

LIFELONG LEARNING: LITERACIES ACROSS ALL DISCIPLINES

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RE-DEFINING LITERACY

What is “literacy”? Traditionally, literacy has meant learning to read and write to a practical level of proficiency. Literacy skills were learned within the context of school, home or the workplace and one’s level of competency depended on society’s demands in those settings. Today, the rapid changes in our society (such as population shifts and increases, global markets, technology’s mainstream functions in the workplace and the rise in a service industry) have resulted in greater learning demands across all work, home and educational contexts. To survive and thrive in the 21st century, a student must learn complex skills in thinking, problem solving, and use of language and technology. Even more important, however, is the fact that every person now is a student for a lifetime. Learning never stops.

SOCIETAL CHANGES CREATE NEW DEMANDS OF LITERACY

Shachtman, in *The Inarticulate Society: Eloquence and Culture in America* (1996), persuasively argues that Americans have lost the ability to respond to other points of view. Many of the public discourse contexts, including media and political ones, are strident with intolerant speech. People use jargon and obtuse language to exclude others with a different point of view. Students from kindergarten through grade twelve seem

not to care about the words that emerge from their mouths or that they spill onto paper or computer screens. ...Those elected to speak for us do so mostly through television, with seconds-long sound bites instead of hour-long explorations of an issue. We are shown a thousand pictures rather than offered a single insightful word (p. 1).

Cunningham (2000) describes major societal changes that create new demands for learning. These are:

❶ Locating information and communicating on the Internet, which creates the demand for critical thinking, ❷ The proliferation of Audiobooks, which creates a greater demand for listening as a major literacy skill, ❸ Self-Publishing combined with fewer guidelines as restraints on freedom of the press, which creates a demand for critical reading and critical literacy.

LITERACY AND LEARNING

Literacy means not only learning to read, write, speak and listen. Literacy means using language to learn. We use reading, listening, writing and talking to learn across all contexts and purposes. The learner gains information through reading, discussing or listening. Students then need to use writing (note-taking) and note-making (double-entry format), to organize their notes, ask questions, and make connections to what they already know. When students are given time to write and discuss the concepts, data or ideas in small groups or within a class discussion, they can gain a clearer understanding. Students need time to “process” the new concepts through writing and talking. In this way, conversation becomes the center of learning (Langer & Applebee, 1987; Applebee, 1996, 1999).

In addition to using writing regularly to learn in all subject areas, there is a need for *coherence* and *continuity* in secondary literature curricula (Applebee, Burroughs & Stevens, 2000). These pertain to the listening, speaking, and reading processes that students use in the class discussion. What kinds of questions do teachers pose? How are students helped to explore the important data or issues? In a recent study, Applebee, et al., (2000), found that even the similarity of topics and use of a well-defined canon of texts “masked wide variation in the ways in which the curricular conversations are realized and in the domain conventions that govern student participation.” There was also “considerable variability... in response to difference in

perceived abilities of the students” (p. 424).

In this and earlier studies, Applebee concluded that the major problem

is the way new scholarship comes into the school curriculum -typically, transformed into a body of knowledge for students to assimilate out of context instead of being presented as a new set of issues and ideas to be debated, explored and evaluated. ... (The) issue is how to help students enter into interesting domains for conversation within which the new scholarship may reside (Applebee, 1999, p. 363).

Do our class discussions make a difference in literacy development? An urban secondary classroom teacher developed a critical inquiry into the impact that language and language learning had on students’ lives (Fecho, 2000). He investigated the ways that home and power codes of language intersect. “By conducting inquiries, students could celebrate their home language while acquiring and critiquing the power codes” (p. 368). Students needed to see personal understanding of their thinking in order to understand better the ambivalence about celebrating language and acquisition of language. Fecho concluded that the students’ ability to conduct inquiry “changed the way they saw themselves as learners” and (just as significantly) the way the teacher researcher looked at his own teaching (p. 368).

It is established that we *learn through language* in all disciplines. This means that we need to involve all teachers in the ways that they help students use language to process essential ideas in depth. It is not surprising then, that a new literacy is needed in mathematics education. Steen (1999) defines “quantitative literacy” as the ability to “numerate.” Quantitative literacy is needed to develop an “informed citizenry and to support

a democratic government” (p. 11). Statistical, computer, interpretive and technical communication skills are the staples of modern business. Can the student use appropriate skills in many contexts? Can the student use these skills in the natural, social and applied sciences?

Zinsser (1988) explains that “writing across the curriculum isn’t just a method of getting students to write who are afraid of writing, (it) is also a method of getting students to learn who were afraid of learning” (page ix). Some students who can write easily in science and math are fearful of writing in the humanities and vice versa. Writing is a way of learning in a discipline in depth.

Writing helps us think, reason and reflect.

Whatever the writer and whatever the subject – the biologist Rachel Carson writing about life on the ocean floor, the anthropologist Clifford Geertz writing about a cockfight in Bali, the art historian H. Hyatt Mayor writing about the lithographs of Toulouse-Lautrec, the zoologist Archie Carr writing about the giant sea turtle, ... the composer Roger Sessions writing about Beethoven and the mystery of composition – the common thread is a sense of high enjoyment, zest and wonder (Zinsser, 1988, p. x).

Murray (1999) describes how students can adapt their essential writing skills to new writing tasks across all school and workplace demands. Whether writing a critical essay, a lab report, a term paper, a poem, a press release, a grant proposal, a marketing memo, an analytical report or a research summary, the learner can effectively communicate through writing. The place to learn these many types of writing begins in school in all subject areas.

“Very few people are “science literate.” according to Nelson (1999) who describes a study done with recent Harvard graduates. Twenty-two out of twenty five students did not answer the question, *Why is it warm in the summer and cold in the winter?* correctly. Nelson contends that students’ inability to explain basic scientific concepts well is due to our teaching practices. Despite the fact that knowledge is increasing rapidly in all disciplines, including science, we try to teach it all, but end up teaching the surface. One of the major conclusions from the recent TIMMS (Third International Mathematics and Science Study) Report from *The National Center for Education Statistics* (1996) was that our Math and Science curricula are a mile wide and an inch deep.

Stigler and Hiebert (1999) used this conclusion to re-focus the failure of many school reform efforts to a focus on teaching. By studying the videotaped lessons from eighth grade classrooms in the United States, Japan and Germany (the countries that participated in the TIMMS study), they found a range of teaching practices that reflected each country’s cultural values. Stigler and Hiebert concluded that American teachers need to learn from the German and Japanese teaching practices which impact student achievement in significant ways. *American schools need to be restructured so that teachers can collaborate over an extended period of time studying their teaching practices in terms of student learning.* Instructing teachers to use “best practices” that will improve student learning is not enough. It is changing teaching itself. We need to make our schools places of year long inquiry. We need to study both teaching and learning.

There is another problem in applying “best practices” research. Daniels and Bizar (1998) say that we need to go beyond using lists of “best practices” for teaching, which is a fragmented, non-organic, and ineffective way to improve teaching.

Daniels and Bizar suggest organizing effective practices into six formats:

- ❶ Integrative Units
 - ❷ Small Group Activities
 - ❸ Representing to Learn
 - ❹ Classroom Workshop
 - ❺ Authentic Experiences
 - ❻ Reflective Assessment
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What these formats do is create structures that support interactive, language-based, meaning-based, accountable learning. These formats also support **lifelong habits of literacy**: self-direction, critical thinking, reflection, and creative thinking. Other instructional/assessment designs that ground experiential learning for teaching core curriculum are Wiggins and McTigue’s “Understanding by Design” (1998), Marzano’s “Dimensions of Learning” (1996), and Tomlinson’s “differentiated instruction” (1999).

IMPLICATIONS FOR TEACHING

In light of society’s changes that make new and significant demands on the ways we learn and the contexts in which we learn through literacy, several major implications for teaching become apparent (Nelson, 1999; Stern, 1999; Applebee, 2000; Applebee, et. al., 2000; Lucas, 2000). We need to understand these new ways of teaching and learning if we are to educate well.

- ❶ **Develop Core Curriculum to standards for teaching**

Teach subjects in depth, not in width. Use national, state and locally-developed standards to create a focused curriculum. Use instructional and assessment designs that help students learn well.

- ❷ **Have students learn with experts in the real world.**

For instance, have students explore nature in ways that resemble how scientists work or have students connect via satellite with scientists to discuss their research projects and findings. Students can ask questions and gain major new understandings in this way.

- ❸ **Take more time for processing and understanding essential concepts, reading texts, and discussing significant issues.**

Teaching needs to take its time with “hands-on learning”, spiraling concepts, and time to talk and write. Create opportunities for students to interact and collaborate (through reading, writing, listening and speaking) on significant issues and texts toward compatible goals. Students need genuine purposes and audiences for learning. Students need to use technology to construct and represent their knowledge and expertise.

- ❹ **Create communities for learning in classrooms and in the wider communities**

Classrooms need to be “knowledge-building communities” where there is thoughtful and purposeful use of language (literate thinking). Within this context, writing is “treated as being concerned primarily with discovering and developing meaning in dialogue with the emerging text.” “Texts” cross all disciplines and contexts. These texts can be notes, essays, stories, tables, graphs, diagrams, prose and observations in all subject areas.

- ❺ **Facilitate learning with explicit expectations**

Teachers need to provide clear expectations and scaffolding strategies of criteria for quality work. Teachers need to share their learning with their students. Teachers need to collaborate and study in communities with other educators.

⑥ Study our teaching practices with student work as our evidence

All teachers need to become skilled and experienced in the methods of teacher research as a part of their ongoing learning. Pre-service and inservice standards need to be structured to support a teacher's use of the classroom to continuously learn how to significantly improve the learning of students.

THE FUTURE LOOK OF LEARNING AND LITERACY

In this brief look at the ways that literacy and learning are changing in significant ways, several characteristics emerge.

Literacy learning:

- ▶ uses Language (reading, writing, speaking and listening)
 - ▶ is Contextualized (as can be seen in the four lenses: Meaning-Making, Social, Language-Based and Human)
 - ▶ is Problem-based
 - ▶ is Conversational
 - ▶ is changed through the use of Technology
 - ▶ is a Continuum for every person
 - ▶ requires many Thinking Processes including self-directed, creative, critical and reflective
 - ▶ is Experience-based
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Use of the four lenses as a framework for a discussion of research issues.

In the following sections, issues for lifelong learning and literacy are discussed within the four lenses: meaning-making, social, language-based and human. Using the lenses in this way presents a dilemma. On the one hand, the lenses represent an “in-depth” look at literacy learning. They are strongly inter-connected, so it is difficult to separate them entirely.

On the other hand, each lens represents a unique way of looking at language learning. Each lens can highlight subtle but important aspects of literacy. The issues selected for the Meaning-Making Lens could be appropriately placed in the Social, Language-Based, or Human Lens context and readers may find it helpful to make those connections.

Each lens section begins with major points made in the 1988 PA Framework to use as a basic foundation for the research discussion.

MEANING-MAKING LENS

The ways in which the Meaning-Centered Lens impact learning (PA Framework, 1988) are that:

- ❶ The most fundamental concern of any learning is “making sense.”
- ❷ We construct meaning in reading, writing speaking, listening - both individually and with others.
- ❸ Our prior knowledge - relating new to known - is using our own experience to “make sense.”
- ❹ Learning entails risk-taking.
- ❺ Effective learners view errors as windows on the mind - or opportunities. They pay attention to their own approximations .

PA Framework 1988

Major Research Issues

Research issues identified in lifelong learning within the context of a meaning-making lens are: Meta Cognition and Cognitive Tools.

METACOGNITION

Metacognition is “thinking about one’s own thoughts.” Flavell’s model (1978) made a significant contribution to an initial understanding of metacognition. The model had four parts: metacognitive experience, metacognitive knowledge, goals and actions (or strategies). A person monitors and regulates his/her thinking to accomplish a task.

Kluwe (as cited in Hacker, p. 8) provided more definition in making distinctions between declarative knowledge (cognitive knowledge or domain/procedural knowledge stored in long-term memory) and metacognitive procedural knowledge (the ability to monitor and regulate one’s thought processes).

As further described in the PA Framework (1988), metacognition is knowledge about and control over thinking (Brown, 1980).

Resnick (1987) organized metacognitive processes as:

Knowing THAT	Knowledge about one’s own reading and writing processes in relation to texts, tasks or situations
Knowing HOW	Strategic or procedural knowledge
Knowing WHEN and WHY	Conditional knowledge

A person’s self-assessment of how well he/she can learn math word problems or do problem solving in science can often determine the course of strategy acquisition as well as strategy transfer. If metacognitive strategies are to be used in learning, then the ability to self assess (what do I know? how do I think? and when should I apply a particular strategy to learn for a particular purpose?) becomes critical to the learner in self-directed learning or managing one’s own learning.

Instruction in Metacognitive Strategies

Can instruction in metacognitive strategies enhance student learning? Researchers have consistently found that explicit teaching of metacognitive strategies is both necessary and effective in helping students learn to manage, self-direct and reflect on their learning. In other words, students must be taught the thinking strategies for lifelong learning - which include reading, writing, listening and speaking in different learning contexts.

Present Practices and What Students Need

Students are not as strategic as they might be in their learning and thus need explicit teaching (Dole, 2000). Readers, for instance, unless taught specific strategies, are limited in their ability to monitor and control their

reading. They need to apply internal and external standards to overcome this. Readers need to engage in a dialogue about the text so that they can apply external standards to their comprehension (Hacker, 1998).

According to Gaskins (1995), explicit teaching of strategies is needed because:

- ❶ Poor readers do not exhibit awareness and control of strategies unless they are explicitly taught.
 - ❷ When poor readers learn that the strategies are valuable and applicable to new situations, they are motivated to use them.
 - ❸ Teaching awareness and control strategies needs to take place at an early age so that students have enough practice and time to reach the level of needed automaticity.
 - ❹ Metacognitive awareness should be embedded into the content of all courses to be the most effective.
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Otero (1998) found that “readers have difficulty in detecting inconsistencies when reading” (p. 146). In reading science texts, Otero found that “students may have the declarative and procedural knowledge of strategies, but may not use them because of the influence of the situation” (p. 159). Otero concluded that subject matter and class setting appear to be contextual factors that influence the use of comprehension strategies.

Brown (1999, 2000) provides a myriad of scaffolding strategies to use with young readers.

- ▶ Simple predictable text
- ▶ Matching texts to learners’ developmental stage
- ▶ A wealth of books in the classroom

HACKER (1998) SUGGESTED ADDITIONAL STRATEGIES.

Monitoring Strategies can include:

- ▶ Rereading
- ▶ Looking back to prior texts
- ▶ Comparing prior text
- ▶ Comparing two or more propositions

Control Strategies can include:

- ▶ Summarizing
- ▶ Clarifying by using reference sources external to the text
- ▶ Self questioning

Dialogue with other Readers encourages:

- ▶ Construction of knowledge
- ▶ Generation of questions
- ▶ Reflecting on the progress of their reading
- ▶ Overcoming the limitation on meaning and interpretation by their limited knowledge

Keene and Zimmerman (1997) and Spiegel (1998) provided major ways to teach metacognitive strategies as well as to learn them ourselves as teachers.

Readers are conceived of as generators of interconnections or links between texts resulting in a web of meaning. Interpretations that readers give to a text depend on the kinds of interpretations they have constructed from other texts and how they have linked those interpretations to the current text (p. 183).

Thus, good readers make interconnections between texts and refine their interpretation of texts. Poor readers must be taught to make these connections among texts.

Teachers must find ways of overcoming in students their “illusion of knowing” where they believe that they have comprehended a text, when, in fact, they have not (Hacker, 1998). Teachers also need to model the strategy during instruction and provide feedback to students as they learn to use and regulate their use of strategies, and provide time for students to reflect on their learning (Gaskins, 1995). Students need practice in learning specific strategies and where and when to use a strategy (Pressley, 2000).

RECIPROCAL TEACHING

Three of the most researched programs for increasing comprehension through collaboration are CIRC (Comprehension, Integrated Reading and Composition), PALS (Personal Assistants for Learning), and Reciprocal Teaching (Palinscar, & Brown, 1984; Fuchs & Fuchs, 2000; Van Den Broek & Kremer, 2000). Reciprocal teaching uses repeated reading, paragraph summary, and prediction relay as a strategy structure for improving comprehension. When students write paragraph summaries, they monitor their comprehension, they allocate their attention and can elaborate on the textual information. In prediction relay, students are required to formulate and check predictions.

These researchers found that by adding a reciprocal dimension, where students took turns being the tutor and tutee in a reading situation, students enhanced their understanding of what they read. Other strategies of reciprocal teaching include:

- ▶ making predictions
- ▶ seeking explanations when content is unclear
- ▶ seeking explanations between multiple events
- ▶ self questioning while reading

However, the peer interaction alone was not sufficient. Students also needed explicit instruction in learning to reply to partners in constructive ways.

The advantage of these strategy structures is that since students can use the expertise of both the teacher and the group; the reader's background knowledge can be supplemented. Such structures increase students' metacognitive abilities (i.e., students learn to apply strategies for self-regulation of reading).

METACOGNITIVE WRITING STRATEGIES

Sitko (1998) found the instructional value of using verbal think aloud procedures to help students develop a repertoire of strategies in writing. Writers themselves use planning, drafting, revising and editing as major recursive strategies when they write. Students also need these strategies and instruction on when to apply them while they write.

IMPLICATIONS FOR INSTRUCTION

Even though these teaching practices are important, their implementation in classrooms is problematic. It has been suggested that:

- ▶ Strategic teaching takes more class time.
- ▶ Collaborative planning requires space and time.
- ▶ Results are not always immediate - practice is needed.
- ▶ Metacognitive instruction demands that teachers allocate planning time to teaching both the knowledge and procedures.

In designing metacognitive lessons, teachers can use the discovery memo (Applebee, 1999), planners' blackboard (Flower & Hayes, cited in Sitko, 1998), partners, cards, verbal cues, external supports, and on-line writing groups.

SOCIAL LENS

In the PA Framework (1988), the impact of the Social Lens on learning was effectively described as "learning (that) occurs in a social context; we make meaning in collaboration with others" (p. 15). From this premise came our understanding that:

- ❶ Children actively build complex repertoires of language strategies in order to make meaning and make sense of the world (Harste, Woodward & Burke, 1984).
- ❷ Social systems shape cognitive development, as seen in small groups of students working collaboratively and in talking to learn.
- ❸ We need to "learn how to learn" through a joint construction of teacher and students.
- ❹ We need knowledge of how to interact, how to communicate, how to make sense of what others say, and how to listen to others. All of these conditions support communities of learners.

- ⑤ We need to pay attention to how students use language in social groups.
- ⑥ We need to provide valuable, timely, and specific feedback to students on their learning.
- ⑦ Students need social support for inquiry.
- ⑧ We need to create structures that maximize the potential of diverse groups of learners (DiPardo & Freedman, 1987).

PA Framework 1988

Major Research Issues

Research done over the last decade has confirmed these results and has provided additional insights into major ways that classrooms and all situated learning environments can support optimum learning. These are: Curriculum as Conversation, Instructional Scaffolding, and Situated Learning Environments.

CURRICULUM AS CONVERSATION

As introduced in the beginning of this chapter, Applebee (1996, 1999) has made a strong case for the need to establish “knowledge-building communities” where conversation becomes the center of learning. The need for such a framework came from taking the long view of what his research in English and other research in many other disciplines has revealed over the last thirty years (Applebee, 1999). He saw the need to move the debate “from the traditional issues of coverage versus depth toward a framework that would fit better with emerging constructivist frameworks of teaching and learning.” (p. 359). The effects of using conversation or situating students in the traditions so that they may participate fully in them are several.

First, it foregrounds the active, participatory nature of knowing—to engage in a conversation requires more than recitation of knowledge out of context. *Second*, it moves away from the artificial separation of the language arts, creating a context in which writing, reading, viewing, and discussion are naturally integrated with one another. *Third*, it places the teacher at the center of learning rather than at the periphery, as the person who mediates between the conversation of the classroom and that of the larger tradition of discourse of which it is a part. *Fourth*, it puts the emphasis on open-ended questions, issues that are worth talking about and about which reasonable people may disagree. *Fifth*, it places curriculum firmly within our current theories of language use and language learning. *Finally*, it offers some straightforward criteria in evaluating a new or existing curriculum: Does it focus on conversations that matter? And does the structure of the curriculum foster conversation or make conversation more difficult to sustain? (pp. 359-360)

Scholes (1998) makes a case for a more balanced learning in English Education around theory, history, production and consumption. This would create a need to dramatically shift teaching priorities, as well as curricula - but would align itself well to the need for students to participate fully in the traditions. Too much time has been spent in secondary schools and colleges on “the study of literature” to the neglect of students’ production of text and learning ways to “consume” texts, media, and films.

Scholes suggests that ❶ the *process* of reading should take precedence over the coverage of texts, ❷ the reading of modern and recent texts can inspire students to read earlier texts, ❸ students should learn to read a *wide range* of texts and ❹ students need to learn to *write well in a range of expressive modes*.

INSTRUCTIONAL SCAFFOLDING

Writing

Langer and Applebee (1987) explored the myriad ways that writing shapes thinking across all subject areas. They found that by including writing in classroom activities, students learn more effectively. However, the types of writing requested led to very different thinking results. ❶ Short answer study questions lead students to learn (but not reflect on) items of information. ❷ Summary writing and note taking lead to a focus on the whole text in more comprehensive but more superficial ways. ❸ Analytic writing leads to more thoughtful focus on a smaller amount of information, (which) is remembered for a longer period of time (p. 135).

We can improve subject area learning with writing to ❶ gain relevant knowledge, ❷ review knowledge ❸ reformulate and extend knowledge. The third way leads to more complex thinking and needs to be used more frequently than classroom practices indicated.

In fact, these researchers found that most teachers used writing processes to “review material read in order to test students’ knowledge of texts” and also to evaluate teaching (p. 137).

These extensively-used teaching practices lead to the need to provide *instructional scaffolding* so that students can “internalize information and strategies relevant to the tasks (and) learn the concepts and skills they will need in order to eventually undertake similar tasks on their own”(p. 139). The components of instructional scaffolding are: *ownership* (by the student), *appropriateness* (to the student’s context of knowledge and skills), *support* (clear expectations and guidance), *collaboration* (helping the student to new learning) and *internalization* (no longer needing the scaffolding) (pp. 141-145).

Understanding Literature

Scaffolding of a different kind, that helps students construct deep understanding through literature experiences, can be found

in Langer's "stances" (1992). Based on Louise Rosenblatt's (1985) aesthetic and efferent readings, James Britton's (1970) spectator and participant roles, among others (also described in the PA Framework's "four perspectives" in *Responding to Literature* 1978, 1988), the distinctions drawn between literary and scientific reasoning can be used together to help students construct meaning - whether from informational or literary texts. Teachers too frequently treat literary texts as informational texts both in instruction and assessment which leads to fewer opportunities for students to expand their thinking or to "explore opportunities" (p. 38).

Reading Stances

Langer suggests four stances that support a student's expanded and reflective understanding of a text.

During reading, there are a series of stances or relationships the reader takes toward the text, each adding a somewhat different dimension to the reader's growing understanding of the piece (p. 40).

- ▶ **Initial Understanding** is a first impression or broad understanding of what is read. It may involve an overall understanding of the topic, theme or main idea of a passage.
- ▶ **Developing Interpretation** is extending ideas found in the text. This may involve linking information across parts of the text as well as focusing on specific information. It includes a range of inferential responses, from drawing conclusions and interpreting characters' actions to inferring cause and effect.
- ▶ **Responding Personally** is connecting information from the text with personal background knowledge and experience. The reader may reflect on, for example, an incident in the

passage or the author's point of view and then respond from a personal perspective, or explain why the passage was or was not interesting.

- ▶ **Responding Critically** is forming a critical judgment about the text. It requires standing apart from the text and reflecting upon and judging it. This stance may require the reader to appreciate literary elements such as imagery, mood or symbolism and even to challenge an author's facts or perspective.

(Reading Assessment Handbook, 2000, p. 14)

Such a scaffolding structure can be a significant way to help students become articulate - perhaps even eloquent - in their construction of meanings through literature.

These four stances are used in the PA Reading Assessment in the open-ended tasks after reading and thus align assessment with significantly appropriate instructional practices.

SITUATED LEARNING ENVIRONMENTS

The eight ways that learning is characterized through a Social Lens on learning in the beginning of this section, summarized from the PA Framework (1988), underscore the interactive nature of learning that is most effective within a context of social support for inquiry. Because we have moved beyond an Industrial Age to an Information Age, we need to understand how social contexts have expanded. We now can learn across space and time through technology.

Renate Caine and Geoffrey Caine (1997) point out that our interconnected brain, "does not distinguish between school and real life" (p. 7). Learning that is "situated" describes learning that is complex,

interconnected, inclusive and authentic. Learning can be "situated" anywhere. We can learn in schools, at home, in museums or on a mountain climb. Students can work in communities "gathering resources to study different topics and themes... with... adult mentors. Community service and internships are becoming more a part of education so that applied, real-life learning is possible" (Taylor, 2000, p. 3).

If both our brains and our relationships are interconnected, we need to value the contribution that a "community" context brings to learning.

Learning Communities

A child's acquisition of language is where the context of community first impacts literacy development as well as his/her continued learning (Moore, 1998). Later, a child's learning can be significantly enhanced through clubs and sports teams. It is in the small informal groups of similar interests in which we participate throughout schooling and beyond, that we often learn so much more (Smith, 1998).

Researchers show the importance of community when students learn to broaden their perspectives toward increased understanding with others who have different points of view (Whitin & Whitin, 1998) and in their investigations into language use.

Fecho (2000), in studying an urban high school class, realized how crucial a classroom community context is in enabling students to explore what matters so much to them - their language. "Those who teach in classrooms where the potential for crossing boundaries of culture is great need to take inquiry stances in order to understand better what occurs during those crossings. More specifically, teachers need to gain a greater sense of the transaction between primary and secondary discourses" (p. 392).

Building communities of learners is crucial for all the language experiences that make us literate: speaking, writing, reading and listening (Graves, 1990, 1994, 1999; Routmann, 2000; Schactman, 1996; Rose, 1989).

Learning communities help students collaborate in their learning. Because learning is interactive, students working in small group structures can collaborate (working together on a challenging and meaningful problem) to accomplish more. "Collaborate" is distinguished from the term "cooperative learning" which focuses on getting along and treating others with respect. Both are needed in small group work.

Physical Environments

We need to realize how our school's physical environments can enhance student learning for the 21st century. Anne Taylor (2000) says that "the art of school design is...resulting in the creation of multisensory, interactive, functionally well-designed and aesthetically beautiful learning environments that are radically different from what we traditionally think of as "schools"(p. 1). Many new schools now use architecture, landscape and interiors for enhanced learning. These include: "hands-on inquiry, problem solving, group work, discussions, presentations, and reflection. ...Classrooms are now studios, workstations and laboratories" (pp. 1-2).

Connecting with Experts in the Real World

Schools are now serving as "hubs for electronic learning networks which link students, staff, parents and the broader community. "Everyone on the network can contribute their expertise to learning, and anyone can use the network to further their own education...(As a result), users can establish relationships with other students and adults around the world" (Taylor, 2000, p. 4). Universities are linking up to teachers to provide new "situated learning" opportunities such as mentoring (Lucas, 2000).

Diane Demee-Benoit (1999) describes how institutions, such as science centers, zoos, botanical gardens and museums, are mentoring science teachers into inquiry-based approaches to science learning. Among the thousands of examples of student and expert networking is one that George Lucas (1999) described in *Learn and Live*. Through a videotape segment we can see how scientists are networked with students in classrooms that have been studying an important question in science. The scientists share the use of their electron microscope with students and answer

student questions about their research results over a long-distance satellite connection.

Implications for Teaching

Caine and Caine (1997, pp. 192-195) suggest practices for changing teaching and for preservice education of teachers, that address many of the issues discussed in this section on the Social Lens.

- 1 Develop a coherent mental model of learning.
- 2 Master the instructional approaches. (Instructional Scaffolding would be included here.)
- 3 Understand technology as a way of infusing life and meaning.
- 4 Help students master multiculturalism within a democratic society.
- 5 Create collaborative communities.

LANGUAGE-BASED LENS

In the PA Framework (1988), discussion about how the Language-based lens or perspective impacts learning included several basic assumptions.

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- 1 Learning in all content areas involves the use of language and the best vehicle for language development is language itself (Harste, 1984).
 - 2 Language is a system of systems, all of which interact and influence each other any time language is used. Therefore language cannot be studied outside of the instances of language in use (Edelsky, 1987; Goodman & Goodman, 1981).
 - 3 Content is learned with and through language processes, so attention to process is essential.
 - 4 Literacy development occurs through a continuum or spiral rather than the accretion of specific skills (Bruner, 1961).

- ⑤ Language processes are connected - not taught separately. They are reciprocal. Students need to “read like writers and write like readers” (Smith, 1983; Tierney & Pearson, 1983).

PA Framework 1988

Major Research Issues

Major research issues related to the Language-Based Lens are: **Using Language to Learn** and **The impact of Technology on Teaching and Learning**.

USING LANGUAGE TO LEARN

To continue to help students learn well across all disciplines, every teacher needs to incorporate language-learning strategies as a way for students to both process and convey their learning. Researchers provide examples in almost every discipline.

For instance, in learning to use and apply mathematical concepts as a part of developing computational skills and reasoning through complex problem solving, students need to use language for inquiry in math; they need to use metaphorical thinking to gain ownership for understandings and they need to develop voice (in speaking and writing) for making personal connections (Whitin & Whitin 1997).

Herrera & Ozgun-Koca (1999) stress the importance of having students use the interconnected math processes to make math learning significant. Use of speaking, listening, writing, and reading are critical for students in solving problems, experimenting, reasoning, cooperative group work, illustration of math concepts, communicating of math ideas, and use of technology. The role of thinking, the importance of social interaction, the explicit use of previous knowledge to build new knowledge, making choices in thinking strategies and accepting developmental errors in supporting math thinking, are all ways that students learn more effectively. These are strategies that teachers need to incorporate in their classrooms (Wakefield, 1997).

An example found in science learning was described by Schroder (1996). In a secondary chemistry class, students successfully used picture books to learn about the elements of chemistry more effectively. Ridgway, et. al., (1999) advocated the use of language-based learning strategies throughout all aspects of instruction and assessment in science. Strategies such as: student-centered instruction, hands-on/minds-on learning, issue-based learning, communicating, assessment and scientific reasoning, are all “best practice strategies.”

TECHNOLOGY

Fortunately, the need for using reading, writing, speaking and listening for all learning is becoming established through our increasing use of technology. The *convergence* of literacy and learning (using language to learn) is now occurring more and more because of our use of technology in our classrooms, schools, work, and homes. This has had a profound impact on all aspects of learning. Technology affects ❶ the development of our literacy competencies; ❷ it affects how we learn; and ❸ where we learn; and ❹ it affects how we represent our learning. As a result, using technology has major implications for teaching.

The Development of Literacy Competencies

The development of our literacy competencies is expanded with the use of the Internet. Leu & Kinzer (2000) summarize the major ways that this occurs. Two are: global economic competition and literacy as technological “deixis” (the meaning of literacy changes by its temporal context). Thus, the nature of literacy learning is changing in both form and function at a much faster pace than was true before technology.

Literacy is transformational. Significant learning takes place when teachers and students imagine new possibilities for literacy and learning. Therefore, literacy will not be measured simply by our ability to comprehend, analyze and communicate. It will also depend on our ability to adapt to the changing technologies and to envision new ways to use these technologies.

According to Leu & Kinzer (2000), our future literacy instruction will change dramatically in several major ways. ❶ Literacy instruction will require *higher standards*, because literacy is needed for

participating fully in the world. ❷ There will be more focus on problem identification and critical evaluation for research purposes. ❸ *Social learning strategies will be increasingly* used for collaborative group work in and beyond the classroom. ❹ The opportunities will increase for widening our perspectives and *learning from others*. “No other instructional resource available in our classroom has ever been as rich in its potential for developing an understanding of the diverse nature of our global society. The question is whether we have the vision and the will to accomplish this” (p. 125).

How and Where We Learn, The Production, Expression and Publication of Knowledge

Along with the expanded opportunities for developing literacy competencies with technology, our learning is affected in both how and where we learn. We find the need to frequently learn from and with others - because there is too much information available for an individual to continually locate and evaluate such information acting alone. We need to use others as resources so that we can collaborate on our learning. More and more we see the use of groups of people in teams, organized to accomplish important goals both in schools and in the workplace. Even teachers and administrators join study groups or participate in peer coaching for their extended learning over time. According to Reinking (1997), technology can actually act as a catalyst to bring people closer together in a democratic and conditional pursuit of knowledge, understanding and enjoyment. Leu (1997) and Lucas (1999) describe how technology provides the tools and contexts for such learning. The use of list serves, chat sessions, collaborative Internet projects and teleconferences forces situated learning with others. Technology expands our audience as

we can publish our learning through texts, projects, web sites. Students and learners of all ages find key pals in other countries, take courses on line or complete projects on line. Learning is expanding as a way of life for all ages because technology has increased our learning opportunities and our reading/listening audience.

Reinking (1997) finds that technology is effective in transforming typical modes of teaching and learning toward more positive results. This can be illustrated in the use of email for writing to authentic audiences and purposes, using critical thinking to evaluate information gained from the Internet rather than discussion of texts only, and the use of word processing which facilitates revising, editing, and publication of writing.

There is a problem, however, in thinking that because technology provides tools, opportunities, collaborative contexts and expanded audiences, that students will know how to take advantage of the new learning technologies for significant learning. In **Hyperlearning: Where Projects, Inquiry and Technology Meet** (1998), Wilhelm, Friedemann and Erickson point out that at least half of our students are unable to “find information, add to it, connect it to what they already know, transform it or communicate it to others. In other words, students are not good at finding, connecting or using information. And if they are given information, they can’t *do* anything with it” (p. 165). Students are at a “mid-level” literacy - not a competent one.

What is the model of learning that will establish a competent literacy for students? “How are we working to develop students’ meaningful abilities of thought and reflection? How are they working together to do something of significance? What is it... that these students... really need to know... and do... and why?” (p. 165)

The model of learning these educators suggest is research. “Students need to be involved in engaging experiences that will inspire, guide and scaffold their efforts to learn.... Learning should be integrated around a problem-centered core” (p. 166). And, it is the use of multi-media technology tools (such as **Hyperstudio** and **Hypercard**), that result in major learning achievements for students.

These tools

- ▶ **make learning visible and accountable.**
- ▶ **develop improved reading and writing skills.**
- ▶ **facilitate the development of ideas and productive research.**
- ▶ **help students apply critical standards to their work.**
- ▶ **are applicable in all content areas and grade levels.**

The need for critical thinking as a major literacy skill was introduced earlier in this document. The American Language Association (1998) has established standards to help students in their research efforts. They suggest the use of such questions as:

- ❶ **Can the student determine accuracy, relevance and comprehensiveness?**
- ❷ **Can the student distinguish among fact, point of view, and opinion?**
- ❸ **Can the student identify inaccurate and misleading information?**
- ❹ **Can the student select information appropriate to the problem or question at hand?**

Teachers' Use of Technology

Golub (2000) points out that we encourage teachers to use technology because it expands their range of teaching options, it is more efficient and maybe because it is there. However, no matter "how well organized and glittery the instructor's presentation becomes through technological enhancement, it can't compare with the value and meaningfulness of the students' own information-gathering efforts"(p. 3). Teachers would better serve their students' learning if they became designers of students' project or extended learning - not only conveyers of information.

Teachers as Designers

Using technology to design projects for enriched student learning is not the first step however. We must begin by restructuring our courses to align with standards (state and/or national). We need to include core curriculum, problem-based or thematic experiences and authentic assessments. Such a task is essentially a design problem.

There are a number of recommended resources to use including: Perkins (1986) *Knowledge as Design*; Davis, et. al., (1997) *Design as a Catalyst for Learning*; Pugh et.al (1997) *Metaphorical Ways of Knowing: The Imaginative Nature of Thought and Expression*, and Wiggins & McTighe (1998) *Understanding by Design*.

Implications for Teaching

As we become more aware of the impact of technology on the language-based lens as well as the other lenses, it has major implications for teaching:

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- ❶ **Student learning needs to be problem-based (Wilhelm, et.al., 1998).**
 - ❷ **Teachers need training and reflection on use of technology tools that support this model of learning (Wilhelm, et. al., 1998).**
 - ❸ **Teachers can support literacy regardless of the medium: print, visual, video, audio or electronic.**
 - ❹ **Teachers need to teach critical thinking.**
 - ❺ **Teachers need to be instructional designers of student learning on major projects and problems (Golub, 2000).**
-

PA Framework 1988

HUMAN LENS

In the PA Framework 1988, several premises were outlined showing how the human lens (or perspective) impacts learning.

- ❶ All learners use language to make meaning in unique ways.
- ❷ All persons have the potential to develop their own distinctive styles of reading and writing and their own voices and strategies for learning.
- ❸ Attitudes affect one's images of self as a reader and writer. There is a strong relationship between "skill and will."
- ❹ Students need exposure to significant ideas in literary and non-literary texts, that generate opportunities to debate, dialogue, and doubt with differences of opinion (McLeod, 1986; Elbow, 1973).
- ❺ Reading the word is dependent on reading the world (Freire, 1985).
- ❻ Reading and writing are a part of human development; reading is an act of knowing both the self and the world.

PA Framework 1988

Major Research Issues

Major research issues identified within the Human Lens perspective are:

▶ **A Continuum**

Learning is a continuum — from the infant's early literacy development to a lifetime of learning. The learner begins with the oral tradition at any age. The learner is everyone: educators, students, parents, workplace partners, higher education teachers, and people in the larger global community.

▶ **Adult Learning**

The learning needs of adults are strongly influenced by functionality (how purposeful and important is it?), resources, support and contexts for learning.

▶ **Professionals and Professional Growth**

Teachers, principals and all those involved in education need to continue learning in a collaborative setting throughout their professional lives. By studying our teaching practices as they impact student performance, we can improve both teaching and learning.

A Continuum

Gross (1991) asserts that we come from a tradition for lifelong learning in America. This country's founding fathers established independent thinking and self-education. Many times this ideal of democracy is under siege from the media and "credentialing" is perceived as the only evidence of competence. He further states that reforming schools is not necessarily the answer to educational problems. Rather, "education needs to become a lifelong activity throughout society. People of every age and in every kind of life circumstance need to be empowered to learn, change, and grow" (xiii).

From her research in working with "at risk" students, Allen (1995) makes a compelling case for not giving up on students who have not had success with reading and writing. In *It's Never Too Late: Leading Adolescents to Lifelong Literacy*, she narrates the ways that she found to bring the power of language into their lives and open doors on learning for a lifetime. Her inspiring stories of these students illustrates the importance of learning as a continuum. From infancy on, language is not only necessary, it is critical for building knowledge and understanding.

Patton and Mercer (1996) emphasize the importance of lots of play in the early literate environment. Another recommendation from researchers is meaningful parental involvement with such programs as Home Response Journals (Morningstar, 1999) and DEAR "Drop Everything and Read," Reading with Wishbone and Reading Backpacks (Cooter, et. al., 1999). Greenberg (1998) recommends knowing each child as a unique learner as well as understanding the developmental continuum.

Further along the learning continuum, we approach the special literacy needs of adolescents. One of the problems in this stage

is that in middle grades and beyond, emphasis shifts to other concerns such as the physical, social, and emotional needs of students. For instance, reading instruction is not included beyond grade six in many schools. Additionally, there is a discernible shift from literacy skill development to the learning of "content."

However, adolescents deserve:

- ▶ **access to a wide variety of reading material that they can and want to read**
- ▶ **instruction that builds both the skill and the desire to read increasingly complex material**
- ▶ **assessment that shows them their strengths as well as their needs with instruction based on this understanding**
- ▶ **expert teachers who model and provide explicit instruction in reading, (writing) and study strategies (Moore, et.al., 1999).**

Rose (1989) finds the lack of a rich literacy program for adolescents extends into remedial programs as well. Remedial level students are given principles of grammar and usage, workbook exercises and short, undemanding bits of writing. This approach is based on the assumption that there is a fundamental mental barrier to engaging in higher-level cognitive pursuits and that the errors must be eradicated first. But we need to challenge the ways we look at the capacities of students.

Rose (1989) stipulates that we need a much different kind of literacy development. Students need to be immersed in talking, reading, and writing and critical thinking. They need to gain confidence in themselves as systematic inquirers. We need "a philosophy of language and literacy that affirms the diverse sources of linguistic competence and deepens our understanding of the ways class and culture blind us to the richness of those sources" (p. 238).

The Adult Learner

Gross (1991) states that we need a broader definition of “self-directed” learning that relies on new insights from brain research, on ways to use resources world-wide and on self-selected strategies for self-directed learning. Effective learning comes from each individual selecting methods that are right for that individual, as well as for the subject a person wishes to learn.

Ideal learning for adults can be demonstrated by observing “peak learners.”

Peak learners are characterized as those who:

- ▶ enjoy learning
- ▶ are aware of what they don’t know - but are energized to learn as a result
- ▶ learn from life experiences
- ▶ have confidence in their ability to learn
- ▶ consider learning an important part of their personal growth

Gross concludes that peak learners need to use writing (in a log) as “writing and learning are the same process” (p. 14). A major learning strategy is the use of the Double-Entry format. The Double-Entry Method forces reflection and gaining of insight on ideas and observations made frequently.

Implications for Teaching and Learning

- ❶ Our individual learning styles and our own understanding of how to learn are important first steps in literacy development. Too many times the “what” of learning is the only focus in schools.
- ❷ Learning to learn tools and strategies need to be facilitated for each individual student as learning is both individual and carried out with others.

Major strategies

- ▶ Use of reading strategies: predicting, clarifying, summarizing
- ▶ Use of a writing log, double-entry
- ▶ Understanding and use of our own learning style
- ▶ Gaining confidence in ourselves as learners - having more choices in what significant problems to solve

- ▶ Using resources all around us
 - ▶ Using critical and creative thinking to support intellectual growth (Gross, 1991)
-

Professionals and Professional Growth

Along with facilitating our students' learning, we have come to the realization that we need to nurture our own learning as well. Continual learning is now a necessity. Routmann (2000) states it succinctly: "Collaboration, collegiality, and community are best taught to our students through our own example" (p. 251). Stigler & Hiebert (1999) in *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom*, convincingly show the need to change teaching itself. If we make our schools places of yearlong inquiry, we will find the time and contexts for studying our teaching practices to significantly improve student learning.

In addition to the teacher collaboration in improving teaching strategies, as seen in student work, we need to widely publish what we learn so that the teaching profession can benefit and the wider community can regain confidence in public schooling. We need to do far more research on how to make our classrooms work better so that students "emerge...as more literate, more thoughtful, more accomplished human beings... Even more important is the fact that we need to be able to **provide evidence** that those resources (which we are demanding for our schools) in fact do some good" (Applebee, 1999, p. 363).

Resnick (1998) describes "nested learning communities" in schools as a way to connect teaching and learning. We need to look at student work. How does student work show us that they have been challenged to think deeply in a subject? What are the "clear expectations" that we have provided to students? Can we find evidence of "academic rigor"? Through

yearlong discussion of such principles of teaching and learning (1998), teachers and administrators can significantly impact students, teaching and schools.

The National Writing Project, founded in the San Francisco Bay Area, has been cited by the National Endowment for the Humanities as one of the most effective professional development programs for both elementary and secondary teachers in the United States for the last twenty years. The Writing Project Centers that are found in almost every state can be the bridge between framework "reforms" and day to day teaching. In Pennsylvania there are a number of Writing Project Centers in all parts of the state.

In the Centers teachers are immersed in writing themselves during a six week summer seminar. From this experience, a teacher can more effectively teach his or her students to become capable writers and readers. Even more impressive, these teachers now have the confidence to teach other teachers the strategies they know work well in classrooms.

Teachers begin with effective strategies, then reflect back to theory on why they are effective with students. By using the principle of inquiry, teachers are inspired to think more deeply about the decisions they make. A teacher involved in this program becomes the reflective practitioner -one who is invited to publish classroom research for other practitioners. What can we learn from this example? It is the engagement of teachers in the discipline that makes the difference between seeing it from the outside and really knowing it. This way of professional development works for teachers. The reason for this is a belief in teachers (Smith, 1996).

Another professional development perspective comes from McKenzie (1999). In *How Teachers Learn Technology Best* he shows us many contexts and strategies to use to reach the vast majority of teachers who are reluctant to transform their teaching with technology.

This challenge is not about training. It is about learning. If we expect teachers to turn around and use technologies daily with students they need to discover personally the power of the new technologies when combined with rich information. We also need to provide more informal support structures such as mentors, coaches and “just in time help” that often do more to promote risk taking and growth than formal class offerings (p. 7).

So we can see the importance of functionality when working with adult learners. Can we make the learning purposeful, practical and functional? Can we provide ongoing support structures that are provided just as teachers need it?

Implications for Teaching and Learning

- ❶ Teachers need to be actively engaged in the learning process themselves.
- ❷ Teachers should model their own learning to their students.
- ❸ Schools need to invest in ongoing professional development with a focus on teacher inquiry (Smith, 1996; Wilkinson, 1997).
- ❹ Administrators and teachers need to learn collaboratively.
- ❺ Principals need to provide a climate of support in their school that encourages risk-taking and learning.

SUMMARY & IMPLICATIONS FOR TEACHING

To summarize the major implications for teaching and for student learning in a lifelong perspective, the following themes and habits of literacy emerge as major considerations for educators.

❶ The Continuum of Learning

- ▶ From the infant’s early literacy development to a lifetime of learning
 - The learner begins with the oral tradition at any age
 - The learner is everyone: educators, students, parents, community members

Early Literacy ➡ Expanding Literacy ➡
Enhancing Literacy ➡ Lifelong Learning

② Habits of Literacy

- ▶ **Self-directed, self-managed, self-assessed learning**
 - The learner learns about his/her individual learning style strengths and areas of need.
 - The learner uses this knowledge for effective study strategies.
 - The learner uses Graphic Organizers to organize and represent important concepts.
 - The learner uses a range of resources and learning situations within and across communities.
 - The learner evaluates his/her own learning with established criteria.
 - The learner collects, selects and presents his/her work to an ever-widening audience.
- ▶ **Language strategies to become proficient as a reader, writer, listener, speaker**
 - The learner consistently uses language strategies/ scaffolding for processing, sharing, reflecting, questioning, investigating, explaining, doubting, debating and becoming articulate.
- ▶ **Creative Thinking and Problem-Solving**
 - The learner identifies a problem, “thinks outside the box”, visualizes in new ways, and generates multiple solutions.
- ▶ **Critical Reflection and the Development of Expertise**
 - The learner reflects on learning (metacognition) and language use in order to evaluate ideas information, texts, graphics, images, film and media using established criteria.

③ Learning from and with others

- ▶ **Participating fully in conversations - “knowledge in context”**
 - The learner participates in ongoing conversations about things that matter within discourse domains of knowledge. Learning is interactive.
- ▶ **Diverse Learners and Multiple Perspectives**
 - The learner uses language strategies (especially listening and reflection) and an inquiry approach into both knowledge and language use in different contexts.
- ▶ **Collaborative and cooperative group skills**
 - The learner shares the roles of participant, leader, scribe, observer, and established procedures for optimum group work to meet goals.

④ Using Technology

- ▶ **Learners use technology:**
 - to deepen their understanding of core concepts, key ideas, and multiple perspectives
 - to visualize and to use visualization for conceptual understanding and long-term memory
 - to practice and discover connections and relationships of themes and big ideas
 - as tools for problem-solving
 - to create new knowledge
 - to represent their knowledge - using multi-media tools
 - to enter new environments of learning for communicating with others, and
 - to situate their learning across time, space and place

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