this paper, we will look at academic literacy in terms of our distinction between micrological perspectives. Micrological studies are those that focus on particular competencies, most often reading, writing and their interconnections. Macrological studies attempt to work within a broader framework for conceptualizing the mindset of academic litcracy

Studies Taking a Micrological View of Literacy

When we look at the existing literature, we find two main purposes being pursued: (a) to explain or conceptualize the case for linking reading and writing, and (b) to give suggestions for linking the two processes. Generally studies conclude that reading and writing are connected, mutually supportive, and fundamentally involved in thinking. We find terminology becoming established for discussing a cognitive view of literacy, such as "intentionality", referring to the driving force of purpose; "transaction", to describe the contracts that readers and writers make with one another; and 'intertextuality", which draws our attention to the fact that texts exist everywhere, in print and other formss, and that these texts constantly mingle in the individual's mind to produce novel conceptions.

A number of studies focus on the role of writing instruction in improving reading. Stotsky (1982), for example, discusses a number of writing activities which have been linked to reading improvement including dictation, reproduction (paragraph paraphrasing common in foreign language instruction), other paraphrasing exercises, precis writing, sentence combining, and sentence pattern practice. She acknowledges that these activities stick to a literal level of understanding but considers them useful for that reason because they "...give students structures, active practice in grappling literally with the language and ideas of [the] forms of discourse. " characteristic of informational and argumentative material (p. 339)

Marshall (1987) looks at the effects of writing tasks on short story reading, concluding that the analytic writing positively affected literature test scores. Such experimental studies that look at results in terms of test scores are not as common as more conceptual approaches that explain and apply connections assumed to exist. Sancore (1983,) for example, puts emphasis on both prior knowledge and writing as means to improve reading. As strategies for helping students apply prior knowledge, he cites methods using guided prereading, structured overviews, graphic organizers, or study systems. Instruction in writing based on types of forms, patterns and purposes in various texts provides tools for understanding written discourse.He also recommends that teachers participate in the reading and writing activities of the class to encourage their awareness of text comprehension as an act of composition and vice versa.

Gebhard (1983) stresses four principles that should underpin a programme to teach writing in reading and content area courses. One is the importance of expanding the actual audience by having students work in pairs or small groups. The second is to have writing develop out of a broad context of interests, and the third is to vary material and assignments to provide experience in both analysis and production of a

range of logical patterns. Finally, writing assignments should help students integrate new into known material. For the last, she also recommends journal writing. All four of these principles can provide some means of integrating reading and writing. Browning (1986) also describes a strategy of writing journal reactions to reading assignments that improved student involvement in reading

Other studies emphasize the application of reading instruction to writing improvement based on essentially the same principles as those that apply writing instruction to reading. Pitts (1986) for example concludes that simultaneously reading and listening to an oral reading of texts improved the writing of basicskills in freshmen. Kennedy (1980) mentions four effects of instruction in reading on writing· (a) students develop a sense of the sound of a written text; (b) they become more precise with words' (c) they become aware of the writer's planning and communication strategies; and (d) they gain competence as readers of their own texts and therefore in revision.

She also finds that many college students demonstrate insufficient experience with written discourse. This inexperience, she asserts, is evident even in mental/motor behaviors such as handwriting, spelling, and oral reading. On the level of comprehension, it is evident in inabiltiy to draw inferences and shape inner thoughts. This inability she describes as " .an articulatory rather than a conceptual disorder" 139 The cure for this is plenty of practice writing about what one has read. The active analysis of the reading material that is required in the writing process will help students form schemata for further comprehension Broderick and Caverly (1987), in their review of the uses of microcomputers in the teaching of writing, describe how the computer can promote interactive learning in the pre-writing, writing, editing and publishing stages of composition. This interaction, when judiciously managed, enhances students' use of reading during the writing process by making them critical readers of their own texts.

Stotsky (1983) describes what she considers to be the diffuseness and incompleteness of both theoretical and applied studies of the relationships bertween reading and writing. She reviews a large number of empirical studies, organized in three categories: correlational, effects of writing on reading, and effects of reading on writing. Subjects in these studies ranged from young children to college students. The conclusion she draws from the correlational studies is that better writers tend to be better readers and vice versa. The experimental studies show that positive efects of writing instruction on reading can be demonstrated when this instruction is intentionally designed to improve reading but not when reading improvement is sought as a casual by-product. Increased reading experience, she concludes, has a globally positive effect on writing, but reading instruction per se has not been found to improve writing. These empirical studies, she points out,

were concerned almost exclusively with academic texts and writing and were therefore dependent on mastery of what she calls "the language of formal schooling" (637). They focused on ways in which instruction could assist students in acquiring this special language rather than on deeper levels of reading/writing relationships.

Her recommendations for future directions in research emphasize descriptive studies rather than examination of instructional effects. She suggests finding out more about particular groups such as poor writers who are also poor readers and poor writers who are good readers. She also recommends more case study investigations of the amount and kind fo reading done by good and poor writers to help clarify effects. Conversely, she recommends examining the reading behaviours of both good and poor writers as well as reading behaviours during the writing process. Another recommendation calls for the development of better measures of the various processes involved. Finally, she recommends more research on reading and writing in second language learning.

In their review of the research, Tierney and Leys (1986) summarize the conclusions as follows: (l) there is a moderate and fluctuating correlation among measures of reading and writing achievement and attitude; (2) selected experiences demonstrate positive mutual effects; (3) certain values and behaviours are drawn from reading into writing and vice versa; and (4) successful writers use reading and vice versa. They view any failure among practitioners to appreciate the interrelationships between reading and writing on a simplistic view of how to define and assess these relationships.

Birnbaum (1986) reports observations at various grade and college levels demonstrating the relationship between reflective thinking and uses of written language. She quotes at length from the statement of a college senior who "exemplifies much that we strive for in literacy", because he is "at home in the world of written language. As he shuttles between reading and writing, he extrapolates from one process and uses that knowledge in the other" (40 - 41). She suggests the need for additional case studies of older, exemplary readers/writers, longitudinal studies of forms of discourse at various age levels, and studies of characteristics of reflective behaviours.

Frameworks for Relating Language Processes

First it should be observed that some writers warn against oversimplified notions of the parallels between reading and writing. Goodman and Goodman (1983) point out that certain pragmatic considerations need to be made, such as the fact that normally there is much greater demand for reading than for writing in life, and that, while readers need not write while reading, writers must read while writing

Langer (1986a) also cautions against an overly simplistic view of the likenesses of reading and writing processes that may obscure important differences. In an analysis of meaning construction in reading and writing by third, sixth and ninth grade students, she found that by the ninth grade students had greatly increased their repertoire of pre-reading strategies and were demonstrating concern for questioning, hypothesizing and metacommentary in both reading and writing. Post-reading and writing operations at the ninth grade level emphasized further extension through discussion of the completed text, suggesting that reading and writing are embedded in more comprehensive thinking activities. She concludes that although as meaning construction activities reading and writing share important strategies, as processes they differ markedly in terms of intent and emphasis on particular operations While acknowledging the fundamental concern at all ages in developing ideas through text, she cautions against an exaggerated emphasis on the similarities rather than on the unique characteristics of the two processes.

A number of studies however do present conceptual frameworks for viewing reading and writing as integrated processes. Tierney and Pearson (1983), for example, propose a composing model of reading applicable to both reading and writing, consisting of five steps: (a) planning, involving goal setting and knowledge mobilization, (b) drafting, involving schema selection and schema instantiation; (c) aligning, involving collaboration and role immersion, (d) revising, involving re-examination and redevelopment; and in the centre of all these operations (e) monitoring, the conscious supervision of these processes

Trotsky and Wood (1982) similalrly offer a model that equates reading and writing processes. This is a three-step model in which composition on the writing side is related to assembling elements and identifying sequences. As the second step, transcription (getting it down) is related to reflection, and as the third step, editing in writing is related to reaction in reading

Crafton (1983) emphasizes the common development of both processes of literacy in early learning. Atwell (1983) presents the sociolinguistic basis for the interrelatedness of all four language system. Aulls (1983) compares skills, psycholinguistic, and discourse models of reading, concluding that the last most clearly integrates reading and writing. Moxley (1984) discusses the central role of meaning construction to both reading and writing. Rubin and Hansen (1986) identify several kinds of knowledge critical to reading and writing, including informational, structural (referring to discourse forms and writing formulas), transactional (referring to reading/author relationships), aesthetic, and process knowledge. This perspective views both composing and comprehending as crucial to thought processes: composing because it actively engages the learner in constructing, developing and expressing

meaning; comprrehending because it requires the reconstruction of meaning expressed by another writer

A number of recent studies have provided a close-up view of the reader/writer at work, giving us new insights into the implications of the relationship. In a study of a small class of students enrolled in a freshman basic skills course combining reading and writing, Reagan (1985) found that students changed their writing behavior from a paragraph approach to a more schematic planning approach. They also changed their concept of revision from a separate process to one integrated in the entire composing process. Case studies of two students illustrated the strong influence of personality and cultural factors on any performance in school, suggesting the shortcomings of quantative data in efforts to understand intellectual processes. This study underscores the value of qualitative data in understanding changes in the composing processes of students.

Dahl (1984) used ethnographic methods to investigate reading/writing transactions from the learner's perspective in a special section of a freshman-level learning skills course, in which she was both teacher and researcher. By examining schema maps, compositions, journal entries, and interview reports as well as her own observation notes, she identified many ways in which reading and writing interact in students' learning and problem solving efforts. In both reading and writing, students were primarily concerned with building and revising meaning, working in a schema theoretic manner. For example, when they read unfamiliar materials, they patterned summaries more closely on the original text than was the case when they read more familiar material. Also, writing that they produced shortly after reading tended to reflect the syntax and language of the text. These findings suggest that students were actively trying to evelop a surface expression of a kind of literacy they identified in their academic texts and used these texts as models. They also suggest that students use language associated with unfamiliar knowledge as a kind of prop in the constructive process of building schemas for this knowledge for themselves.

Smith (19850 observed the same kind of phenomenon in written summaries by graduate students dealing with subject matter for which they had no background.

Dahl (1984) also found that mapping information and switching back and forth between the reader's and writer's roles helped students conceptualize meaning and perceive new relationships. Based on these and other findings, she proposed a transactional model of reading and writing delineating four shared processes and four transactive relationships or ways in which the two processes affect each other This model provides a useful structure for the practitioner seeking ways to relate reading and writing

whole language perspective at the college level, contending that the purpose for using language must transcend the study of language. He then describes a course using a research approach to reading/writing instruction with an emphasis on peer sharing, peer critiquing and peer editing.

Salvatori (1983) argues that reading complex or literary texts fosters the sensitive and reflective frame of mind important in writing. He describes the reading process as an "extremely commplicated activity in which the mind is at one and the same time relaxed and alert, expanding meanings as it selects and modifies them, confronting the blanks and filling them with modifiable projections produced by inter-textual and intra-textual connections" (661). Dealing with complexity and ambiguity in reading helps students handle the same elements of uncertainty in their writing

Squire (1983) emphasizes lack of experience in expressing ideas in their own language as a main cause of thinking deficiencies evident among high school students. This, in turn, he blames on their teachers' failure to understand that composing and comprehension are interrelated, process-oriented activities. Asserting that comprehending and composing reflect the same cognitive process, he calls for the development of these through such activities as summarizing, retelling, rephrasing, reprocessing, elaborating and translating among communication media. He advocates this approach in all disciplines where comprehension of material must always be viewed as the construction and reconstruction of whole ideas.

Studies examining the uses of reading and writing in content learing often emphasize the value of the analysis and synthesis required in writing as ways of developing thought. Hull and Bartholomae (1986) cite progress made in recent years in the development of knowledge about how students learn to write, making the process approach to instruction possible. They discuss two perspectives. writing as complex behavior and writing as a complex intellectual process They also distinguish between technically competent writing that reflects no intellectual growth or learning and writing that embodies efforts to increase understanding. They advocate the latter kind of writing, which they call "speculative", as a powerful means for learning in subject areas.

Beyer (1982) reviews research supporting the uses of writing to enhance social studies learning, citing such activities as inventing hypotheses, generating new knowledge, developing concepts and generalizations, reinforcing or extending previous learning and developing empathy He concludes that teaching writing in social studies may be more effective than separate writing instruction. Koeller (1982) makes a point similar to Beyer's regarding the uses of writing as a learning mode in science. She recommends teaching such concepts as mapping,

clustering, writing formats, and frames of reference for tools for understanding science content.

Evans (1984) applied Tierney's principles from the Bay Area Writing Project (concerning uses of writing to enhance content learning) to elementary mathematics. She and a colleague bad students do three kinds of writing: "how to" explanations, definitions, and trobleshooting or explanations of errors made. Students made significant gains in pre and post test scores, leading her to conclude that writing can help students learn math.

Marton (1979) proposes that cognitive skills are an aspect of knowledge, using the terms "skills" to refer to students' ability to use principles. Using an introspective interview technique to examine college students' processing of text material, he identified two groups of processors: (a) students who assumed the text had a meaning to convey and manipulated their reading to find it, an (b) students who attended to the text itself and tried to remember verbatim working. He concluded that the constructive meaning search and the ability to conduct it were integral to content learning. He then affirms on a pragmmatic level that content learning is not just the acquisition of information but more significantly the use and extension of it.

Beyond Reading and Writing: Macrological Studies of Literacy

In this era of decline in absolutes (Langer and Applebee, 1988) all scholary fields have moved from a belief in the accumulation of knowledge toward one based on the tentative nature of truth and questioning, inquiry and interpretation as on going processes in understanding. In this context, reading and writing are seen as basic tools to use in judging and negotiating knowledge rather than discovering it (Bleich, 1987)

McGinley et al (1988) call the type of literacy needed in such a context "critical literacy". i.e., one which enables individuals to use reading and writing in a multi-perspective approach to knowing. Students' engagement in different types of reading and writing will result in ways of thinking and learning that they call "traversing the topical landscape" (11). Such a view specifies roles for readers and writers. Readers undertake the mental task of forming schemata (Anderson and Pearson, 1984) Writers separate themselves, as knowers, from what they know (Havelock, 1963), a separation which makes possible increasingly articulate introspectivity (Ong, 1986). Writing holds thought still long enough for writers to examine its sources, its destinations, its strengths and its flaws.

Writing also requires writers to sharpen their communication. To make themselves clear without gesture, facial expression, intonation, or feedback from a hearer, they have to realize the possible ambigui-

ties of their statements and make their language work with no existential context (Ong, 1986). They also need to anticipate readers' reactions in order to support a dialogue between reader and text. Writing also gives rise to intertextuality (Hawkers, 1977). That is a text is created out of other texts, borrowing, adapting, sharing the common formulas and themes (Ong, 1986). Writer find their sources in both lived and literate experiences.

In like vein, Siegel (1988) sees literacy as a process of inquiry that is, a process that involves making selections. Selection involves the inquirer's values and experiences. If individuals conduct research only from an external, observational perspective, restrained by others' meanings, learning will also be restrained. As an illustration, John-Stein (19850 reports that many successful scientists claim their real learning began when they were able to work on their own in laboratories, engaging in the inquiry process on their own terms. It is the same case for students. If they acquire information from an external viewpoint, they never get into the "laboratory" of their own experiences and ideas, so their real inquiry does not begin.

An inquiry approach to literacy is described by Langer and Applebee (1988) in the context of history instruction. Instead of being asked to read for a survey of facts and events, students were encouraged to strive for historical-mindedness. This involved the students in examining their own biases as well as those of participants in and recorders of historical events. As readers they scrutinized texts for biases within social, political and economic contexts; focused on meanings and implications, looked for corroboration among witnesses' accounts, and strove for reasoned interpretations, recognizing that historical certainly is impossible.

Literacy as inquiry, in its truest form, consists of a triadic dialogue among readers, text and context, including other readers of the text (Harste, Woodward and Burke, 1984). Mitchell (1989) describes how Douglas of stadter, author of *Godel, Escher and Bach]*, adopts such a dialogic approach in his classroom. Hofstadter assigns students to write dialogues to describe or propose a theory. A good dialogue would involve students with the thoughts of the characters involved, drawing these thoughts into their own reasoning systems and including them in the internal search for resolutions and understanding. In summary of this point, reading and writing, in the macrological sense of literacy, should go beyond communication in academic or social interactions. They should lead to self-exploration, self-awareness and self-direction (Jackson, 1988). With reference to the study of literature, Bleich (1987) asserts that literacy should enable each to pose the question, "what do this text and my reactions to it tell me about myself, of feelings, wishes and desires that previously may be un-

known to me?" This is where real inquiry, and therefore real literacy, begins with an assessment of where one is before one proceeds forward.

The notion that literacy involves particular ways of knowing and using knowledge within both personal and social contexts is compatible with current sociolinguistic theory We might then look at studies establishing a broad framework for understanding how knowledge is constructed as a way of approaching a practical concept of literacy, especially for post-secondary learning A number of such studies establish the basic principle that learning is a complex, constructive and relativistic activity that is creative on the part of every learner and requires the organization and structuring of fluid information as knowledge is built and formed, not acquired. It is in this organizing and structuring activity that the essence of literacy may be found.

Riegel (1973, 1979) has proposed a stage of dialectical operations superceding Piaget's stage of formal operations as the ultimate level of mature development. While the stage of formal operations adequately describes the development of logical and structural thinking, a further state is required to describe how adults operate in life when faced with situations in which logic and structure can assist in the finding of but cannot determine the solutions to problems. Like Perry's (1970) higher reaches of relativism, dialectical thinking is a process in which situational factors are taken into acount as well as principles or rules, and this process is guided by hypotheses, not axioms. Again, the development of this capacity requires opportunities to handle information in novel ways.

Gibbs, Morgan and Taylor (1982) describe a set of studies that qualitatively investigate the content (as opposed to the amount) of student learning from texts. In order to do this, they asked their students to verbalize their understanding of texts while reading. Analyzing these open-ended protocols, they identified five ways of conceptualizing learning that are qualitatively different from each other: (a) learning as a quantitative increase in knowledge; (b) learning as memorizing; (c) learning as the acquisition of facts, procedures, etc., which can be retained and/or utilized in practice; (d) learning as the abstraction of meaning, and (e) learning as an interpretive process aimed at the understanding of reality

The first three conceptions view knowledge as external to the student ans something to be acquired, while the last two view knowledge as internal, requiring individual action on the part of the student to draw out meaning from texts and relate it to a larger reality They also imply tolerance for self-change. These conceptions of knowledge can be compared to Belenkey et al.'s (1986) identification of five types of knowers amont their female subjects, silent, received, intuitive, proce-

dural, and constructive knowers. In their categorization, the procedural and constructive knowers are those who can control their knowing in a social context and thereby achieve effective communication with others.

Internally controlled ways of knowing, it might be reasoned, cannot be externally induced. Gibbs et al. (1982) report studies showing that planned interventions intending to enhance student learning, such as inserted text questions and study skills taught as tecbniques may actually distort learning and promote surface rather than deep level processing. Such approaches may remove deep level processing from the control of the student and "technify" the process of learning (see articles by Hayes as well as Caverly and Mullen with the volume referred to) Wbat stands the best chance of inducing deep level processing, they believe, is letting the students have uninterrupted interplay with texts on their own terms. Learning should then be assessed vertically by measuring how students think about content available through their own written or oral texts, ratber than horizontally through conventional measures of the amount retained.

Concluding Remarks

Referring to the philosopher John Austin, Bruner (1984) discusses the nature of language as a social instrument for creating or stipulating a shared world and then for getting things done in that world. All social psychology, he argues, must now deal with these uses of language. Bruner also makes a distinction between paradigmatic (or manipulative) and syntagmatic (or narrative) modes of language, the latter being the mode in which humans transact or negotiate among themselves in continuous endeavors to make the implicit knowledge of culture explicit. The pragmatics of language is the vehicle for this work, the goal of which is to increase the sharing of perspectives

One of the cbaracteristics of the language of academia is that there is often a gap between the complexity or remoteness of meanings and the capability of the language users to stretch the language to fit the sense. Waterbouse (1980) has called this need for ingenious extension of language the semiotic extension, and this we may presume is what is happening during deep level processing Laurillard (1979), in her discussion of levels of processing, points out that a processing level varies for a given learner according to the context and expectations of the task. Thus the sharing of perspectives that Bruner views as the main work of literacy is a matter of constant negotiation.

The literature reviewed in this chapter shows the need to be able to read language and synthesize it in writing, but it shows more strongly the need for the student/researcher to be able to assess meaning in personal and social contexts, pose questions, communicate negotia-

tions of material with other members of the learning community, and develop a fluid conception of knowledge. Newcomers to the society of academia may have difficulty at first entering into relationships of negotiation with each other and especially with faculty, and they will continue to have difficulty as long as they have little opportunity to participate in the communications of that culture.

A strong, macrological sense of academic literacy, therefore, calls for far more than attention to reading and writing, although these are certainly not to be neglected. It calls for involving the students in the learning processes of whatever disciplines they are studying and inviting them to participate in the communications of these disciplines. For this reason, the best developmental instruction will take place within the context of discipline learning, guided by those who themselves represent the community of thought into which the student is being inducted.

In our less than ideal world, however, content instrnctors may not assume responsibility for developing students' literacy within their disciplines, and teachers of developmental and process courses are the ones who help students acquire the mindset of academia withont losing the view that learning is the critical comprehension of reality (Freire and Macedo, 1987). Process teachers therefore need a strong macrological view of what learning means in the various desciplines and how it is supported by language. At the same time, as Hamilton-Wieler (1989) has demonstrated in her study of writing across disciplines, they must deal with interfering effects of institutional requirements such as examinations and grades, nnderstanding that students are often caught in a bind between surviving and pursuing their own meaningful goals. The developmental instructor, from the broad perspective of a true learning specialist, helps students manage the sometimes intricate negotiations between personal and institutional purposes as they make their way

But the instructor is not the only one who guides in this venture. At least as important is the guidance students receive from each other and from themselves as they undertake what Freire calls the "conceptual ballet we learn in a university" (Shor and Freire, 1987:147) The conceptual language and thinking must be mastered, but the connections with the concrete, with the learners' own experiences, and with the experiences learners have in dialogic communication with each other are necessary for macrological literacy to develop. This is what process teachers do well and often do alone: provide settings for personal reflection within social contexts, encourage dialogical reading and discussion, incorporate writing into the collaborative learning of the group, explore the nature of knowledge in general and within particular disciplines, and help students articulate their own identities as critical learners. This is the literacy that empowers. This is the literacy that succeeds.

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